

Five Things Patients and Providers Should Question

1

Do not perform a laparotomy for the management of non-malignant disease when surgical management is indicated and a vaginal, laparoscopic or robotic-assisted approach is feasible and appropriate.

Selection of an endoscopic approach should be tailored to patient selection, surgeon ability, and equipment ability. The surgeon should take into consideration how the procedure may be performed cost-effectively with the fewest complications.

2

Do not perform routine oophorectomy in premenopausal women undergoing hysterectomy for non-malignant indications who are at low risk for ovarian cancer.

Outside of high-risk populations, the association of oophorectomy with increased mortality in the general population has substantial implications, particularly as it relates to higher rates of coronary heart disease and cardiovascular death. The long-term risks associated with salpingo-oophorectomy are most pronounced in women who are younger than 45–50 years who were not treated with estrogen.

3

Do not routinely administer prophylactic antibiotics in low-risk laparoscopic procedures.

The use of prophylactic antibiotics in women undergoing gynecologic surgery is often inconsistent with published guidelines. Although the appropriate use of antibiotic prophylaxis for hysterectomy is high, antibiotics are increasingly being administered to women who are less likely to receive benefit. The potential results are significant resource use and facilitation of antimicrobial resistance.

4

Avoid the unaided removal of endometrial polyps without direct visualization when hysteroscopic guidance is available and can be safely performed.

Endometrial polyps are a common gynecologic disease. Though conservative management may be appropriate in some patients, hysteroscopic polypectomy is the mainstay of treatment. Removal without the aid of direct visualization should be avoided due to its low sensitivity and negative predictive value of successful removal compared to hysteroscopy and guided biopsy.

5

Avoid opioid misuse in the chronic pelvic pain patient without compromising care through education, responsible opioid prescribing and advocacy.

Patients have a right to appropriate assessment and management of pain; however, opioid misuse has become a public health crisis. It is essential that providers become familiar with published FDA and CDC plans and guidelines. Providers must also educate and screen for risk factors for opioid misuse and follow patients on chronic opioid therapy for any signs of misuse.

How This List Was Created

As an international leader in the advancement of minimally invasive surgery, AAGL relies on its society members and board to determine the various needs and best practices to promote safe, higher quality care to patients. The list of things to question provided to the Choosing Wisely campaign was submitted to the AAGL Board, who developed a subcommittee dedicated to analyzing the recommended interventions. The subcommittee of expert surgeons in the field of minimally invasive surgery recommended and developed a more effective use of health care resources, along with safe techniques to practice. The submitted list was reviewed and approved by the AAGL Board.

Sources

- 1 Gala R et al. Systematic Review of Robotic Surgery in Gynecology: Robotic Techniques Compared with Laparoscopy and Laparotomy, J Minim Invasive Gynecol. 2014 May-Jun;21(3):353-61.
ACOG Committee Opinion: Choosing the Route of Hysterectomy for Benign Disease, Number 701, June 2017
- 2 Evans EC et al. Salpingo-oophorectomy at the time of Benign Hysterectomy. Obstet Gynecol 2016;128:476-485.
Parker WH et al. Long-term Mortality Associated with Oophorectomy versus Ovarian Conservation in the Nurses' Health Study, Obstet Gynecol 2013;121(4):709-716.
- 3 Wright J et al. Use of Guideline Based Antibiotic Prophylaxis in Women Undergoing Gynecologic Surgery, Obstet Gynecol 2013; 122:1145-1153.
ACOG Practice Bulletin: Antibiotic Prophylaxis for Gynecologic Procedures, Number 104 May 2009 (Reaffirmed 2016)
- 4 AAGL Practice Report: Practice Guidelines for the Diagnosis and Management of Endometrial Polyps. Journal of Minimally Invasive Gynecology, Vol 19, No 1, January/February 2012.
Bettocchi et al. Diagnostic Inadequacy of Dilatation & Curettage, Fertil Steril 2001;75:803-805.
Swirsky R et al. Can We Rely on Blind Endometrial Biopsy for Detection of Focal Intrauterine Pathology?, Am J Obstet Gynecol 2008;199:115.e1-115.e3
- 5 Phillips DM. JCAHO pain management standards are unveiled. JAMA 2000;284:428-429.
Dowell, T.M. Haegerich, R. Chou, CDC guideline for prescribing opioids for chronic pain - United States, 2016, MMWR Recomm. Rep. 65 (1) (2016)

About the ABIM Foundation

The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.

To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About the AAGL

Established in 1971, AAGL was the first organization of its kind dedicated to gynecologic endoscopic surgery. Still today, AAGL remains the largest international, professional society in minimally invasive gynecology. With over 7,000 members, AAGL is recognized worldwide for leading the field through education, communication and research. AAGL works with some of the world's finest gynecologic surgeons to promote quality health care for women by advancing minimally invasive gynecologic practices through clinical practice, research, innovation and dialogue.



For more information or to see other lists of Five Things Patients and Providers Should Question, visit www.choosingwisely.org.

Ten Things Physicians and Patients Should Question

1

Don't insert percutaneous feeding tubes in individuals with advanced dementia. Instead, offer oral assisted feedings.

Strong evidence exists that artificial nutrition does not prolong life or improve quality of life in patients with advanced dementia. Substantial functional decline and recurrent or progressive medical illnesses may indicate that a patient who is not eating is unlikely to obtain any significant or long-term benefit from artificial nutrition. Feeding tubes are often placed after hospitalization, frequently with concerns for aspirations, and for those who are not eating. Contrary to what many people think, tube feeding does not ensure the patient's comfort or reduce suffering; it may cause fluid overload, diarrhea, abdominal pain, local complications, less human interaction and may increase the risk of aspiration. Assistance with oral feeding is an evidence-based approach to provide nutrition for patients with advanced dementia and feeding problems.

2

Don't use sliding scale insulin (SSI) for long-term diabetes management for individuals residing in the nursing home.

SSI is a reactive way of treating hyperglycemia after it has occurred rather than preventing it. Good evidence exists that SSI is neither effective in meeting the body's physiologic insulin needs nor is it efficient in the long-term care (LTC) setting in medically stable individuals. Use of SSI is associated with more frequent glucose checks and insulin injections, leads to greater patient discomfort and increased nursing time and resources. With SSI regimens, patients may be at risk from wide glucose fluctuations or hypoglycemia when insulin is given when food intake is erratic.

3

Don't obtain a urine culture unless there are clear signs and symptoms that localize to the urinary tract.

Chronic asymptomatic bacteriuria is frequent in the LTC setting, with prevalence as high as 50%. A positive urine culture in the absence of localized urinary tract infection (UTI) symptoms (i.e., dysuria, frequency, urgency) is of limited value in identifying whether a patient's symptoms are caused by a UTI. Colonization (a positive bacterial culture without signs or symptoms of a localized UTI) is a common problem in LTC facilities that contributes to the over-use of antibiotic therapy in this setting, leading to an increased risk of diarrhea or other adverse drug events, resistant organisms, and infection due to *Clostridium difficile*. An additional concern is that the finding of asymptomatic bacteriuria may lead to an erroneous assumption that a UTI is the cause of an acute change of status, hence failing to detect or delaying the more timely detection of the patient's more serious underlying problem. A patient with advanced dementia may be unable to report urinary symptoms. In this situation, it is reasonable to obtain a urine culture if there are objective signs of systemic infection such as fever (increase in temperature of equal to or greater than 2°F [1.1°C] from baseline) leukocytosis, or a left shift or chills in the absence of additional symptoms (e.g., new cough) to suggest an alternative source of infection.

4

Don't prescribe antipsychotic medications for behavioral and psychological symptoms of dementia (BPSD) in individuals with dementia without an assessment for an underlying cause of the behavior.

Careful differentiation of cause of the symptoms (physical or neurological versus psychiatric, psychological) may help better define appropriate treatment options. The therapeutic goal of the use of antipsychotic medications is to treat patients who present an imminent threat of harm to self or others, or are in extreme distress – not to treat nonspecific agitation or other forms of lesser distress. Treatment of BPSD in association with the likelihood of imminent harm to self or others includes assessing for and identifying and treating underlying causes (including pain; constipation; and environmental factors such as noise, being too cold or warm, etc.), ensuring safety, reducing distress and supporting the patient's functioning. If treatment of other potential causes of the BPSD is unsuccessful, antipsychotic medications can be considered, taking into account their significant risks compared to potential benefits. When an antipsychotic is used for BPSD, it is advisable to obtain informed consent.

5

Don't routinely prescribe lipid-lowering medications in individuals with a limited life expectancy.

There is no evidence that hypercholesterolemia, or low HDL-C, is an important risk factor for all-cause mortality, coronary heart disease mortality, hospitalization for myocardial infarction or unstable angina in persons older than 70 years. In fact, studies show that elderly patients with the lowest cholesterol have the highest mortality after adjusting other risk factors. In addition, a less favorable risk-benefit ratio may be seen for patients older than 85, where benefits may be more diminished and risks from statin drugs more increased (cognitive impairment, falls, neuropathy and muscle damage).

6

Don't place an indwelling urinary catheter to manage urinary incontinence.

The most common source of bacteremia in the post-acute and long-term care (PA/LTC) setting is the bladder when an indwelling urinary catheter is in use. The federal Healthcare Infection Control Practices Advisory Committee (HICPAC) recommends minimizing urinary catheter use and duration of use in all patients. Specifically, HICPAC recommends not using a catheter to manage urinary incontinence in the PA/LTC setting. Appropriate indications for indwelling urinary catheter placement include acute retention or outlet obstruction, to assist in healing of deep sacral or perineal wounds in patients with urinary incontinence, and to provide comfort at the end of life if needed.

7

Don't recommend screening for breast, colorectal or prostate cancer if life expectancy is estimated to be less than 10 years.

Many patients residing in the LTC setting are elderly and frail, with multimorbidity and limited life expectancy. Although research evaluating the impact of screening for breast, colorectal and prostate cancer in older adults in general and LTC residents in particular is scant, available studies suggest that multimorbidity and advancing age significantly alter the risk-benefit ratio. Preventive cancer screenings have both immediate and longer term risks (e.g., procedural and psychological risks, false positives, identification of cancer that may be clinically insignificant, treatment-related morbidity and mortality). Benefits of cancer screening occur only after a lag time of 10 years (colorectal or breast cancer) or more (prostate cancer). Patients with a life expectancy shorter than this lag time are less likely to benefit from screening. Discussing the lag time ("When will it help?") with patients is at least as important as discussing the magnitude of any benefit ("How much will it help?"). Prostate cancer screening by prostate-specific antigen testing is not recommended for asymptomatic patients because of a lack of life-expectancy benefit. One-time screening for colorectal cancer in older adults who have never been screened may be cost-effective; however, it should not be considered after age 85 and for most LTC patients older than 75 the burdens of screening likely outweigh any benefits.

8

Don't obtain a C. difficile toxin test to confirm "cure" if symptoms have resolved.

Rates of Clostridium difficile infection (CDI) have been increasing, especially among older adults who have recently been hospitalized or who reside in the PA/LTC setting. Patients residing in PA/LTC facilities are particularly at risk for CDI because of advanced age, frequent hospitalizations and frequent antibiotic exposure. However, only symptomatic patients should be tested. Furthermore, studies have shown that C. difficile tests may remain positive for as long as 30 days after symptoms have resolved. False positive "test-of-cure" specimens may complicate clinical care and result in additional courses of inappropriate anti-C. difficile therapy. To limit the spread of C. difficile, care providers in the PA/LTC setting should concentrate on early detection of symptomatic patients and the consistent use of proper infection control practices, including hand washing with soap and water, contact precautions, and environmental cleaning with 1:10 dilution of sodium hypochlorite (bleach) prepared fresh daily.

9

Don't recommend aggressive or hospital-level care for a frail elder without a clear understanding of the individual's goals of care and the possible benefits and burdens.

Hospital-level care has known risks, including delirium, infections, side effects of medications and treatments, disturbance of sleep, and loss of mobility and function. These risks are often more significant for patients in the PA/LTC setting, who are more likely to be frail and to have multimorbidity, functional limitations and dementia. Therefore, for some frail elders, the balance of benefits and harms of hospital-level care may be unfavorable. To avoid unnecessary hospitalizations, care providers should engage in advance care planning by defining goals of care for the patient and discussing the risks and benefits of various interventions, including hospitalization, in the context of prognosis, preferences, indications, and the balance of risks and benefits. Advance directives such as the Physician Orders for Life Sustaining Treatment (POLST) paradigm form and Do Not Hospitalize (DNH) orders communicate a patient's preferences about end-of-life care. Patients with DNH orders are less likely to be hospitalized than those who do not have these directives. Patients who opt for less-aggressive treatment options are less likely to be subjected to unnecessary, unpleasant and invasive interventions and the risks of hospitalization.

10

Don't initiate antihypertensive treatment in frail individuals ≥ 60 years of age for systolic blood pressure (SBP) < 150 mm Hg or diastolic blood pressure (DBP) < 90 mm Hg.

There is strong evidence for the treatment of hypertension in older adults. Achieving a goal SBP of 150mm Hg reduces stroke incidence, all-cause mortality and heart failure. There is less consistent evidence that lower BP targets are beneficial for high-risk patients, especially frail patients in the post-acute and long-term care setting. Target SBP and DBP levels should be based on shared decision-making with the patient as there is data supporting benefit in treating more aggressively to a goal SBP of < 140 mm Hg in community-dwelling individuals ≥ 75 years of age with elevated cardiovascular risk. Using a reliable, representative method of taking blood pressures with special attention to orthostatic hypotension is important, as orthostatic hypotension has been associated with increased mortality and cardiovascular events. In addition, moderate or high-intensity treatment of hypertension has been associated with an increased risk of serious falls and injury in frail older adults.

How This List Was Created (1–5)

AMDA – The Society for Post -Acute and Long-Term Care Medicine convened a work group made up of members from the Clinical Practice Steering Committee (CPSC). Members of the CPSC include board certified geriatricians, certified medical directors, multi-facility medical directors, attending practitioners, physicians practicing in both office-based and nursing facility practice, physicians in rural, suburban and academic settings, those with university appointments, and more. It was important to AMDA that the workgroup chosen represent the core base of the AMDA membership. Ideas for the “five things” were solicited from the workgroup. Suggested elements were considered for appropriateness, relevance to the core of the specialty and opportunities to improve patient care. They were further refined to maximize impact and eliminate overlap, and then ranked in order of potential importance both for the specialty and for the public. A literature search was conducted to provide supporting evidence or refute the activities. The list was modified and a second round of selection of the refined list was sent to the workgroup for paring down to the final “top five” list. Finally, the work group chose its top five recommendations before submitting a final draft to the AMDA Executive Committee, which were then approved.

How This List Was Created (6–10)

The AMDA *Choosing Wisely*[®] endeavor utilized a similar procedure as published in *JAMA Intern Med.* 2014;174 (40):509-515 - A Top 5 List for Emergency Medicine for our five items.

The AMDA Clinical Practice Steering Committee acted as the Technical Expert Panel (TEP).

Phase 1 – The Clinical Practice Steering Committee (CPSC) along with the Infection Advisory Committee clinicians brainstormed an initial list of low-value clinical decisions that are under control of PA/LTC physicians that were thought to have a potential for cost savings.

Phase 2 – Each member of the CPSC selected five low-value tests considering the perceived contribution to cost (how commonly the item is ordered and the individual expense of the test/treatment/action), benefit of the item (scientific evidence to support use of the item in the literature or in guidelines); and highly actionable (use decided by PA/LTC clinicians only).

Phase 3 – A survey was sent to all AMDA members. Statements were phrased as specific overuse statements by using the word “don’t,” thereby reflecting the action necessary to improve the value of care.

Phase 4 – CPSC members reviewed survey results and chose the five items.

For more information, visit www.paltc.org.

Sources

Teno JM, Gozalo PL, Mitchell SL, Kuo S, Rhodes RL, Bynum JP, Mor V. Does feeding tube insertion and its timing improve survival? *J Am Geriatr Soc.* 2012 Oct;60(10):1918-21.

Hanson LC, Ersek M, Gilliam R, Carey TS. Oral feeding options for people with dementia: a systematic review. *J Am Geriatr Soc.* 2011;59(3):463-72.

Palecek EJ, Teno JM, Casarett DJ, Hanson LC, Rhodes RL, Mitchell SL. Comfort feeding only: a proposal to bring clarity to decision-making regarding difficulty with eating for persons with advanced dementia. *J Am Geriatr Soc.* 2010;58(3):580.

Sorrell JM. Use of feeding tubes in patients with advanced dementia: are we doing harm? *J Psychosoc Nurs Ment Health Serv.* 2010 May;48(5):15-8.

Sampson EL, Candy B, Jones L. Enteral tube feeding for older people with advanced dementia. *Cochrane Database Syst Rev.* 2009 Apr 15;(2):CD007209.

Gillick MR, Volandes AE. The standard of caring: why do we still use feeding tubes in patients with advanced dementia? *J Am Med Dir Assoc.* 2008 Jun;9(5):364-7.

Ganzini L. Artificial nutrition and hydration at the end of life: ethics and evidence. *Palliat Support Care.* 2006 Jun;4(2):135-43.

Li I. Feeding tubes in patients with severe dementia. *Am Fam Physician.* 2002 Apr 15;65(8):1605-11.

Finucane TE, Christmas C, Travis K. Tube feeding in patients with advanced dementia: a review of the evidence. *JAMA.* 1999 Oct 13;282(14):1365-70.

Mitchell SL, Kiely DK, Lipsitz LA. The risk factors and impact on survival of feeding tube placement in nursing home residents with severe cognitive impairment. *Arch Intern Med.* 1997 Feb 10;157(3):327-32.

Sue Kirkman M, Briscoe VJ, Clark N, Florez H, Haas LB, Halter JB, Huang ES, Korytkowski MT, Munshi MN, Odegard PS, Pratley RE, Swift CS. Consensus Development Conference on Diabetes and Older Adults. Diabetes in older adults: a consensus report. *J Am Geriatr Soc.* 2012 Dec;60(12):2342-56.

American Geriatrics Society 2012 Beers Criteria Update Expert Panel. American Geriatrics Society updated Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc.* 2012 Apr;60(4):616-31.

Haq J. Insulin sliding scale, does it exist in the nursing home. *JAMDA.* 2010 Mar;11(3):B14.

Hirsch IB. Sliding scale insulin—time to stop sliding. *JAMA.* 2009;301(2):213-14.

American Medical Directors Association. Diabetes management in the long-term care setting clinical practice guideline. Columbia, MD:AMDA 2008, revised 2010.

Pandya N, Thompson S, Sambamoorthi U. The prevalence and persistence of sliding scale insulin use among newly admitted elderly nursing home residents with diabetes mellitus. *J Am Med Dir Assoc.* 2008 Nov;9(9):663-9.

Umpierrez GE, Palacio A, Smiley D. Sliding scale insulin use: myth or insanity? *Am J Med.* 2007;120(7):563-67.

Golightly LK, Jones MA, Hamamura DH, Stolpman NM, McDermott MT. Management of diabetes mellitus in hospitalized patients: efficiency and effectiveness of sliding-scale insulin therapy. *Pharmacotherapy.* 2006;26(10):1421-32.

Queale WS, Seidler AJ, Brancati FL. Glycemic control and sliding scale insulin use in medical inpatients with diabetes mellitus. *Arch Intern Med.* 1997;157(5):545-52.

3

- Stone ND, Ashraf MS, Calder J, Crnich CJ, Crossley K, Drinka PJ, Gould CV, Juthani-Mehta M, Lautenbach E, Loeb M, MacCannell T, Malani TN, Mody L, Mylotte JM, Nicolle LE, Roghmann MC, Schweon SJ, Simor AE, Smith PW, Stevenson KB, Bradley SF. Surveillance definitions of infections in long-term care facilities: revisiting the McGeer Criteria. *Infect Control Hosp Epidemiol*. 2012; 33(10):965-77.
- Drinka P. Treatment of bacteriuria without urinary signs, symptoms, or systemic infectious illness (S/S/S). *J Am Med Dir Assoc*. 2009 Oct;10(8):516-9.
- Arinzon Z, Peisakh A, Shuval I, Shabat S, Berner YN. Detection of urinary tract infection (UTI) in long-term care setting: is the multireagent strip an adequate diagnostic tool? *Arch Gerontol Geriatr*. 2009 Mar-Apr;48(2):227-31.
- High KP, Bradley SF, Gravenstein S, Mehr DR, Quagliarello VJ, Richards C, Yoshikawa TT. Clinical practice guideline for the evaluation of fever and infection in older adult residents of long-term care facilities: 2008 update by the Infectious Diseases Society of America. *J Am Geriatr Soc*. 2009 Mar;57(3):375-94.
- Zabarsky TF, Sethi AK, Donskey CJ. Sustained reduction in inappropriate treatment of asymptomatic bacteriuria in a long-term care facility through an educational intervention. *Am J Infect Control*. 2008 Sep;36(7):476-80.
- Richards CL Jr. Infection control in long-term care facilities. *J Am Med Dir Assoc*. 2007 Mar;8(3 Suppl):S18-25.
- Ducharme J, Neilson S, Ginn JL. Can urine cultures and reagent test strips be used to diagnose urinary tract infection in elderly emergency department patients without focal urinary symptoms? *CJEM*. 2007 Mar;9(2):87-92.
- Loeb M, Brazil K, Lohfeld L, McGeer A, Simor A, Stevenson K, Zoutman D, Smith S, Liu X, Walter SD. Effect of a multifaceted intervention on number of antimicrobial prescriptions for suspected urinary tract infections in residents of nursing homes: cluster randomized controlled trial. *BMJ*. 2005 Sep 24;331(7518):669.
- Loeb M, Brazil K, Lohfeld L, McGeer A, Simor A, Stevenson K, Walter S, Zoutman D. Optimizing antibiotics in residents of nursing homes: protocol of a randomized trial. *BMC Health Serv Res*. 2002 Sep 3;2(1):17.
- Nicolle LE. Urinary tract infection in geriatric and institutionalized patients. *Curr Opin Urol*. 2002 Jan;12(1):51-5.
- Boscia JA, Kobasa WD, Abrutyn E, Levison ME, Kaplan AM, Kaye D. Lack of association between bacteriuria and symptoms in the elderly. *Am J Med*. 1986 Dec;81(6):979-82.
- Nicolle LE, Bentley D, Garibaldi R, Neuhaus E, Smith P. SHEA Long-Term-Care Committee. Antimicrobial use in long-term-care facilities. *Infect Control Hosp Epidemiol*. 1996;17:119-28.
- High KP, Bradley SF, Gravenstein S, Mehr DR, Quagliarello VJ, Richards C, Yoshikawa TT. Clinical practice guideline for the evaluation of fever and infection in older adult residents of long-term care facilities: 2008 update by the Infectious Diseases Society of America. *Clin Infect Dis* 2009; 48: 149-71.

4

- American Medical Directors Association. Dementia in the long term care setting clinical practice guideline. Columbia, MD: AMDA 2012.
- Perkins, R. Evidence-based practice interventions for managing behavioral and psychological symptoms of dementia in NH residents. *Ann LTC*. 2012;20(12):20-4.
- Flaherty J, Gonzales J, Dong B. Antipsychotics in the treatment of delirium in older hospitalized adults: a systematic review. *JAGS*. 2011;59:269-76.
- American Medical Directors Association. Delirium and acute problematic behavior clinical practice guideline. Columbia, MD: AMDA 2008.
- Ozbolt LB, Paniagua MA, Kaiser RM. Atypical antipsychotics for the treatment of delirious elders. *J Am Med Dir Association*. 2008;9:18-28.
- U.S. Food and Drug Administration. Information for healthcare professionals: antipsychotics. FDA Alert, [Internet]. 2008 Jun 16. [Cited 2008 Sep 23]. Available from: http://www.fda.gov/cder/drug/InfoSheets/HCP/antipsychotics_conventional.htm.
- U.S. Food and Drug Administration, U.S. Department of Health and Human Services. 2007 information for healthcare professionals: haloperidol (marketed as Haldol, Haldol decanoate, and Haldol lactate). [Internet]. 2007 Sep 17. [Cited 2013 Jul 23]. Available from <http://www.fda.gov/cder/drug/InfoSheets/HCP/haloperidol.htm>.
- Schneeweiss S, Setoguchi S, Brookhart A, Dormuth C, Wang PS. Risk of death associated with the use of conventional versus atypical antipsychotic drugs among elderly patients. *CMAJ* 2007;176(5): 627-32.
- Gill SS, Bronskill SE, Normand SL, Anderson GM, Sykora K, Lam K, Bell CM, Lee PE, Fischer HD, Herrmann N, Gurwitz JH, Rochon PA. Antipsychotic drug use and mortality in older adults with dementia. *Ann Intern Med*. 2007;146(11):775-86.
- Schneider LS, Dagerman KS, Insel P. Risk of death with atypical antipsychotic drug treatment for dementia: meta-analysis of randomized placebo-controlled trials. *JAMA*. 2005;294(15):1934-1943.
- Schneider LS, Tariot PN, Dagerman KS. Effectiveness of atypical antipsychotic drugs in patients with Alzheimer's disease. *N Engl J Med*. 2006;355(15):1525-38.
- Sink KM, Holden KF, Yaffe K. Pharmacological treatment of neuropsychiatric symptoms of dementia: a review of the evidence. *JAMA*. 2005;293:596-608.
- U.S. Food and Drug Administration, U.S. Department of Health and Human Services. FDA public health advisory: deaths with antipsychotics in elderly patients with behavioral disturbances. [Internet]. 2005 Apr 11. [Cited 2013 Jul 23]. Available from <http://www.fda.gov/cder/drug/advisory/antipsychotics.htm>.

5

- Dalleur O, Spinewine A, Henrard S, Losseau C, Speybroeck N, Boland B. Inappropriate prescribing and related hospital admissions in frail older persons according to the STOPP and START criteria. *Drugs Aging*. 2012 Oct;29(10):829-37.
- Schiattarella GG, Perrino C, Magliulo F, Ilardi F, Serino F, Trimarco V, Izzo R, Amato B, Terranova C, Cardin F, Militello C, Leosco D, Trimarco B, Esposito G. Statins and the elderly: recent evidence and current indications. *Aging Clin Exp Res*. 2012 Jun;24(3 Suppl):47-55.
- Maraldi C, Lattanzio F, Onder G, Gallerani M, Bustacchini S, De Tommaso G, Volpato S. Variability in the prescription of cardiovascular medications in older patients: correlates and potential explanations. *Drugs Aging*. 2009 Dec;26 Suppl 1:41-51.
- Schatz IJ, Masaki K, Yano K, Chen R, Rodriguez BL, Curb JD. Cholesterol and all-cause mortality in elderly people from the Honolulu Heart Program: a cohort study. *Lancet*. 2001 Aug 4;358(9279):351-5.
- Weverling-Rijnsburger AW, Blauw GJ, Lagaay AM, Knook DL, Meinders AE, Westendorp RG. Total cholesterol and risk of mortality in the oldest old. *Lancet*. 1997 Oct 18;350(9085):1119-23.
- Krumholz HM, Seeman TE, Merrill SS, Mendes de Leon CF, Vaccarino V, Silverman DI, Tsukahara R, Ostfeld AM, Berkman LF. Lack of association between cholesterol and coronary heart disease mortality and morbidity and all-cause mortality in persons older than 70 years. *JAMA*. 1994 Nov 2;272(17):1335-40.

6

- CMS Manual System Pub. 100-07 State Operations Provider Certification. Transmittal 8. Revision of Appendix PP-Section 483.25(d)-Urinary Incontinence, Tags F315 and F316. Centers for Medicare and Medicaid Services, U.S. Department of Health and Human Services; 2005 Jun 28 [cited 2014 Dec 31]. Available from: <https://www.cms.gov/Regulations-and-Guidance/Guidance/Transmittals/downloads/r8som.pdf>.
- Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA; Healthcare Infection Control Practices Advisory Committee. Guideline for prevention of catheter-associated urinary tract infections 2009. *Infect Control Hosp Epidemiol*. 2010 Apr;31(4):319-26.
- Hooton TM, Bradley SF, Cardenas DD, Colgan R, Geerlings SE, Rice JC, Saint S, Schaeffer AJ, Tambayh PA, Tenke P, Nicolle LE; Infectious Diseases Society of America. Diagnosis, prevention, and treatment of catheter-associated urinary tract infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. *Clin Infect Dis*. 2010 Mar;50(5):625-63.

7

- Clarfield AM. Screening in frail older people: an ounce of prevention or a pound of trouble? *J Am Geriatr Soc.* 2010 Oct;58:2016-21.
- Gill TM. The central role of prognosis in clinical decision making. *JAMA.* 2012 Jan 11;307(2):199-200.
- Gross CP. Cancer screening in older persons: a new age of wonder. *JAMA Intern Med.* 2014 Oct;174(10):1565-7.
- Lee SJ, Leipzig RM, Walter LC. Incorporating lag time to benefit into prevention decision for older adults. *JAMA.* 2013 Dec (25);310(24):2609-10.
- Lonsdorp-Vogelaar I, Gulati R, Mariotto AB, Schechter CB, de Carvalho TM, Knudsen AB, van Ravesteyn NT, Heijnsdijk EA, Pabiniak C, van Ballegooijen M, Rutter CM, Kuntz KM, Feuer EJ, Etzioni R, de Koning HJ, Zauber AG, Mandelblatt JS. Personalizing age of cancer screening cessation based on comorbid conditions: model estimates of harms and benefits. *Ann Intern Med.* 2014 Jul 15;161(2):104-12.
- Moyer VA. Screening for prostate cancer: U.S. Preventive Services Task Force Recommendation Statement. *Ann Intern Med.* 2012 Jul 17;157(2):120-34.
- Royce TJ, Hendrix LH, Stokes WA, Allen IM, Chen RC. Cancer screening rates in individuals with different life expectancies. *JAMA Intern Med.* 2014 Oct;174(10):1558-65.
- Spivack B, Cefalu C, Kamel H, et al. Health Maintenance in the Long Term Care Setting Clinical Practice Guideline. 2012. Columbia, MD: American Medical Directors Association.
- van Hees F, Habbema JD, Meester RG, Lansdorp-Vogelaar I, van Ballegooijen M, Zauber AG. Should colorectal cancer screening be considered in elderly persons without previous screening? A cost-effectiveness analysis. *Ann Intern Med.* 2014 Jun 3;160(11):750-9.
- Walter LC, Covinsky KE. Cancer screening in elderly patients: a framework for individualized decision making. *JAMA.* 2001 Jun 6;285(21):2750-6.

8

- Riggs MM, Sethi AK, Zabarsky TF, Eckstein EC, Jump RL, Donskey CJ. Asymptomatic carriers are a potential source for transmission of epidemic and nonepidemic *Clostridium difficile* strains among long-term care facility residents. *Clin Infect Dis.* 2007 Oct 15;45 (8):992.
- Surawicz CM, Brandt LJ, Binion DG, Ananthakrishnan AN, Curry SR, Gilligan PH, McFarland LV, Mellow M, Zuckerbraun BS. Guidelines for diagnosis, treatment, and prevention of *Clostridium difficile* infections. *Am J Gastroenterol.* 2013 Apr;108(4):478-98.

9

- Creditor MC. Hazards of hospitalization of the elderly. *Ann Intern Med.* 1993 Feb 1;118(3):219.
- Deciding About Going to the Hospital. Interact v4.0 Tool. Florida Atlantic University; 2011 [cited 2015 Jan 2]. Available from: http://interact2.net/docs/INTERACT%20Version%204.0%20Tools/INTERACT%20V%204%20Deciding_About_Going_to_Hospital%20Nov%2017%202014.pdf.
- Inouye SK, Westendorp RG, Saczynski JS. Delirium in elderly people. *Lancet.* 2014 Mar 8;383(9920):911-22.
- Murray LM, Laditka SB. Care transitions in older adults from nursing homes to hospitals: implications for long-term care practice, geriatrics education, and research. *J Am Med Dir Assoc.* 2010 May;11(4):231-8.
- Tulsky JA. Beyond advance directives: importance of communication skills at the end of life. *JAMA.* 2005 Jul 20;294(3):359-65.

10

- Beckett NS, Peters R, Fletcher AE, Staessen JA, Liu L, Dumitrascu D, Stoyanovsky V, Antikainen RL, Nikitin Y, Anderson C, Belhani A, Forette F, Rajkumar C, Thijs L, Banya W, Bulpitt CJ; HYVET Study Group. Treatment of hypertension in patients 80 years of age or older. *N Engl J Med.* 2008 May 1; 358(18):1887-98.
- James PA, Oparil S, Carter BL, Cushman WC, Dennison-Himmelfarb C, Handler J, Lackland DT, LeFevre ML, Mackenzie TD, Oggedegbe O, Smith SC Jr, Svetkey LP, Taler SJ, Townsend RR, Wright JT Jr, Narva AS, Ortiz E. 2014 evidence-based guideline for the management of high blood pressure in adults. *JAMA.* 2014 Feb 5;311(5):507-20.
- Muntner P, Bowling CB, Shimbo D. Systolic blood pressure goals to reduce cardiovascular disease among older adults. *Am J Med Sci.* 2014 Aug;348(2):129-34.
- Tinetti ME, Han L, Lee DSH, McAvay GJ, Peduzzi P, Gross CP, Zhou B, Lin H. Antihypertensive medications and serious fall injuries in a nationally representative sample of older adults. *JAMA Intern Med.* 2014 Apr;174(4):588-95.
- Angelousi A, Girerd N, Benetos A, Frimat L, Gautier S, Weryha G, Boivin J-M. Association between orthostatic hypotension and cardiovascular risk, cerebrovascular risk, cognitive decline and falls as well as overall mortality: a systematic review and meta-analysis. *Journal of Hypertension* 2014, 32:1562-1571
- Williamson JD, Supiano MA, Applegate WB, Berlowitz DR, Campbell RC, Chertow GM, Fine LJ, Haley WE, Hawfield AT, Ix JH, Kitzman DW, Kostis JB, Krousel-Wood MA, Launer LJ, Oparil S, Rodriguez CJ, Roumie CL, Shorr RI, Sink KM, Wadley VG, Whelton PK, Whittle J, Woolard NF, Wright JT Jr, Pajewski NM, SPRINT Research Group. Intensive vs Standard Blood Pressure Control and Cardiovascular Disease Outcomes in Adults Aged ≥75 Years: A Randomized Clinical Trial. *JAMA.* 2016;315(24):2673.

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AMDA - The Society for Post-Acute and Long-Term Care Medicine is dedicated to excellence in patient care and provides education, advocacy, information and professional development to promote the delivery of quality post-acute and long-term care (PA/LTC) medicine. AMDA strives to provide cutting edge education, information, and tools on advocacy, clinical, management and technology topics that are specific to the evolving PA/LTC setting. AMDA offers opportunities to learn about best practices and activities that can maximize the quality of care and quality of life for patients.

For more information, visit www.paltc.org.



For more information or to see other lists of Things Providers and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't perform unproven diagnostic tests, such as immunoglobulin G (IgG) testing or an indiscriminate battery of immunoglobulin E (IgE) tests, in the evaluation of allergy.

Appropriate diagnosis and treatment of allergies requires specific IgE testing (either skin or blood tests) based on the patient's clinical history. The use of other tests or methods to diagnose allergies is unproven and can lead to inappropriate diagnosis and treatment. Appropriate diagnosis and treatment is both cost effective and essential for optimal patient care.

2

Don't order sinus computed tomography (CT) or indiscriminately prescribe antibiotics for uncomplicated acute rhinosinusitis.

Viral infections cause the majority of acute rhinosinusitis and only 0.5 percent to 2 percent progress to bacterial infections. Most acute rhinosinusitis resolves without treatment in two weeks. Uncomplicated acute rhinosinusitis is generally diagnosed clinically and does not require a sinus CT scan or other imaging. Antibiotics are not recommended for patients with uncomplicated acute rhinosinusitis who have mild illness and assurance of follow-up. If a decision is made to treat, amoxicillin should be first-line antibiotic treatment for most acute rhinosinusitis.

3

Don't routinely do diagnostic testing in patients with chronic urticaria.

In the overwhelming majority of patients with chronic urticaria, a definite etiology is not identified. Limited laboratory testing may be warranted to exclude underlying causes. Targeted laboratory testing based on clinical suspicion is appropriate. Routine extensive testing is neither cost effective nor associated with improved clinical outcomes. Skin or serum-specific IgE testing for inhalants or foods is not indicated, unless there is a clear history implicating an allergen as a provoking or perpetuating factor for urticaria.

4

Don't recommend replacement immunoglobulin therapy for recurrent infections unless impaired antibody responses to vaccines are demonstrated.

Immunoglobulin (gammaglobulin) replacement is expensive and does not improve outcomes unless there is impairment of antigen-specific IgG antibody responses to vaccine immunizations or natural infections. Low levels of immunoglobulins (isotypes or subclasses), without impaired antigen-specific IgG antibody responses, do not indicate a need for immunoglobulin replacement therapy. Exceptions include IgG levels <150mg/dl and genetically defined/suspected disorders. Measurement of IgG subclasses is not routinely useful in determining the need for immunoglobulin therapy. Selective IgA deficiency is not an indication for administration of immunoglobulin.

5

Don't diagnose or manage asthma without spirometry.

Clinicians often rely solely upon symptoms when diagnosing and managing asthma, but these symptoms may be misleading and be from alternate causes. Therefore spirometry is essential to confirm the diagnosis in those patients who can perform this procedure. Recent guidelines highlight spirometry's value in stratifying disease severity and monitoring control. History and physical exam alone may over- or under-estimate asthma control. Beyond the increased costs of care, repercussions of misdiagnosing asthma include delaying a correct diagnosis and treatment.

Five More Things Physicians and Patients Should Question

6

Don't rely on antihistamines as first-line treatment in severe allergic reactions.

Epinephrine is the first-line treatment for anaphylaxis. Data indicate that antihistamines are overused as the first-line treatment of anaphylaxis. By definition, anaphylaxis has cardiovascular and respiratory manifestations, which require treatment with epinephrine. Overuse of antihistamines, which do not treat cardiovascular or respiratory manifestations of anaphylaxis, can delay the effective first-line treatment with epinephrine.

Epinephrine should be administered as soon as the diagnosis of anaphylaxis is suspected. Antihistamines are second-line supportive therapy for cutaneous non-life-threatening symptoms (hives), but do not replace epinephrine as the first-line treatment for anaphylaxis.

Fatalities during anaphylaxis have been associated with delayed administration of epinephrine.

7

Don't perform food IgE testing without a history consistent with potential IgE-mediated food allergy.

False or clinically irrelevant positive allergy tests for foods are frequent. Indiscriminate screening results in inappropriate avoidance of foods and wastes healthcare resources. IgE testing for specific foods must be driven by a history of signs or symptoms consistent with an IgE-mediated reaction after eating a particular food. Ordering IgE testing in individuals who do not have a history consistent with or suggestive for food allergy based on history frequently reveals positive tests that are unlikely to be clinically relevant. Testing, when done, should be limited to suspected foods.

The diagnostic utility of IgE testing for specific foods is optimal when a history compatible with or suggestive for the diagnosis of food allergy is present. In the absence of a compatible or suggestive history, the pre-test probability for a diagnosis of food allergy is low and a positive skin or in vitro IgE test does not establish a diagnosis of food allergy. Skin testing or serum testing for specific-IgE to food antigens has excellent sensitivity and high negative predictive value, but has low specificity and low positive predictive value.

Considering that 50 to 90 percent of presumed cases of food allergy do not reflect IgE-mediated (allergic) pathogenesis and may instead reflect food intolerance or symptoms not causally associated with food consumption, ordering panels of food tests leads to many incorrectly identified food allergies and inappropriate recommendations to avoid foods that are positive on testing.

8

Don't routinely order low- or iso-osmolar radiocontrast media or pretreat with corticosteroids and antihistamines for patients with a history of seafood allergy, who require radiocontrast media.

Although the exact mechanism for contrast media reactions is unknown, there is no cause and effect connection with seafood allergy. Consequently there is no reason to use more expensive agents or pre-medication before using contrast media in patients with a history of seafood allergy. A prior history of anaphylaxis to contrast media is an indication to use low- or iso-osmolar agents and pretreat with corticosteroids and antihistamines.

Patients with a history of seafood allergy are not at elevated risk for anaphylaxis from iodinated contrast media. Similarly, patients who have had anaphylaxis from contrast media should not be told that they are allergic to seafood.

Patients with a history of seafood allergy who are labeled as being at greater risk for adverse reaction from contrast infusions experience considerable morbidity from unnecessary precautions – including but not limited to denying them indicated roentgenographic procedures and adverse effects from pretreatment with antihistamine and/or corticosteroid medications.

Regardless of whether these patients truly have IgE-mediated allergies to seafood (crustacean), there is no evidence in the medical literature that indicates they are at elevated risk for anaphylaxis from contrast infusion compared with the history-negative general population.

In a random telephone survey of 5,529 households with a census of 14,948 individuals, seafood allergy was reported by 3.3 percent of survey respondents. According to current U.S. population estimates for 2013, this corresponds to 10,395,000 Americans.

The mechanism for anaphylaxis to radio-iodinated contrast media relates to the physiochemical properties of these media and is unrelated to its iodine content. Further, although delayed-type hypersensitivity (allergic contact dermatitis) reactions to iodine have rarely been reported, IgE-mediated reactions to iodine have not, and neither type of reaction would be related to IgE-mediated shellfish allergy nor to contrast media reactions. Patients with a history of prior anaphylaxis to contrast media are at elevated risk for anaphylactic reaction with re-exposure to contrast media.

Patients with asthma or cardiovascular disease, or who are taking beta blockers, are at increased risk for serious anaphylaxis from radiographic contrast media.

Don't routinely avoid influenza vaccination in egg-allergic patients.

Of the vaccines that may contain egg protein (measles, mumps, rabies, influenza and yellow fever), measles, mumps and rabies vaccines have at most negligible egg protein; consequently no special precautions need to be followed in egg-allergic patients for these vaccines. Studies in egg-allergic patients receiving egg-based inactivated influenza vaccine have not reported reactions; consequently egg-allergic patients should be given either egg-free influenza vaccine or should receive egg-based influenza vaccine with a 30-minute post-vaccine observation period. Egg-allergic patients receiving the yellow fever vaccine should be skin tested with the vaccine and receive the vaccine with a 30-minute observation period if the skin test is negative. If positive, the vaccine may be given in graded doses with appropriate medical observation.

Egg protein is present in influenza and yellow fever vaccines and in theory could cause reactions in egg-allergic patients. However, in 27 published studies collectively 4,172 patients with egg allergy received 4,729 doses of egg-based inactivated influenza vaccine (IIV) with no cases of anaphylaxis, including 513 with severe egg allergy who uneventfully received 597 doses. The CDC's Advisory Committee on Immunization Practices recommends that egg-allergic persons receive IIV as a single dose without prior vaccine skin testing and be observed for 30 minutes afterwards for any possible allergic reaction. If the reaction to the ingestion of eggs was hives only, the vaccine can be administered in a primary care setting, whereas if the reaction to the ingestion of eggs was more severe, the vaccine should be administered in an allergist/immunologist's office. Two new IIVs not grown in eggs have been approved for patients 18 years and older: Flucelvax, prepared from virus propagated in cell culture, and Flublok, recombinant hemagglutinin proteins produced in an insect cell line. For egg-allergic patients 18 years of age and older, either egg-based IIV can be used with the precautions above or egg-free IIV can be used.

Measles and mumps vaccines (and Purified Chick Embryo Cell [PCEC] rabies vaccine) are grown in chick embryo fibroblast cultures and contain negligible or no egg protein. Thus, MMR and PCEC rabies vaccine can be administered to egg-allergic recipients in the usual manner.

Per the Yellow Fever vaccine package insert, egg-allergic recipients should be skin tested with the vaccine prior to administration. If negative, the vaccine can be given in the usual manner, but the patient should be observed for 30 minutes afterward. If the vaccine skin test is positive, the vaccine can be given in graded doses under appropriate medical observation.

Don't overuse non-beta lactam antibiotics in patients with a history of penicillin allergy, without an appropriate evaluation.

While about 10 percent of the population reports a history of penicillin allergy, studies show that 90 percent or more of these patients are not allergic to penicillins and are able to take these antibiotics safely. The main reason for this observation is that penicillin allergy is often misdiagnosed and when present wanes over time in most (but not all) individuals. Patients labeled penicillin-allergic are more likely to be treated with alternative antibiotics (such as vancomycin and quinolones), have higher medical costs, experience longer hospital stays, and are more likely to develop complications such as infections with vancomycin-resistant enterococcus (VRE) and *Clostridium difficile*.

Evaluation for specific IgE to penicillin can be carried out by skin testing. Ideally, penicillin skin testing should be performed with both major and minor determinants. The negative predictive value of penicillin skin testing for immediate reactions approaches 100 percent, whereas the positive predictive value is between 40 and 100 percent. The usefulness of in vitro tests for penicillin-specific IgE is limited by their uncertain predictive value. They are not suitable substitutes for penicillin skin testing.

By identifying the overwhelming majority of individuals who can safely receive penicillin and penicillin-like drugs, we can improve the appropriateness of antibiotic therapy and clinical care outcomes.

How This List Was Created

The American Academy of Allergy, Asthma & Immunology (AAAAI) Executive Committee created a task force to lead work on Choosing Wisely consisting of board members, the AAAAI President and Secretary/Treasurer and AAAAI participants in the Joint Task Force on Practice Parameters. Through multiple society publications and notifications, AAAAI members were invited to offer feedback and recommend elements to be included in the list. A targeted email was also sent to an extended group of AAAAI leadership inviting them to participate.

The work group reviewed the submissions to ensure the best science in the specialty was included. Based on this additional members were recruited for their expertise. Suggested elements were considered for appropriateness, relevance to the core of the specialty, potential overuse of resources and opportunities to improve patient care. They were further refined to maximize impact and eliminate overlap, and then ranked in order of potential importance both for the specialty and for the public. Finally, the work group chose its top five recommendations which were then approved by the Executive Committee. AAAAI's disclosure and conflict of interest policy can be found at www.aaaai.org.

Sources

- 1 Cox L, Williams PB, Sicherer S, et al. Pearls and pitfalls of allergy diagnostic testing: report from the American College of Allergy, Asthma and Immunology/ American Academy of Allergy, Asthma & Immunology Specific IgE Test Task Force. *Ann All Asthma Immunol*. 2008;101:580–92
Bernstein I, Li J, Bernstein D et al. Allergy diagnostic testing: an updated practice parameter. *Ann All Asthma Immunol* 2008;100:s1–148.
Terr AI. Unconventional theories and unproven methods in allergy. In: *Allergy Principles and Practice*, 7th Ed, 97:1691–1709.
- 2 Ahovuo-Saloranta A, Borisenko OV, Kovanen N, et al. Antibiotics for acute maxillary sinusitis. *Cochrane database of systematic reviews* 2008:CD000243.
American College of Radiology ACR Appropriateness Criteria® for Sinonasal Disease, 2009 http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonNeurologicImaging/SinonasalDisease.aspx; 2009.
- 3 Wanderer, AA, Bernstein, IL, Goodman, DL, et al. The Diagnosis and Management of Urticaria: a Practice Parameter. *Ann Allergy Asthma Immunol* 2000;85:521–44.
Tarbox JA, Gutta RC, Ching EL, Radojicic C, Lang DM. Utility of routine laboratory testing in management of chronic urticaria/angioedema. *Ann Allergy Asthma Immunol* 2011, 107: 239–43.
Bernstein IL, Li, JT, Bernstein DI et al. Allergy diagnostic testing: an updated practice parameter. *Ann Allergy Asthma Immunol*. 2008 Mar;100(3 Suppl 3):S1–148.
Kozel MM, Bossuyt PM, Mekkes JR, Bos JD. Laboratory tests and identified diagnoses in patients with physical and chronic urticaria and angioedema: A systematic review. *J Am Acad Dermatol*. 2003 Mar;48(3):409–16.
- 4 Orange, JS et al. Use of intravenous immunoglobulin in human disease: a review of evidence by members of the Primary Immunodeficiency Committee of the American Academy of Allergy, Asthma and Immunology. *JACI* 117:S525–S553, 2006.
Ballou, M. “Immunoglobulin Therapy: Replacement and Immunomodulation” in *Clinical Immunology*, Third Edition Rich RR (Editor), Chapter 85, pp. 1265–1280, 2008.
Stiehm ER, Orange JS, Ballou M, Lehman H. Therapeutic use of immunoglobulins. *Adv Pediatr* 2010;57:185–218.
Bonilla FA, Bernstein IL, Khan DA, Ballas ZK, Chinen J, Frank MM, et al. Practice parameter for the diagnosis and management of primary immunodeficiency. *Annals of Allergy, Asthma & Immunology*. 2005;94 (Suppl 1):S1–S63.
- 5 National Asthma Education and Prevention Expert Panel Report 3: Guidelines for the diagnosis and Management of Asthma. NIH Publication Number 08–5846 October 2007.
Li J, Oppenheimer J, Bernstein IL et al. Attaining asthma control. A practice parameter. *J Allergy Clin Immunol*. 2005;115:S3–11.
Global strategy for asthma management and prevention: GINA executive summary *Eur Respir J* 2008 31:143–178.
Fuhlbrigge A, Kitch B, Paltelet D et al. FEV1 is associated with risk of asthma attacks in a pediatric population. *J Allergy Clin Immunol*. 2001;107:61–66.
Magadle R The Risk of Hospitalization and Near-Fatal and Fatal Asthma in Relation to the Perception of Dyspnea *Chest*. 2002;121:329–333.
- 6 Lieberman P, Nicklas RA, Oppenheimer J, Kemp SF, Lang DM, Bernstein DI, Bernstein JA, Burks AW, Feldweg AM, Fink JN, Greenberger PA, Golden DB, James JM, Kemp SF, Ledford DK, Lieberman P, Sheffer AL, Bernstein DI, Blessing-Moore J, Cox L, Khan DA, Lang D, Nicklas RA, Oppenheimer J, Portnoy JM, Randolph C, Schuller DE, Spector SL, Tilles S, Wallace D. The diagnosis and management of anaphylaxis practice parameter 2010 update. *J Allergy Clin Immunol*. 2010 Sep;126(3):477-80.e1–42.
Sampson HA, Muñoz-Furlong A, Campbell RL, Adkinson NF Jr, Bock SA, Branum A, Brown SG, Camargo CA Jr, Cydulka R, Galli SJ, Gidudu J, Gruchalla RS, Harlor AD Jr, Hepner DL, Lewis LM, Lieberman PL, Metcalfe DD, O'Connor R, Muraro A, Rudman A, Schmitt C, Scherrer D, Simons FE, Thomas S, Wood JP, Decker WW. Second symposium on the definition and management of anaphylaxis: summary report – Second National Institute of Allergy and Infectious Diseases/ Food Allergy and Anaphylaxis Network symposium. *J Allergy Clin Immunol*. 2006 Feb;117(2):391–7.
Kemp SF, Lockey RF, Simons FE; World Allergy Organization ad hoc Committee on Epinephrine in Anaphylaxis. Epinephrine the drug of choice for anaphylaxis. A statement of the World Allergy Organization. *Allergy*. 2008 Aug;63(8):1061–70.
Cox L, Nelson H, Lockey R, Calabria C, Chacko T, Finegold I, Nelson M, Weber R, Bernstein DI, Blessing-Moore J, Khan DA, Lang DM, Nicklas RA, Oppenheimer J, Portnoy JM, Randolph C, Schuller DE, Spector SL, Tilles S, Wallace D. Allergen immunotherapy: a practice parameter third update. *J Allergy Clin Immunol*. 2011 Jan;127(1 Suppl):s1–55.
Golden DB, Moffitt J, Nicklas RA, Freeman T, Graft DF, Reisman RE, Tracy JM, Bernstein D, Blessing-Moore J, Cox L, Khan DA, Lang DM, Oppenheimer J, Portnoy JM, Randolph C, Schuller DE, Spector SL, Tilles SA, Wallace D; Joint Task Force on Practice Parameters; American Academy of Allergy, Asthma & Immunology (AAAAI); American College of Allergy, Asthma & Immunology (ACAAI); Joint Council of Allergy, Asthma and Immunology. Stinging insect hypersensitivity: a practice parameter update 2011. *J Allergy Clin Immunol*. 2011 Apr; 127(4):852–4.
Clark S, Long AA, Gaeta TJ, Camargo CC. Multicenter study of emergency department visits for insect sting allergies. *J Allergy Clin Immunol*. 2005;116:643–9.

7

Bernstein IL, Li JT, Bernstein DI, Hamilton R, Spector SL, Tan R, Sicherer S, Golden DB, Khan DA, Nicklas RA, Portnoy JM, Blessing-Moore J, Cox L, Lang DM, Oppenheimer J, Randolph CC, Schuller DE, Tilles SA, Wallace DV, Levetin E, Weber R; American Academy of Allergy, Asthma and Immunology; American College of Allergy, Asthma and Immunology. Allergy diagnostic testing: an updated practice parameter. *Ann Allergy Asthma Immunol.* 2008 Mar;100(3 Suppl 3):S1–148.

NIAID-Sponsored Expert Panel, Boyce JA, Assa'ad A, Burks AW, Jones SM, Sampson HA, Wood RA, Plaut M, Cooper SF, Fenton MJ, Arshad SH, Bahna SL, Beck LA, Byrd-Bredbenner C, Camargo CA Jr, Eichenfield L, Furuta GT, Hanifin JM, Jones C, Kraft M, Levy BD, Lieberman P, Luccioli S, McCall KM, Schneider LC, Simon RA, Simons FE, Teach SJ, Yawn BP, Schwanger JM. Guidelines for the diagnosis and management of food allergy in the United States: report of the NIAID-sponsored expert panel. *J Allergy Clin Immunol.* 2010 Dec;126 (6 Suppl):S1–58.

8

American Academy of Asthma, Allergy and Immunology. Food allergy: a practice parameter. *Ann Allergy Asthma Immunol.* 2006 Mar;96:S1–68.

Lieberman P, Nicklas RA, Oppenheimer J, Kemp SF, Lang DM. The diagnosis and management of anaphylaxis practice parameter: 2010 update. *J Allergy Clin Immunol.* 2010 Aug 21;126(3):477–522.

Solensky R, Khan DA. Drug allergy: an updated parameter. *Ann Allergy Asthma Immunol.* 2010 Oct;105(4):259–73.

Sicherer S, Munoz-Furlong A, Sampson H. Prevalence of seafood allergy in the United States determined by a random telephone survey. *J Allergy Clin Immunol.* 2004;114:159–65.

Greenberger P. Prophylaxis against repeated radio contrast media reaction in 857 cases. *Arch Intern Med.* 1985;145:2197–200.

Sicherer SH. Risk of severe allergic reactions from the use of potassium iodide for radiation emergencies. *J Allergy Clin Immunol.* 2004;114:1395–7.

Lang DM, Alpern MB, Visintainer PF, Smith ST. Elevated risk for anaphylactoid reaction from radiographic contrast media associated with both beta blocker exposure and cardiovascular disorders. *Arch Intern Med.* 1993;153:2033–40.

9

Des Roches A, Paradis L, Gagnon R, Lemire C, Bégin P, Carr S, Chan ES, Paradis J, Frenette L, Ouakki M, Benoît M, De Serres G; PCIRN (Public Health Agency of Canada/Canadian Institutes of Health Research Influenza Research Network). Egg-allergic patients can be safely vaccinated against influenza. *J Allergy Clin Immunol.* 2012 Nov;130(5):1213–1216.

Centers for Disease Control and Prevention (CDC). Prevention and control of influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP)—United States, 2012–13 influenza season. *MMWR Morb Mortal Wkly Rep.* 2012 Aug 17;61(32):613–8.

FLUCELVAX (Novartis) Package Insert. 2012.

FLUBLOK (Protein Sciences) Package Insert. 2013.

American Academy of Pediatrics. Red Book: 2012 report of the Committee on Infectious Diseases. Pickering LK, ed. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012. 936 p.

Kelso JM, Greenhawt MJ, Li JT, Nicklas RA, Bernstein DI, Blessing-Moore J, Cox L, Khan D, Lang DM, Oppenheimer J, Portnoy JM, Randolph CR, Schuller DE, Spector SL, Tilles SA, Wallace D. Adverse reactions to vaccines practice parameter 2012 update. *J Allergy Clin Immunol.* 2012 Jul;130(1):25–43.

YF-VAX (Sanofi Pasteur) Package Insert. 2010.

10

Solensky R, Khan DA. Drug allergy: an updated parameter. *Ann Allergy Asthma Immunol.* 2010 Oct;105(4):259–73.

Solensky R. Penicillin allergy as a public health measure. *J Allergy Clin Immunol.* 2013 Dec 8. pii:S0091-6749(13)01646–1.

Macy E, Contreras R. Healthcare utilization and serious infection prevalence associated with penicillin “allergy” in hospitalized patients: a cohort study. *J Allergy Clin Immunol.* 2013 Nov 1. pii:S0091–6749(13)01467–X.

Park MA, Markus PJ, Matesic D, Li JTC. Safety and effectiveness of a preoperative allergy clinic in decreasing vancomycin use in patients with a history of penicillin allergy. *Ann Allergy Asthma Immunol.* 2006;97:681–7.

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Ten Things Physicians and Patients Should Question

1

Don't prescribe oral antifungal therapy for suspected nail fungus without confirmation of fungal infection.

Approximately half of nails with suspected fungus do not have a fungal infection. As other nail conditions, such as nail dystrophies, may look similar in appearance, it is important to ensure accurate diagnosis of nail disease before beginning treatment. By confirming a fungal infection, patients are not inappropriately at risk for the side effects of antifungal therapy, and nail disease is correctly treated.

2

Don't perform sentinel lymph node biopsy or other diagnostic tests for the evaluation of early, thin melanoma because they do not improve survival.

Patients with early, thin melanoma, such as melanoma in situ, T1a melanoma or T1b melanoma $\leq 0.5\text{mm}$, have a very low risk of the cancer spreading to the lymph nodes or other parts in the body. Further, patients with early, thin melanoma have a 97 percent five-year survival rate which also indicates a low risk of the cancer spreading to other parts of the body. As such, the performance of sentinel lymph node biopsy is unnecessary.

Additionally, baseline blood tests and radiographic studies (e.g., chest radiographs, CT scans and PET scans) are not the most accurate tests for the detection of cancer that is spreading as they have high false-positive rates. These tests have only shown benefit when performed as indicated for suspicious signs and symptoms based on the patient's history and physical exam.

3

Don't treat uncomplicated, nonmelanoma skin cancer less than 1 centimeter in size on the trunk and extremities with Mohs micrographic surgery.

In healthy individuals, the use of Mohs micrographic surgery for low-risk small ($< 1\text{cm}$), superficial or non-aggressive (based on appearance under a microscope) squamous cell carcinomas and basal cell carcinomas is inappropriate for skin cancers on the trunk and extremities. In these areas of the body, the clinical benefits of this specialized surgical procedure do not exceed the potential risks. It is important to note that Mohs micrographic surgery may be considered for skin cancers appearing on the hands, feet, ankles, shins, nipples or genitals, as they have been shown to have a higher risk for recurrence or require additional surgical considerations.

4

Don't use oral antibiotics for treatment of atopic dermatitis unless there is clinical evidence of infection.

The presence of high numbers of the *Staphylococcus aureus* (Staph) bacteria on the skin of children and adults with atopic dermatitis (AD) is quite common. While it is widely believed that Staph bacteria may play a role in causing skin inflammation, the routine use of oral antibiotic therapy to decrease the amount of bacteria on the skin has not been definitively shown to reduce the signs, symptoms (e.g., redness, itch) or severity of atopic dermatitis. In addition, if oral antibiotics are used when there is not an infection, it may lead to the development of antibiotic resistance. The use of oral antibiotics also can cause side effects, including hypersensitivity reactions (exaggerated immune responses, such as allergic reactions). Although it can be difficult to determine the presence of a skin infection in atopic dermatitis patients, oral antibiotics should only be used to treat patients with evidence of bacterial infection in conjunction with other standard and appropriate treatments for atopic dermatitis.

5

Don't routinely use topical antibiotics on a surgical wound.

Any possible reduction in the rate of infection from the use of topical antibiotics on clean surgical wounds compared to the use of non-antibiotic ointment or no ointment is quite small. Risk reduction may be overshadowed by the risks of wound irritation or contact dermatitis. When topical antibiotics are used in this setting, there is a significant risk of developing contact dermatitis, a condition in which the skin becomes red, sore or inflamed after direct contact with a substance, along with the potential for developing antibiotic resistance. Only wounds that show symptoms of infection should receive appropriate antibiotic treatment.

Ten Things Physicians and Patients Should Question

6

Don't use systemic (oral or injected) corticosteroids as a long-term treatment for dermatitis.

The potential complications of long-term treatment with oral or injected corticosteroids outweigh the potential benefits. Although the short-term use of systemic corticosteroids is sometimes appropriate to provide relief of severe symptoms, long-term treatment could cause serious short- and long-term adverse effects in both children and adults. In extreme cases that have failed to respond to other appropriate treatments, the benefits of systemic corticosteroids must be weighed against these potentially serious risks.

7

Don't use skin prick tests or blood tests such as the radioallergosorbent test (RAST) for the routine evaluation of eczema.

Skin prick tests or blood tests may help identify the causes of allergic reactions, including hives or sneezing after exposure to dust or pollen. However, these tests are not useful for diagnosing dermatitis or eczema. When testing for suspected allergies is deemed necessary in patients with these rashes, it is better to conduct patch testing with ingredients of products that come in contact with the patient's skin.

8

Don't routinely use microbiologic testing in the evaluation and management of acne.

Bacteria are only one of several factors that contribute to acne. Microbiologic testing, used to determine the type of bacteria present in an acne lesion, is generally unnecessary because it does not affect the management of typical acne patients. Microbiologic testing should be considered only when acne has failed to respond to conventional treatments, particularly in patients who have already been treated with oral antibiotics.

9

Don't routinely use antibiotics to treat bilateral swelling and redness of the lower leg unless there is clear evidence of infection.

Research has suggested that bilateral lower leg cellulitis is very rare. Patients with swelling and redness of both legs most likely have another condition, such as dermatitis resulting from leg swelling, varicose veins or contact allergies. To ensure appropriate treatment, doctors must consider the likelihood of diagnoses other than cellulitis when evaluating swelling and redness of the lower legs. Misdiagnosis of bilateral cellulitis can lead to overuse of antibiotics and subject patients to potentially unnecessary hospital stays.

10

Don't routinely prescribe antibiotics for inflamed epidermal cysts.

The overwhelming majority of red and swollen epidermal cysts (ECs) are inflamed but not infected. It is important to confirm infection before treating these cysts with antibiotics. Appropriate treatments for inflamed ECs include incision and drainage or an injection of corticosteroid directly into the cyst.

How This List Was Created

The American Academy of Dermatology (AAD) is strongly committed to dermatologists serving as effective stewards of limited health care resources by assisting patients in making informed health care decisions. As such, the AAD leadership created a workgroup to develop this list with specific skills and expertise in evidence based research, public health quality and payer policy. Members of this workgroup include dermatologists who are current members of the Academy's Board of Directors, Council on Science and Research, Council on Government Affairs, Health Policy and Practice, Research Agenda Committee, Clinical Guidelines Committee, Access to Dermatology Care Committee, Patient Safety and Quality Committee, Resource-Based Relative Value Scale Committee and the Workgroup on Innovative Payment Delivery. The workgroup identified areas to be included on this list based on the greatest potential for overuse/misuse, quality improvement and availability of strong evidence based research as defined by the recommended criteria listed below. The recommended list was reviewed and approved by the AAD Council on Science and Research and the AAD Board of Directors.

- Supported by available scientific evidence (e.g., existing AAD appropriate use criteria and/or existing AAD clinical guidelines)
- Strongest consensus inappropriate score from the AAD Appropriate Use Criteria (AUC)
- Strong (wording/level of evidence) recommendations from the guidelines about discouraged practice
- Greatest potential for improvement in outcomes for patients
- Greatest potential for overuse/misuse by physicians

For AAD's disclosure and conflict of interest policy, visit. www.aad.org.

Sources

- 1 Ameen M, Lear JT, Madan V, Mohd Mustapa MF, Richardson M. British Association of Dermatologists' guidelines for the management of onychomycosis 2014. *Br J Dermatol*. 2014 Nov;171:937-58.
- 2 Bichakjian CK, Halpern AC, Johnson TM, Foote Hood A, Grichnik JM, Swetter SM, Tsao H, Barbosa VH, Chuang TY, Duvic M, Ho VC, Sober AJ, Beutner KR, Bhushan R, Smith Begolka W; American Academy of Dermatology. Guidelines of care for the management of primary cutaneous melanoma. *American Academy of Dermatology. J Am Acad Dermatol*. 2011 Nov;65(5):1032-47.

American Joint Committee on Cancer, AJCC Cancer Staging Manual, Eighth Edition: 2017

National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology: Melanoma (Version 3.2015)
- 3 Connolly SM, Baker DR, Coldiron BM, Fazio MJ, Storrs PA, Vidimos AT, Zalla MJ, Brewer JD, Smith Begolka W; Ratings Panel, Berger TG, Bigby M, Bologna JL, Brodland DG, Collins S, Cronin TA Jr, Dahl MV, Grant-Kels JM, Hanke CW, Hruza GJ, James WD, Lober CW, McBurney EI, Norton SA, Roenigk RK, Wheeland RG, Wisco OJ. AAD/ACMS/ASDSA/ASMS 2012 appropriate use criteria for Mohs micrographic surgery: a report of the American Academy of Dermatology, American College of Mohs Surgery, American Society for Dermatologic Surgery Association, and the American Society for Mohs Surgery. *J Am Acad Dermatol*. 2012 67(4):531-50.

National Comprehensive Cancer Network. NCCN Clinical Practice Guidelines in Oncology: Basal cell and Squamous Cell Skin Cancers. (Version 1.2015)
- 4 Sidbury R, Davis DM, Cohen DE, Cordero KM, Berger TG, Bergman JN, et al. Guidelines of care for the management of atopic dermatitis: section 3. Management and treatment with phototherapy and systemic agents. *J Am Acad Dermatol*. 2014 Aug;71(2):327-49

Francis NA, Ridd MJ, Thomas-Jones E, Butler CC, Hood K, Shepherd V, Marwick CA, Huang C, Longo M, Wootton M, Sullivan F. Oral and topical antibiotics for clinically infected eczema in children: A pragmatic randomized controlled trial in ambulatory care. *Ann Fam Med*. 2017 Mar;15(2):124-30
- 5 Heal CF, Banks JL, Lepper PD, Kontopantelis E, van Driel ML. Topical antibiotics for preventing surgical site infection in wounds healing by primary intention. *Cochrane Database of Systemic Reviews*. 2016.

Norman G, Dumville JC, Mohapatra DP, Owens GL, Crosbie EJ. Antibiotics and antiseptics for surgical wounds healing by secondary intention. *Cochrane Database of Systemic Reviews*. 2016.

Dixon AJ, Dixon MP, Dixon JB. Randomized clinical trial of the effect of applying ointment to surgical wounds before occlusive dressing. *Br J Surg*. 2006 Aug;93(8):937-43.

Smack DP, Harrington AC, Dunn C, Howard RS, Szkutnik AJ, Krivda SJ, Caldwell JB, James WD. Infection and allergy incidence in ambulatory surgery patients using white petrolatum vs bacitracin ointment. A randomized controlled trial. *JAMA*. 1996 Sep 25;276(12):972-7.

Campbell RM, Perlis CS, Fisher E, Gloster HM Jr. Gentamicin ointment versus petrolatum for management of auricular wounds. *Dermatol Surg*. 2005 Jun;31(6):664-9.

Sheth VM, Weitzul S. Postoperative topical antimicrobial use. *Dermatitis*. 2008 Jul-Aug;19(4):181-9.

Gehrig KA, Warshaw EM. Allergic contact dermatitis to topical antibiotics: epidemiology, responsible allergens, and management. *J Am Acad Dermatol*. 2008 Jan;58(1):1-21.

Saco M, Howe N, Nathoo R, Cherpelis B. Topical antibiotic prophylaxis for prevention of surgical wound infections from dermatologic procedures: a systematic review and meta-analysis. *J Dermatolog Treat*. 2014 Apr 8:1-8.
- 6 Sidbury R, Davis DM, Cohen DE, Cordero KM, Berger TG, Bergman JN, Chamlin SL, Cooper KD, Feldman SR, Hanifin JM, Krol A, Margolis DJ, Paller AS, Schwarzenberger K, Silverman RA, Simpson EL, Tom WL, Williams HC, Elmetts CA, Block J, Harrod CG, Begolka WS, Eichenfield LF; American Academy of Dermatology. Guidelines of care for the management of atopic dermatitis: section 3. Management and treatment with phototherapy and systemic agents. *J Am Acad Dermatol*. 2014 Aug;71(2):327-49.

Diepgen TL, Andersen KE, Chosidow O, Coenraads PJ, Elsner P, English J, Fartasch M, Gimenez-Arnau A, Nixon R, Sasseville D, Agner T. Guidelines for diagnosis, prevention and treatment of hand eczema. *J Dtsch Dermatol Ges*. 2015 Jan;13(1):e1-22.

Usatine RP, Riojas M. Diagnosis and management of contact dermatitis. *Am Fam Physician*. 2010 Aug 1;82(3):249-55.

Krejci-Manwaring J, McCarty MA, Camacho F, Manuel J, Hartle J, Fleischer A Jr, Feldman SR. Topical tacrolimus 0.1% improves symptoms of hand dermatitis in patients treated with a prednisone taper. *J Drugs Dermatol*. 2008 Jul;7(7):643-6.

7

Sidbury R, Tom WL, Bergman JN, Cooper KD, Silverman RA, Berger TG, Chamlin SL, Cohen DE, Cordoro KM, Davis DM, Feldman SR, Hanifin JM, Krol A, Margolis DJ, Paller AS, Schwarzenberger K, Simpson EL, Williams HC, Elmets CA, Block J, Harrod CG, Smith Begolka W, Eichenfield LF. Guidelines of care for the management of atopic dermatitis: Section 4. Prevention of disease flares and use of adjunctive therapies and approaches. *J Am Acad Dermatol*. 2014 Dec;71(6):1218-33.

Boyce JA, Assa'ad A, Burks AW, Jones SM, Sampson HA, Wood RA et al. Guidelines for the diagnosis and management of food allergy in the United States: report of the NIAID-sponsored expert panel. *J Allergy Clin Immunol* 2010;126:S1-58.

8

Zaenglein AL, Pathy AL, Schlosser BJ, Alikhan A, Baldwin HE, Berson DS, et al. Guidelines of care for the management of acne vulgaris. *J Am Acad Dermatol*. 2016 Feb 15.

9

Weng QY, Raff AB, Cohen JM, Gunasekera N, Okhovat JP, Vedak P, Joyce C, Kroshinsky D, Mostaghimi A. Costs and consequences associated with misdiagnosed lower extremity cellulitis. *JAMA Dermatol* 2017; 153:141-146.

Arakaki RY, Strazzula L, Woo E, Kroshinsky D. The impact of dermatology consultation on diagnostic accuracy and antibiotic use among patients with suspected cellulitis seen at outpatient internal medicine offices: a randomized clinical trial. *JAMA Dermatol*. 2014 Oct;150(10):1056-61.

Hughey LC. The impact dermatologists can have on misdiagnosis of cellulitis and overuse of antibiotics: closing the gap. *JAMA Dermatol*. 2014 Oct;150(10):1061-2.

Salmon M. Differentiating between red legs and cellulitis and reviewing treatment options. *Br J Community Nurs* 2015;20:474-80.

David CV, Chira S, Eells SJ, Ladrikan M, Papier A, Miller LG, Craft N. Diagnostic accuracy in patients admitted to hospitals with cellulitis. *Dermatol Online J*. 2011 Mar 15;17(3):1.

Levell NJ, Wingfield CG, Garioch JJ. Severe lower limb cellulitis is best diagnosed by dermatologists and managed with shared care between primary and secondary care. *Br J Dermatol*. 2011 Jun;164(6):1326-8.

Kroshinsky D, Grossman ME, Fox LP. Approach to the patient with presumed cellulitis. *Semin Cutan Med Surg*. 2007 Sep;26(3):168-78.

Hirschmann JV, Raugi GJ. Lower limb cellulitis and its mimics: part I. Lower limb cellulitis. *J Am Acad Dermatol*. 2012 Aug;67(2):163.e1-12; quiz 175-6.

Hirschmann JV, Raugi GJ. Lower limb cellulitis and its mimics: part II. Conditions that simulate lower limb cellulitis. *J Am Acad Dermatol*. 2012 Aug;67(2):177.e1-9; quiz 185-6.

10

Liu C, Bayer A, Cosgrove SE, Daum RS, Fridkin SK, Gorwitz RJ, Kaplan SL, Karchmer AW, Levine DP, Murray BE, J Rybak M, Talan DA, Chambers HF; Infectious Diseases Society of America. Clinical practice guidelines by the Infectious Diseases Society of America for the treatment of methicillin-resistant *Staphylococcus aureus* infections in adults and children. *Clin Infect Dis*. 2011 Feb 1;52(3):e18-55.

Diven DG, Dozier SE, Meyer DJ, Smith EB. Bacteriology of inflamed and uninfamed epidermal inclusion cysts. *Arch Dermatol*. 1998 Jan;134(1):49-51.

About the ABIM Foundation

The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.

To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About the American Academy of Dermatology

Headquartered in Schaumburg, IL, the American Academy of Dermatology (AAD), founded in 1938, is the largest, most influential and most representative of all dermatologic associations. With a membership of more than 18,000 physicians worldwide, the Academy is committed to: advancing the diagnosis and medical, surgical and cosmetic treatment of the skin, hair and nails; advocating high standards in clinical practice, education and research in dermatology; and supporting and enhancing patient care for a lifetime of healthier skin, hair and nails.

For more information, visit www.aad.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Fifteen Things Physicians and Patients Should Question

1

Don't do imaging for low back pain within the first six weeks, unless red flags are present.

Red flags include, but are not limited to, severe or progressive neurological deficits or when serious underlying conditions such as osteomyelitis are suspected. Imaging of the lower spine before six weeks does not improve outcomes, but does increase costs. Low back pain is the fifth most common reason for all physician visits.

2

Don't routinely prescribe antibiotics for acute mild-to-moderate sinusitis unless symptoms last for seven or more days, or symptoms worsen after initial clinical improvement.

Symptoms must include discolored nasal secretions and facial or dental tenderness when touched. Most sinusitis in the ambulatory setting is due to a viral infection that will resolve on its own. Despite consistent recommendations to the contrary, antibiotics are prescribed in more than 80 percent of outpatient visits for acute sinusitis. Sinusitis accounts for 16 million office visits and \$5.8 billion in annual health care costs.

3

Don't use dual-energy x-ray absorptiometry (DEXA) screening for osteoporosis in women younger than 65 or men younger than 70 with no risk factors.

DEXA is not cost effective in younger, low-risk patients, but is cost effective in older patients.

4

Don't order annual electrocardiograms (EKGs) or any other cardiac screening for low-risk patients without symptoms.

There is little evidence that detection of coronary artery stenosis in asymptomatic patients at low risk for coronary heart disease improves health outcomes. False-positive tests are likely to lead to harm through unnecessary invasive procedures, over-treatment and misdiagnosis. Potential harms of this routine annual screening exceed the potential benefit.

5

Don't perform Pap smears on women younger than 21 or who have had a hysterectomy for non-cancer disease.

Most observed abnormalities in adolescents regress spontaneously, therefore Pap smears for this age group can lead to unnecessary anxiety, additional testing and cost. Pap smears are not helpful in women after hysterectomy (for non-cancer disease) and there is little evidence for improved outcomes.

Fifteen Things Physicians and Patients Should Question

6

Don't schedule elective, non-medically indicated inductions of labor or Cesarean deliveries before 39 weeks, 0 days gestational age.

Delivery prior to 39 weeks, 0 days has been shown to be associated with an increased risk of learning disabilities and a potential increase in morbidity and mortality. There are clear medical indications for delivery prior to 39 weeks and 0 days based on maternal and/or fetal conditions. A mature fetal lung test, in the absence of appropriate clinical criteria, is not an indication for delivery.

7

Avoid elective, non-medically indicated inductions of labor between 39 weeks, 0 days and 41 weeks, 0 days unless the cervix is deemed favorable.

Ideally, labor should start on its own initiative whenever possible. Higher Cesarean delivery rates result from inductions of labor when the cervix is unfavorable. Health care clinicians should discuss the risks and benefits with their patients before considering inductions of labor without medical indications.

8

Don't screen for carotid artery stenosis (CAS) in asymptomatic adult patients.

There is good evidence that for adult patients with no symptoms of carotid artery stenosis, the harms of screening outweigh the benefits. Screening could lead to non-indicated surgeries that result in serious harms, including death, stroke and myocardial infarction.

9

Don't screen women older than 65 years of age for cervical cancer who have had adequate prior screening and are not otherwise at high risk for cervical cancer.

There is adequate evidence that screening women older than 65 years of age for cervical cancer who have had adequate prior screening and are not otherwise at high risk provides little to no benefit.

10

Don't screen women younger than 30 years of age for cervical cancer with HPV testing, alone or in combination with cytology*.

There is adequate evidence that the harms of HPV testing, alone or in combination with cytology, in women younger than 30 years of age are moderate. The harms include more frequent testing and invasive diagnostic procedures such as colposcopy and cervical biopsy. Abnormal screening test results are also associated with psychological harms, anxiety and distress.

**Recommendation currently under review*

Fifteen Things Physicians and Patients Should Question

11

Don't prescribe antibiotics for otitis media in children aged 2–12 years with non-severe symptoms where the observation option is reasonable.

The "observation option" refers to deferring antibacterial treatment of selected children for 48 to 72 hours and limiting management to symptomatic relief. The decision to observe or treat is based on the child's age, diagnostic certainty and illness severity. To observe a child without initial antibacterial therapy, it is important that the parent or caregiver has a ready means of communicating with the clinician. There also must be a system in place that permits reevaluation of the child.

12

Don't perform voiding cystourethrogram (VCUG) routinely in first febrile urinary tract infection (UTI) in children aged 2–24 months.

The risks associated with radiation (plus the discomfort and expense of the procedure) outweigh the risk of delaying the detection of the few children with correctable genitourinary abnormalities until their second UTI.

13

Don't routinely screen for prostate cancer using a prostate-specific antigen (PSA) test or digital rectal exam.

There is convincing evidence that PSA-based screening leads to substantial over-diagnosis of prostate tumors. Many tumors will not harm patients, while the risks of treatment are significant. Physicians should not offer or order PSA screening unless they are prepared to engage in shared decision making that enables an informed choice by patients.

14

Don't screen adolescents for scoliosis.

There is no good evidence that screening asymptomatic adolescents detects idiopathic scoliosis at an earlier stage than detection without screening. The potential harms of screening and treating adolescents include unnecessary follow-up visits and evaluations due to false positive test results and psychological adverse effects.

15

Don't require a pelvic exam or other physical exam to prescribe oral contraceptive medications.

Hormonal contraceptives are safe, effective and well-tolerated for most women. Data do not support the necessity of performing a pelvic or breast examination to prescribe oral contraceptive medications. Hormonal contraception can be safely provided on the basis of medical history and blood pressure measurement.

How This List Was Created (1–5)

The American Academy of Family Physicians (AAFP) list is an endorsement of the five recommendations for Family Medicine previously proposed by the National Physicians Alliance (NPA) and published in the *Archives of Internal Medicine*, as part of its Less is More™ series. The goal was to identify items common in primary care practice, strongly supported by the evidence and literature, that would lead to significant health benefits, reduce risks and harm, and reduce costs. A working group was assembled for each of the three primary care specialties; family medicine, pediatrics and internal medicine. The original list was developed using a modification of the nominal group process, with online voting. The literature was then searched to provide supporting evidence or refute the activities. The list was modified and a second round of field testing was conducted. The field testing with family physicians showed support for the final recommendations, the potential positive impact on quality and cost, and the ease with which the recommendations could be implemented.

More detail on the study and methodology can be found in the *Archives of Internal Medicine* article: [The “Top 5” Lists in Primary Care.](#)

How This List Was Created (6–10)

The American Academy of Family Physicians (AAFP) has identified this list of clinical recommendations for the second phase of the *Choosing Wisely* campaign. The goal was to identify items common in the practice of family medicine supported by a review of the evidence that would lead to significant health benefits, reduce risks, harms and costs. For each item, evidence was reviewed from appropriate sources such as evidence reviews from the Cochrane Collaboration, and the Agency for Healthcare Research and Quality. The AAFP’s Commission on Health of the Public and Science and Chair of the Board of Directors reviewed and approved the recommendations.

In the case of the first two items on our list – “Don’t schedule elective, non-medically indicated inductions of labor or Cesarean deliveries before 39 weeks, 0 days gestational age” and “Don’t schedule elective, non-medically indicated inductions of labor between 39 weeks, 0 days and 41 weeks, 0 days unless the cervix is deemed favorable” – we collaborated with the American College of Obstetricians and Gynecologists in developing the final language.

How This List Was Created (11–15)

The American Academy of Family Physicians (AAFP) has identified this list of clinical recommendations for the third phase of the *Choosing Wisely*® campaign. The goal was to identify items common in the practice of family medicine supported by a review of the evidence that would lead to significant health benefits, reduce risks, harms and costs. For each item, evidence was reviewed from appropriate sources such as the Cochrane Collaboration, the Agency for Healthcare Research and Quality and other sources. The AAFP’s Commission on Health of the Public and Science and Board of Directors reviewed and approved the recommendations.

AAFP’s disclosure and conflict of interest policy can be found at www.aafp.org.

Sources

- 1 Agency for Health Care Research and Policy (AHCPR), Cochrane Reviews.
- 2 Center for Disease Control and Prevention (CDC), Cochrane, and *Annals of Internal Medicine*.
- 3 U.S. Preventive Services Task Force (USPSTF), American Association of Clinical Endocrinology (AACE), American College of Preventive Medicine (ACPM), National Osteoporosis Foundation (NOF).
- 4 U.S. Preventive Services Task Force (USPSTF).
- 5 U.S. Preventive Services Task Force (USPSTF) (for hysterectomy), American College of Obstetrics and Gynecology (ACOG) (for age).
- 6 Main E, Oshiro B, Chagolla B, Bingham D, Dang-Kilduff L, Kowalewski L (California Maternal Quality Care Collaborative). Elimination of non-medically indicated (elective) deliveries before 39 weeks gestational age. California: March of Dimes; First edition July 2010. California Department of Public Health; Maternal, Child and Adolescent Health Division; Contract No: 08-85012.
- 7 American Academy of Pediatrics, American College of Obstetricians and Gynecologists. Guidelines for perinatal care 6th ed. Elk Grove Village (IL): AAP; Washington, DC: ACOG; 2007. 450 p. Induction of labor. ACOG Practice Bulletin No. 107. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2009;114:386–97. Gulmezoglu AM, Crowther CA, Middleton P, Heatley E. Induction of labour for improving birth outcomes for women at or beyond term (review). The Cochrane Collaboration. *Cochrane Database of Systematic Reviews* 2012, Issue 6. Art. No.: CD004945. DOI: 10.1002/14651858.CD004945.pub3. Available from: <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD004945.pub3/abstract;jsessionid=242792D050CDB79D0D80C0F6FDE85031.d02t03>
- 8 American Academy of Family Physicians. Carotid Artery Stenosis [Internet]. 2007[cited 2012 Oct 10]. Available from: <http://www.aafp.org/online/en/home/clinical/exam/carotidartery.html> U.S. Preventive Services Task Force. Screening for Carotid Artery Stenosis [Internet]. 2007 Dec. [Cited 2012 Oct 10]. Available from: <http://www.uspreventiveservicestaskforce.org/uspstf/uspstf.uspsacas.htm> Wolff T, Guirguis-Blake J, Miller T, et al. Screening For Asymptomatic Carotid Artery Stenosis [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2007 Dec. (Evidence Syntheses, No. 50). Available from: <http://www.ncbi.nlm.nih.gov/books/NBK33504/>
- 9 American Academy of Family Physicians. Cervical Cancer [Internet]. 2012 [cited 2012 Oct 10]. <http://www.aafp.org/online/en/home/clinical/exam/cervicalcancer.html> U.S. Preventive Services Task Force. Screening for Cervical Cancer. 2012 Mar. [cited 2012 Oct 10]. Available from: <http://www.uspreventiveservicestaskforce.org/uspstf/uspstf.uspscerv.htm> Vesco KK, Whitlock EP, Eder M, et al. Screening for Cervical Cancer: A Systematic Evidence Review for the U.S. Preventive Services Task Force [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2011 May. (Evidence Syntheses, No. 86.) Available from: <http://preview.ncbi.nlm.nih.gov/bookshelf/booktest/br.fcgi?book=es86>
- 10 American Academy of Family Physicians. Cervical Cancer [Internet]. 2012 [cited 2012 Oct 10]. <http://www.aafp.org/online/en/home/clinical/exam/cervicalcancer.html> U.S. Preventive Services Task Force. Screening for Cervical Cancer. 2012 Mar. [cited 2012 Oct 10]. Available from: <http://www.uspreventiveservicestaskforce.org/uspstf/uspstf.uspscerv.htm> Vesco KK, Whitlock EP, Eder M, et al. Screening for Cervical Cancer: A Systematic Evidence Review for the U.S. Preventive Services Task Force [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2011 May. (Evidence Syntheses, No. 86.) Available from: <http://preview.ncbi.nlm.nih.gov/bookshelf/booktest/br.fcgi?book=es86>

11

Lieberthal AS, Carroll AE, Chonmaitree T, Ganiats TG, Hoberman A, Jackson MA, Joffe MD, Miller DT, Rosenfeld RM, Sevilla XD, Schwartz RH, Thomas PA, Tunkel DE, American Academy of Pediatrics, American Academy of Family Physicians. The diagnosis and management of acute otitis media. *Pediatrics*. 2013 Mar;131(3):e964–99.

Venekamp RP, Sanders S, Glasziou PP, Del Mar CB, Rovers MM. Antibiotics for acute otitis media in children. *Cochrane Database Syst Rev*. 2013 Jan 31;1:CD000219.

12

Subcommittee on Urinary Tract Infection, Steering Committee on Quality Improvement and Management, Roberts KB. Urinary tract infection: clinical practice guideline for the diagnosis and management of the initial UTI in febrile infants and children 2 to 24 months. *Pediatrics*. 2011 Sep;128(3):595–610.

American College of Radiology (ACR), Society for Pediatric Radiology (SPR), Society of Nuclear Medicine (SNM). ACR-SPR-SNM practice guideline for the performance of adult and pediatric radionuclide cystography [Internet]. Reston (VA): American College of Radiology (ACR); 2010. 5 p.

National Institute for Health and Clinical Excellence, National Collaborating Centre for Women's and Children's Health (UK). Urinary tract infection in children: diagnosis, treatment and long-term management. London: RCOG Press; August 2007. 429 p.

Westwood ME, Whiting PF, Cooper J, Watt IS, Kleijnen J. Further investigation of confirmed urinary tract infection (UTI) in children under five years: a systematic review. *BMC Pediatrics*. 2005 Mar 15;5:2.

13

American Academy of Family Physicians. Prostate cancer [Internet]. Leawood (KS): American Academy of Family Physicians; 2012 [cited 2013 Jul 23]. Available from: <http://www.aafp.org/patient-care/clinical-recommendations/all/prostate-cancer.html>.

U.S. Preventive Services Task Force. Screening for prostate cancer. Rockville (MD): U.S. Preventive Services Task Force. 2012 May. 16 p.

14

American Academy of Family Physicians. Scoliosis [Internet]. Leawood (KS): American Academy of Family Physicians; 2004 [cited 2013 Jul 23]. Available from: <http://www.aafp.org/patient-care/clinical-recommendations/all/scoliosis.html>.

U.S. Preventive Services Task Force. Screening for idiopathic scoliosis in adolescents. Rockville (MD): U.S. Preventive Services Task Force. 2004 Jun. 3 p.

15

Stewart FH, Harper CC, Ellertson CE, Grimes DA, Sawaya GF, Trussell J. Clinical breast and pelvic examination requirements for hormonal contraception: current practice vs evidence. *JAMA*. 2001 May 2;285(17):2232–9.

Henderson JT, Sawaya GF, Blum M, Stratton L, Harper CC. Pelvic examinations and access to oral hormonal contraception. *Obstet Gynecol*. 2010 Dec;116(6):1257–64.

Committee on Gynecologic Practice. Committee opinion no. 534: well-woman visit. *Obstet Gynecol*. 2012 Aug;120(2 Pt 1):421–4.

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About the American Academy of Family Physicians

Founded in 1947, the American Academy of Family Physicians (AAFP) represents 105,900 physicians and medical students nationwide. It is the only medical society devoted solely to primary care. Approximately one in four of all doctor's office visits are made to family physicians. Family medicine's cornerstone is an ongoing, personal patient-physician relationship focused on integrated care.



For information about health care, health conditions and wellness, please visit the AAFP's award-winning consumer website, www.familydoctor.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't recommend percutaneous feeding tubes in patients with advanced dementia; instead, offer oral assisted feeding.

In advanced dementia, studies have found feeding tubes do not result in improved survival, prevention of aspiration pneumonia, or improved healing of pressure ulcers. Feeding tube use in such patients has actually been associated with pressure ulcer development, use of physical and pharmacological restraints, and patient distress about the tube itself. Assistance with oral feeding is an evidence-based approach to provide nutrition for patients with advanced dementia and feeding problems; in the final phase of this disease, assisted feeding may focus on comfort and human interaction more than nutritional goals.

2

Don't delay palliative care for a patient with serious illness who has physical, psychological, social or spiritual distress because they are pursuing disease-directed treatment.

Numerous studies—including randomized trials—provide evidence that palliative care improves pain and symptom control, improves family satisfaction with care and reduces costs. Palliative care does not accelerate death, and may prolong life in selected populations.

3

Don't leave an implantable cardioverter-defibrillator (ICD) activated when it is inconsistent with the patient/family goals of care.

In about a quarter of patients with ICDs, the defibrillator fires within weeks preceding death. For patients with advanced irreversible diseases, defibrillator shocks rarely prevent death, may be painful to patients and are distressing to caregivers/family members. Currently there are no formal practice protocols to address deactivation; fewer than 10% of hospices have official policies. Advance care planning discussions should include the option of deactivating the ICD when it no longer supports the patient's goals.

4

Don't recommend more than a single fraction of palliative radiation for an uncomplicated painful bone metastasis.

As stated in the American Society for Radiation Oncology (ASTRO) 2011 guideline, single-fraction radiation to a previously un-irradiated peripheral bone or vertebral metastasis provides comparable pain relief and morbidity compared to multiple-fraction regimens while optimizing patient and caregiver convenience. Although it results in a higher incidence of later need for retreatment (20% vs. 8% for multi-fraction regimens), the decreased patient burden usually outweighs any considerations of long-term effectiveness for those with a limited life expectancy.

5

Don't use topical lorazepam (Ativan), diphenhydramine (Benadryl), haloperidol (Haldol) ("ABH") gel for nausea.

Topical drugs can be safe and effective, such as topical non-steroidal anti-inflammatory drugs for local arthritis symptoms. However, while topical gels are commonly prescribed in hospice practice, anti-nausea gels have not been proven effective in any large, well-designed or placebo-controlled trials. The active ingredients in ABH are not absorbed to systemic levels that could be effective. Only diphenhydramine (Benadryl) is absorbed via the skin, and then only after several hours and erratically at subtherapeutic levels. It is therefore not appropriate for "as needed" use. The use of agents given via inappropriate routes may delay or prevent the use of more effective interventions.

How This List Was Created

The American Academy of Hospice and Palliative Medicine's (AAHPM) president appointed a special task force to coordinate the development of the Academy's recommendations. Chaired by a member of the Board of Directors who had previously overseen AAHPM's education and training committees, the task force included representatives of the Academy's Quality and Practice Standards Task Force, Research Committee, Ethics Committee, Public Policy Committee and External Awareness Task Force, as well as at-large appointees that represent distinguished leaders in the field. The task force solicited input from AAHPM's 17 Special Interest Groups, and task force members also offered their own suggestions for the list. Considering the potential impact and evidence to support the proposed recommendations, the task force identified seven finalists for which a rationale and evidence base was further developed. All AAHPM members were invited to comment on and rank these seven recommendations. Member feedback informed the task force's final deliberation, which included narrowing the list to the "Five Things" and refining the verbiage of the recommendations. The list was then reviewed and approved by the AAHPM Executive Committee.

AAHPM's disclosure and conflict of interest policy can be found at www.aahpm.org.

Sources

- Finucane TE, Christmas C, Travis K. Tube feeding in patients with advanced dementia: A review of the evidence. *JAMA*. 1999;282(14):1365-1370.
- Gillick MR. Rethinking the role of tube feeding in patients with advanced dementia. *N Engl J Med*. 2000;342(3):206-210.
- Hanson LC, Ersek M, Gilliam R, Carey TS. Oral feeding options for people with dementia: A systematic review. *J Am Geriatr Soc*. 2011;59(3):463-472.
- Kuo S, Rhodes RL, Mitchell SL, Mor V, Teno JM. Natural history of feeding-tube use in nursing home residents with advanced dementia. *J Am Med Dir Assoc*. 2009;10(4):264-270.
- Palecek EJ, Teno JM, Casarett DJ, Hanson LC, Rhodes RL, Mitchell SL. Comfort feeding only: A proposal to bring clarity to decision-making regarding difficulty with eating for persons with advanced dementia. *J Am Geriatr Soc*. 2010;58(3):580-584.
- Sampson EL, Candy B, Jones L. Enteral tube feeding for older people with advanced dementia. *Cochrane Database Syst Rev*. 2009 Apr 15;(2):CD007209.
- Stratton RJ, Ek AC, Engfer M, Moore Z, Rigby P, Wolfe R, Elia M. Enteral nutritional support in prevention and treatment of pressure ulcers: A systematic review and meta-analysis. *Ageing Res Rev*. 2005;4(3):422-450.
- Teno JM, Gozalo P, Mitchell SL, Kuo S, Fulton AT, Mor V. Feeding tubes and the prevention or healing of pressure ulcers. *Arch Intern Med*. 2012;172(9):697-701.
- Teno JM, Mitchell SL, Gozalo PL, Dosa D, Hsu A, Intrator O, Mor V. Hospital characteristics associated with feeding tube placement in nursing home residents with advanced cognitive impairment. *JAMA*. 2010;303(6):544-550.
- Teno JM, Mitchell SL, Kuo SK, Gozalo PL, Rhodes RL, Lima JC, Mor V. Decision-making and outcomes of feeding tube insertion: A five-state study. *J Am Geriatr Soc*. 2011;59(5):881-886.
- Delgado-Guay MO, Parson HA, Li Z, Palmer LJ, Bruera E. Symptom distress, intervention and outcomes of intensive care unit cancer patients referred to a palliative care consult team. *Cancer*. 2009;115:437-445.
- Elsayem A, Smith ML, Palmer JL, Jenkins R, Reddy S, Bruera E. Impact of a palliative care service on in-hospital mortality in a comprehensive cancer center. *J Pall Med*. 2006;9:894-902.
- Elsayem A, Swint K, Fisch MJ, Palmer JL, Reddy S, Walker P, Zhukovsky D, Knight P, Bruera E. Palliative care inpatient services in a comprehensive cancer center: Clinical and financial outcomes. *J Clin Oncol*. 2004 May 14;22(10):2008-2014.
- Gelfman LP, Meier D, Morrison RS. Does palliative care improve quality? A survey of bereaved family members. *J Pain Symptom Manage*. 2008 Jul;36f:22-28.
- Higginson IJ, Finlay IG, Goodwin DM, Hood K, Edwards AG, Cook A, Douglas HR, Normand CE. Is there evidence that palliative care teams alter end-of-life experiences of patients and their caregivers? *J Pain Symptom Manage*. 2003;25:150-168.
- Jordhoy MS, Fayers P, Saltnes T, Ahlner-Elmqvist M, Jannert M, Kaasa S. A palliative care intervention and death at home: A cluster randomized trial. *Lancet*. 2000 Sep 9;356(9233):888-893.
- London MR, McSkimming S, Drew N, Quinn C, Carney B. Evaluation of a comprehensive, adaptable, life-affirming, longitudinal (CALL) palliative care project. *J Pall Med*. 2005;8:1214-1225.
- Temel JS, Greer JA, Muzikansky A, Gallagher ER, Admane S, Jackson VA, Dahlin CM, Blinderman CD, Jacobsen J, Pirl WF, Billings JA, Lynch TJ. Early palliative care for patients with metastatic non-small cell lung cancer. *N Engl J Med*. 2010;363:733-742.
- Berger JT. The ethics of deactivating implanted cardioverter defibrillators. *Ann Intern Med*. 2005;142:631-634.
- Goldstein N, Carlson M, Livote E, Kutner J. Brief communication: Management of implantable cardioverter-defibrillators in hospice: A nationwide survey. *Ann Intern Med*. 2010;152(5):296-299.
- Goldstein NE, Lampert R, Bradley EH, Lynn J, Krumholz HM. Management of implantable cardioverter defibrillators in end-of-life care. *Ann Intern Med*. 2004;141(11):835-838.
- Russo, J. Deactivation of ICDs at the end of life: A systematic review of clinical practices and provider and patient attitudes. *Am J Nurs*. 2011;111(10):26-35.
- Lutz S, Berk L, Chang E, Chow E, Hahn C, Hoskin P, Howell D, Konski A, Kachnic L, Lo S, Sahgal A, Silverman L, von Gunten C, Mendel E, Vassil A, Bruner DW, Hartsell W. Palliative radiotherapy for bone metastases: An ASTRO evidence-based guideline. *Int J Radiat Oncol Biol Phys*. 2011;79(4):965-976.
- Smith TJ, Ritter JK, Poklis JL, Fletcher D, Coyne PJ, Dodson P, Parker G. ABH gel is not absorbed from the skin of normal volunteers. *J Pain Symptom Manage*. 2012;43(5):961-966.
- Weschules DJ. Tolerability of the compound ABHR in hospice patients. *J Palliat Med*. 2005;8(6):1135-1143.

About the ABIM Foundation

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the American Academy of Hospice and Palliative Medicine

The American Academy of Hospice and Palliative Medicine (AAHPM) is the professional organization for physicians specializing in Hospice and Palliative Medicine. AAHPM's 4,900 members also include nurses and other healthcare providers committed to improving quality of life for patients and families facing life-threatening or serious conditions. AAHPM is dedicated to advancing the discipline of Hospice and Palliative Medicine through professional education and training, development of a specialist workforce, support for clinical practice standards, research and public policy.



For more information, visit www.aahpm.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1 Don't perform electroencephalography (EEG) for headaches.

EEG has no advantage over clinical evaluation in diagnosing headache, does not improve outcomes and increases cost. Recurrent headache is the most common pain problem, affecting 15% to 20% of people.

2 Don't perform imaging of the carotid arteries for simple syncope without other neurologic symptoms.

Occlusive carotid artery disease does not cause fainting but rather causes focal neurologic deficits such as unilateral weakness. Thus, carotid imaging will not identify the cause of the fainting and increases cost. Fainting is a frequent complaint, affecting 40% of people during their lifetime.

3 Don't use opioid or butalbital treatment for migraine except as a last resort.

Opioid and butalbital treatment for migraine should be avoided because more effective, migraine-specific treatments are available. Frequent use of opioid and butalbital treatment can worsen headaches. Opioids should be reserved for those with medical conditions precluding the use of migraine-specific treatments or for those who fail these treatments.

4 Don't prescribe interferon-beta or glatiramer acetate to patients with disability from progressive, non-relapsing forms of multiple sclerosis.

Interferon-beta and glatiramer acetate do not prevent the development of permanent disability in progressive forms of multiple sclerosis. These medications increase costs and have frequent side effects that may adversely affect quality of life.

5 Don't recommend CEA for asymptomatic carotid stenosis unless the complication rate is low (<3%).

Based on studies reporting an upfront surgical complication rate ranging from 2.3% (ACAS) to 3.1% (ACST) among patients undergoing carotid endarterectomy (CEA) for asymptomatic stenosis of >60%, and an absolute risk reduction for stroke or death of roughly 5–6% in the surgical group at 5 years, several specialty societies (Goldstein et al, 2011; Brott et al, 2011; Chaturvedi et al; Ricotta et al) have recommended that surgery for asymptomatic patients should be reserved for those with a perioperative complication risk of <3% and a life expectancy of greater than 3–5 years. The cited 3% threshold for complication rates may be high because more recent studies have reported lower stroke rates with improvements in both surgical (Brott, 2010) and medical (Marquardt) management. However, there are no recent randomized trials comparing these treatments. Given this, the more recent AHA guidelines (Brott 2011) state that it is “reasonable” to perform CEA for asymptomatic patients with >70% stenosis if the surgical complication rate is “low.”

Reported complication rates vary widely by location (Kresowik), and are dependent on how complications are tracked (self-report vs. neurologist's evaluation vs. administrative data (Wolff T). Despite calls for rigorous monitoring 15 years ago (Goldstein), most patients will likely need to rely on the surgeon's self-reported rates.

How This List Was Created

The American Academy of Neurology (AAN) established a *Choosing Wisely Working Group* to develop its list of recommendations. Members of this group were selected to broadly represent varying practice settings and neurological subspecialties. Neurologists with methodological expertise in evidence-based medicine and practice guideline development were also included. The working group solicited recommendations from AAN members, which were then rated based upon their judgments of harm and benefit that would result based upon compliance with the recommendation. Based on committee voting and a literature review, candidate recommendations were sent to relevant AAN sections, committees, specialty societies and patient advocacy groups for review and comment. The working group reviewed this feedback and voted on the final Top Five recommendations, which were approved by the AAN Practice Committee and Board of Directors.

AAN's disclosure and conflict of interest policy can be found at www.aan.com.

Sources

- 1 Gronseth GS, Greenberg MK. The utility of the electroencephalogram in the evaluation of patients presenting with headache: a review of the literature. *Neurology* [Internet]. 1995;45(7):1263-1267.
- 2 Strickberger SA, Benson DW, Biaggioni I, Callans DJ, Cohen MI, Ellenbogen KA, Epstein AE, Friedman P, Goldberger J, Heidenreich PA, Klein GJ, Knight BP, Morillo CA, Myerburg RJ, Sila CA. AHA/ACCF scientific statement on the evaluation of Syncope: From the American Heart Association councils on clinical cardiology, cardiovascular nursing, cardiovascular disease in the young, and stroke, and the quality of care and outcomes research interdisciplinary working group; and the American College of Cardiology Foundation in collaboration with the Heart Rhythm Society. *J Am Coll Cardiol* [Internet]. 2006 January 17;47(2):473-84.
The Task Force for the Diagnosis and Management of Syncope of the European Society of Cardiology. Guidelines for the diagnosis and management of syncope (version 2009). *Eur Heart J*. [Internet]. 2009 Aug 27 Nov;30(21):2631-2671.
National Institute for Health and Clinical Excellence. Transient loss of consciousness ("Blackouts") Management in adults and young people. [Internet]. London: Royal College of Physicians (UK); 2010 [cited 2012 Oct 25]. Available from: publications.nice.org.uk/transient-loss-of-consciousness-blackouts-management-in-adults-and-young-people-cg109/notes-on-the-scope-of-the-guidance.
- 3 Silberstein SD; US Headache Consortium. Practice parameter: Evidence-based guidelines for migraine headache (an evidence-based review): Report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology* [Internet]. 2000;55(6):754-762.
Evers S, Afra J, Frese A, Goadsby PJ, Linde M, May A, Sandor PS, European Federation of Neurological Societies. EFNS guideline on the drug treatment of migraine – revised report of an EFNS task force. *Eur J Neurol* [Internet]. 2009 Sep;16(9):968-81.
Institute for Clinical Systems Improvement. Headache, Diagnosis and Treatment of (Guideline) [Internet]. Bloomington, MN: Institute for Clinical Systems Improvement; 2011 [cited 2012 Oct 25]. Available from: www.icsei.org/headache/headache_diagnosis_and_treatment_of_2609.html.
- 4 Rice GPA, Inorvaia B, Munari LM, Ebers G, Polman C, D'Amico R, Parmelli E, Filippini G. Interferon in relapsing-remitting multiple sclerosis. *Cochrane Database Syst Rev*. 2001, Issue 4. Art. No.: CD002002. DOI: 10.1002/14651858.CD002002.
La Mantia L, Munari LM, Lovati R. Glatiramer acetate for multiple sclerosis. *Cochrane Database Syst Rev*. 2010, Issue 5. Art. No.: CD004678. DOI: 10.1002/14651858.CD004678.pub2.
La Mantia L, Vacchi L, Di Pietrantonj C, Ebers G, Rovaris M, Fredrikson S, Filippini G. Interferon beta for secondary progressive multiple sclerosis. *Cochrane Database Syst Rev*. 2012, Issue 1. Art. No.: CD005181. DOI: 10.1002/14651858.CD005181.pub3.
Rojas JI, Romano M, Ciapponi A, Patrucco L, Cristiano E. Interferon Beta for Primary Progressive Multiple Sclerosis. *Cochrane Database Syst Rev*. 2010, Issue 1. Art. No.: CD006643. DOI: 10.1002/14651858.CD006643.pub3.
- 5 Walker MD, Marler JR, Goldstein M, Grady PA, Toole JF, Baker WH, Castaldo JE, Chambless LE, Moore WS, Robertson JT, Young B, Howard VJ, Marler JR, Purvis S, Vernon DD, Needham K, Beck P, Celani VJ, Sauerbeck L, von Rajcs JA, Atkins D. Endarterectomy for asymptomatic carotid artery stenosis. Executive Committee for the Asymptomatic Carotid Atherosclerosis Study (ACAS). *JAMA*. 1995 May 10;273(18):1421-8.
MRC Asymptomatic Carotid Surgery Trial (ACST) Collaborative Group. Prevention of disabling and fatal strokes by successful carotid endarterectomy in patients without recent neurological symptoms: randomized controlled trial. *Lancet* [Internet]. 2004 [cited 2013 Jan 3];363(9420):1491-1502.
Goldstein LB, Bushnell CD, Adams RJ, Appel LJ, Braun LT, Chaturvedi S, Creager MA, Culebras A, Eckel RH, Hart RG, Hinchey JA, Howard VJ, Jauch EC, Levine SR, Meschia JF, Moore WS, Nixon JV, Pearson TA. Guidelines for the primary prevention of stroke: a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke* [Internet]. 2011 Feb [cited 2013 Jan 3];42(2):517-84.
Chaturvedi S, Bruno A, Feasby T, Holloway R, Benavente O, Cohen SN, Cote R, Hess D, Saver J, Spence JD, Stern B, Wilterdink J. Carotid endarterectomy: an evidence-based report of the Technology and Therapeutics Committee of the American Academy of Neurology. *Neurology* [Internet]. 2005 [cited 2013 Jan 3];65:794-801.
Ricotta JJ, Aburahma A, Ascher E, Eskandari M, Faries P, Lal BK. Updated Society for Vascular Surgery guidelines for management of extracranial carotid disease. *J Vasc Surg* [Internet]. 2011 Sep [cited 2013 Jan 3];54(3)e1-31.
Kresowik TF, Bratzler DW, Kresowik RA, Hendel ME, Grund SL, Brown KR, Niladena DS. Multistate improvement in process and outcomes of carotid endarterectomy. *J Vasc Surg* [Internet]. 2004 [cited 2013 Jan 3];39:372-380.
Brott TG, Hobson RW II, Howard G, Roubin GS, Clark WM, Brooks W, Mackey A, Hill MD, Leimgruber PP, Sheffett AJ, Howard VJ, Moore WS, Voeks JH, Hopkins LN, Cutlip DE, Cohen DJ, Popma JJ, Ferguson RD, Cohen SN, Blackshear JL, Silver FL, Mohr JP, Lal BK, Meschia JF. Stenting versus endarterectomy for treatment of carotid-artery stenosis. *N Engl J Med* [Internet]. 2010 Jul 1 [cited 2013 Jan 3];363(1):11-23.
Marquardt L, Geraghty OC, Mehta Z, Rothwell PM. Low risk of ipsilateral stroke in patients with asymptomatic carotid stenosis on best medical treatment: a prospective, population-based study. *Stroke* [Internet]. 2010 [cited 2013 Jan 1];41:e11-e7.
Brott TG, Halperin JL, Abbara S, Bacharach JM, Barr JD, Bush RL, Cates CU, Creager MA, Fowler SB, Friday G, Hertzberg VS, McIff EB, Moore WS, Panagos PD, Riles TS, Rosenwasser RH, Taylor RJ. 2011 ASA/ACCF/AHA/AANS/ACR/ASNR/CNS/SAIP/SCAI/SIR/SNIS/SVM/SVS guideline on the management of patients with extracranial carotid and vertebral artery disease. *Circulation* [Internet]. 2011 [cited 2013 Jan 3];124:e54-e130.
Wolff T, Guirguis-Blake J, Miller T, Gillespie M, Harris R. Screening For Asymptomatic Carotid Artery Stenosis. Rockville: Agency for Health Care Quality (US). 2007 Dec. Appendix 4-Evidence Table on Complication Rates for Carotid Endarterectomy.
Goldstein LB, Moore WS, Robertson JT, Chaturvedi S. Complication rates for carotid endarterectomy—a call to action. *Stroke* [Internet]. 1997 [cited 2013 Jan 3];28(5):889-890.

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About the American Academy of Neurology

With more than 25,000 members, the American Academy of Neurology is the world's largest association of neurologists dedicated to promoting the highest quality patient-centered neurologic care. A neurologist is a doctor with specialized training in diagnosing, treating and managing disorders of the brain and nervous system such as Alzheimer's disease, stroke, Parkinson's disease and epilepsy. The Academy provides valuable resources for neurologists and neuroscience professionals worldwide who look to the Academy for the most comprehensive professional development, career enhancement, and practice improvement opportunities available.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.



Twenty-Five Things Nurses and Patients Should Question

1

Don't automatically initiate continuous electronic fetal heart rate (FHR) monitoring during labor for women without risk factors; consider intermittent auscultation (IA) first.

Continuous electronic FHR monitoring during labor, a routine procedure in many hospitals, is associated with an increase in cesarean and instrumental births without improving Apgar score, NICU admission or intrapartum fetal death rates. IA allows women more freedom of movement during labor, enhancing their ability to cope with labor pain and utilize gravity to promote labor progress. Upright positions and walking have been associated with shorter duration of first stage labor, fewer cesareans and reduced epidural use.

2

Don't let older adults lie in bed or only get up to a chair during their hospital stay.

Up to 65% of older adults who are independent in their ability to walk will lose their ability to walk during a hospital stay. Walking during the hospital stay is critical for maintaining functional ability in older adults. Loss of walking independence increases the length of hospital stay, the need for rehabilitation services, new nursing home placement, risk for falls both during and after discharge from the hospital, places higher demands on caregivers and increases the risk of death for older adults. Bed rest or limited walking (only sitting up in a chair) during a hospital stay causes deconditioning and is one of the primary factors for loss of walking independence in hospitalized older adults. Older adults who walk during their hospital stay are able to walk farther by discharge, are discharged from the hospital sooner, have improvement in their ability to independently perform basic activities of daily living, and have a faster recovery rate after surgery.

3

Don't use physical restraints with an older hospitalized patient.

Restraints cause more problems than they solve, including serious complications and even death. Physical restraints are most often applied when behavioral expressions of distress and/or a change in medical status occur. These situations require immediate assessment and attention, not restraint. Safe, quality care without restraints can be achieved when multidisciplinary teams and/or geriatric nurse experts help staff anticipate, identify and address problems; family members or other caregivers are consulted about the patient's usual routine, behavior and care; systematic observation and assessment measures and early discontinuation of invasive treatment devices are implemented; staff are educated about restraints and the organizational culture and structure support restraint-free care.

4

Don't wake the patient for routine care unless the patient's condition or care specifically requires it.

Studies show sleep deprivation negatively affects breathing, circulation, immune status, hormonal function and metabolism. Sleep deprivation also impacts the ability to perform physical activities and can lead to delirium, depression and other psychiatric impairments. Multiple environmental factors affect a hospitalized person's ability for normal sleep. Factors include noise, patient care activities and patient-related factors such as pain, medication and co-existing health conditions.

5

Don't place or maintain a urinary catheter in a patient unless there is a specific indication to do so.

Catheter-associated urinary tract infections (CAUTIs) are among the most common health care-associated infections in the United States. Most CAUTIs are related to urinary catheters so the infections can largely be prevented by reduced use of indwelling urinary catheters and catheter removal as soon as possible. CAUTIs are responsible for an increase in U.S. health care costs and can lead to more serious complications in hospitalized patients.

6

Don't use aloe vera on skin to prevent or treat radiodermatitis.

Radiodermatitis can cause patient pain and pruritus that affect quality of life, body image and sleep. Severe radiodermatitis can necessitate dose reductions or treatment delays that negatively impact the ability to adequately treat the cancer. The incidence of radiodermatitis can be as high as 95% depending upon the population of patients receiving treatment. Studies documenting incidence have primarily occurred in women receiving treatment for breast cancer.

Many Internet sites market aloe to individuals for what is commonly termed “sunburn type” reactions from radiation therapy. Research evidence shows that aloe vera is not beneficial for the prevention or treatment of radiodermatitis, and one study reported worse patient outcomes with use of aloe vera.

Patients undergoing radiation therapy need to know that aloe vera should not be used to prevent or treat skin reactions from radiation therapy, since it has been shown to be ineffective and has the potential to make skin reactions worse.

7

Don't use L-carnitine/acetyl-L-carnitine supplements to prevent or treat symptoms of peripheral neuropathy in patients receiving chemotherapy for treatment of cancer.

Peripheral neuropathy is a chronic side effect of some chemotherapeutic agents. This can be a significant quality of life issue for patients, affecting functional ability and comfort. In the public realm, numerous Internet sites that sell herbal and dietary supplements have specifically recommended L-carnitine/acetyl-L-carnitine for symptoms of peripheral neuropathy. This supplement is available without a physician prescription. Evidence not only has shown use of carnitine supplements to be ineffective, but research also has shown it may make symptoms worse. Current professional guidelines contain a strong recommendation against the use of L-carnitine for prevention of chemotherapy-induced peripheral neuropathy. Nurses need to educate patients not to use this dietary supplement while undergoing chemotherapy for cancer.

8

Don't neglect to advise patients with cancer to get physical activity and exercise during and after treatment to manage fatigue and other symptoms.

During treatment for cancer, up to 99% of patients will have fatigue and many individuals continue to experience persistent fatigue for years after completion of treatment. It is the natural tendency for people to try to get more rest when feeling fatigued and health care providers have traditionally been educated about the importance of getting rest and avoiding strenuous activity when ill. In contrast to these traditional views, resistance and aerobic exercise have been shown to be safe, feasible and effective in reducing symptoms of fatigue during multiple phases of cancer care. Exercise has also been shown to have a positive effect on symptoms of anxiety and depression. Current professional guidelines recommend 150 minutes of moderate-level exercise such as fast-walking, cycling or swimming per week along with 2–3 strength training sessions per week, unless specifically contraindicated.

9

Don't use mixed medication mouthwash, commonly termed “magic mouthwash,” to prevent or manage cancer treatment-induced oral mucositis.

Oral mucositis is a painful and debilitating side effect of some chemotherapeutic agents and radiation therapy that includes the oral mucosa in the treatment field. Painful mucositis impairs the ability to eat and drink fluids and impacts quality of life. Oral mucositis can result in the need for hospitalization for pain control and provision of total parenteral nutrition in order to maintain adequate nutritional intake during cancer treatment. Mixed medication mouthwash, also commonly known by other names such as “magic mouthwash,” “Duke’s magic mouthwash,” or “Mary’s magic mouthwash,” is commonly used to prevent or treat oral mucositis. These are often compounded by a pharmacy, are expensive and may not be covered by health insurance. Research has shown that magic mouthwash was reported to cause taste changes, irritating local side effects and is no more effective than salt and baking soda (sodium bicarbonate) rinses. Instead, frequent and consistent oral hygiene and use of salt or soda mouth rinses can be used.

10

Don't administer supplemental oxygen to relieve dyspnea in patients with cancer who do not have hypoxia.

Reports of the prevalence of dyspnea range from 21 to 90% overall among patients with cancer, and the prevalence and severity of dyspnea increase in the last six months of life, regardless of cancer diagnosis. Supplemental oxygen therapy is commonly prescribed to relieve dyspnea in people with advanced illness despite arterial oxygen levels within normal limits, and has been seen as standard care. Supplemental oxygen is costly and there are multiple safety risks associated with use of oxygen equipment. People also experience functional restriction and may have some distress from being attached to a device. Palliative oxygen (administration in nonhypoxic patients) has consistently been shown not to improve dyspnea in individual studies and systematic reviews. Rather than use a costly and ineffective intervention for dyspnea, care should be focused on those interventions which have demonstrated efficacy such as immediate release opioids.

11

Don't promote induction or augmentation of labor and don't induce or augment labor without a medical indication; spontaneous labor is safest for woman and infant, with benefits that improve safety and promote short- and long-term maternal and infant health.

The rate of induction in the United States (23.4% of all births) has more than doubled since 1990. The increase is not thought to be attributable to a similar rise in medical conditions in pregnancy that warrant induction of labor.

Researchers have demonstrated that induction of labor for any reason increases the risk for a number of complications for women and infants. Induced labor results in more postpartum hemorrhage than spontaneous labor, which increases the risk for blood transfusion, hysterectomy, placenta implantation abnormalities in future pregnancies, a longer hospital stay, and more hospital re-admissions. Induction of labor is also associated with a significantly higher risk of cesarean birth. For infants, a number of negative health effects are associated with induction, including increased fetal stress and respiratory illness.

Research on the risk-to-benefit ratio of elective augmentation of labor is limited. However, many of the risks associated with elective induction may extend to augmentation. In a recent systematic review, the authors found that women with slow progress in the first stage of spontaneous labor who underwent augmentation with exogenous oxytocin, compared with women who did not receive oxytocin, had similar rates of cesarean. Such results call into question a primary rationale for labor augmentation, which is the reduction of cesarean surgery.

In addition to the serious health problems associated with non-medically indicated induction of labor, hospitals, insurers, providers and women must consider a number of financial implications associated with the practice. In the United States, the average cost of an uncomplicated cesarean birth is 68% higher than the cost of an uncomplicated vaginal birth. Further, women who deliver vaginally have shorter hospital stays, fewer hospital readmissions, faster recoveries and fewer infections than those who have cesareans.

12

Don't prescribe opioid pain medication in pregnancy without discussing and fully weighing the risks to the woman and her fetus.

In utero exposure to opioids can lead to risks for the infant, including neonatal abstinence syndrome (NAS) and/or developmental deficits affecting behavior and cognition.

Pregnant women's use of opioids dramatically increased from 1.19 per 1000 hospital births in 2000 to 5.63 per 1000 hospital births in 2009. Prescription opioids are among the most effective medications for the treatment of pain. However, regular or long-term use of opioids can create physical dependence and in some cases, addiction. Women who are prescribed, or continue to use, opioids during pregnancy may not understand the risks to themselves or their babies.

Pregnant women and their fetuses are an inherently vulnerable population and opioid dependence increases their vulnerability. Women using opioids during pregnancy were shown to have higher rates of depression, anxiety and chronic medical conditions as well as increased risks for preterm labor, poor fetal growth and stillbirth.

Women who used opioids during pregnancy were four times as likely to have a prolonged hospital stay compared to nonusers and incurred significantly more per-hospitalization cost.

Neonatal abstinence syndrome (NAS) occurs in newborns that are exposed to substances, typically opioids, while in their mothers' wombs. In utero exposure to these substances can cause a newborn to experience withdrawal symptoms after birth. Symptoms of NAS vary depending on the type and amount of the substance that the mother used, how the mother and fetus metabolize the drug and how long the mother used the drug. Symptoms of NAS range from blotchy skin and sneezing, to respiratory complications, low birth weight, prematurity, feeding difficulties, extreme irritability and seizures.

13

Don't separate mothers and their newborns at birth unless medically necessary. Instead, help the mother to place her newborn in skin-to-skin contact immediately after birth and encourage her to keep her newborn in her room during hospitalization after the birth.

Keeping mothers and newborns together promotes maternal-infant attachment, early and sustained breastfeeding and physiologic stability. Early initiation of skin-to-skin care and breastfeeding promotes optimal outcomes and can significantly reduce morbidity for healthy term and preterm or vulnerable newborns. Breastfeeding is the ideal form of infant nutrition and should be the societal norm. Given the numerous health benefits for infant and mother and the health care cost savings associated with breastfeeding, breastfeeding has become a global public health initiative that can improve the overall health of nations. Ideally, infants should be exclusively breastfed for the first six months of life; after the first six months, appropriate complementary foods should be introduced, and the infant should continue to breastfeed for 1–2 years, or longer as desired. Worldwide, the lives of an estimated 1.5 million children less than the age of five would be saved annually if all children were fed according to this standard.

14

Don't administer "prn" (i.e., as needed) sedative, antipsychotic or hypnotic medications to prevent and/or treat delirium without first assessing for, removing and treating the underlying causes of delirium and using nonpharmacologic delirium prevention and treatment approaches.

The most important step in treating delirium is identifying, removing and treating the underlying cause(s) of delirium. Delirium is often a direct physiological consequence of another medical condition, substance intoxication or withdrawal, exposure to a toxin, or is due to multiple etiologies. Clinicians should therefore perform a detailed history and physical exam, order appropriate laboratory/diagnostic tests, conduct a thorough medication review, and discontinue any potentially deliriogenic medications. Because numerous medications or medication classes are associated with the development of delirium (e.g., benzodiazepines, anticholinergics, diphenhydramine, sedative-hypnotics), their administration on a prn basis should be avoided if possible. Moreover, due to the potential for harm and lack of sufficient evidence supporting the safety and efficacy of antipsychotics for the prevention and treatment of delirium, these medications should be administered only at the lowest effective dose, for the shortest amount of time, in patients who are severely agitated and/or at risk for harming themselves and/or others. In terms of delirium prevention, it is recommended health systems should implement multicomponent, nonpharmacologic interventions that are delivered consistently throughout hospitalization by the interdisciplinary team.

15

Don't assume a diagnosis of dementia in an older adult who presents with an altered mental status and/or symptoms of confusion without assessing for delirium or delirium superimposed on dementia using a brief, sensitive, validated assessment tool.

Delirium is common in older adults, especially in the hospital setting, yet delirium is frequently unrecognized and not documented by nursing or medical staff. Delirium occurs in as much as 50% of older adults in the hospital and delirium superimposed on dementia occurs in as high as 90% of hospitalized older adults. Delirium is associated with very poor clinical outcomes, including prolonged length of stay, high costs and lower quality of life for older adults when not detected early. Delirium is treatable and often reversible and dementia is not, so mislabeling older adults with dementia may miss a life threatening underlying condition causing the delirium such as an infection, medication side effect or subdural hematoma. Delirium is extremely costly to the health care system and to society with estimates ranging from \$143 to \$152 billion annually. Nurses and physicians often fail to recognize delirium. Only 12–35% of delirium cases are detected in routine care, with hypoactive delirium and delirium superimposed on dementia most likely to be missed.

16

Don't routinely order a head CT to assess for shunt failure in children with hydrocephalus.

Computerized tomography (CT) scans have been used for diagnostic imaging for more than 40 years, but it should not be assumed that a head CT is always needed in an evaluation for shunt failure. Because CT is the usual mode of imaging for children with hydrocephalus, these patients have a much higher cumulative radiation exposure than the average population. Children have an increased risk of cancer with exposure to higher cumulative radiation doses. CT scans should be performed only when warranted to reduce exposure to radiation and decrease the risk for radiation induced cancer. Consider using head ultrasounds when there is an open fontanel, or a rapid sequence magnetic resonance imaging (MRI) scan to reduce the amount of ionizing radiation exposure to pediatric patients with a ventricular shunt. A rapid sequence MRI is less expensive than a formal MRI and comparable in costs to CT scan. Because the rapid sequence MRI is quick, sedation is not needed, further reducing costs and medical risks of sedation. A CT scan can be used for emergencies and if the child has implanted metal or a device that is not compatible with an MRI.

17

Don't routinely order an EEG on neurologically healthy children who have a simple febrile seizure.

Febrile seizures are the most commonly occurring seizures in the first 60 months of life. Caregiver anxiety can often lead to requests for neurodiagnostic testing. Attention should be directed at finding the cause of fever and treating it. Electroencephalogram (EEG) tests are costly and can increase caregiver and child anxiety without changing the outcome or course of treatment. EEG has not been shown to predict recurrence of febrile seizures or future epilepsy in patients with simple febrile seizures. EEG can be ordered for children that present with afebrile seizures, complex febrile seizures and in children with neurological insult.

18

Don't administer diazepam for muscle spasm following spine surgery in the elderly.

Classic spine surgical treatment involves bilateral dissection of paraspinal muscles to expose the involved levels. Spasms of these muscles are common postoperatively. Treatment of these spasms should include both pharmacologic and non-pharmacologic interventions. Age-related changes in adults can affect both metabolism and drug elimination in the body, resulting in a prolonged half-life for medications. Among the benzodiazepines, diazepam is particularly problematic due to its long half-life and many active metabolites. Benzodiazepines can lead to over-sedation, potential for respiratory depression, increased risk of delirium, and extended in-hospital recovery time. Benzodiazepines have consistently been associated with falls in the aging population and should be avoided. Effective non-pharmacological interventions for use include heat, cold, repositioning, and massage.

19

Don't use lumbar puncture (LP) opening pressure as a reliable measure of intracranial pressure in children with severe chronic headache.

There are many limitations with LP pressure measurement as it varies with patient position and level of the manometer. As a “snapshot in time,” it cannot be correlated with symptoms over time, and anesthetic agents can cause false readings. An intracranial monitor (bolt) measures intracranial pressure (ICP) over time as the patient goes about daily activities. Medical and surgical treatment decisions are based on relieving intracranial pressure. Inaccurate pressure readings can lead to unnecessary surgeries such as cranial vault expansion, shunt revisions and placement of lumbar-peritoneal shunts as well as unnecessary medical treatments.

20

Don't order “formal” swallow evaluation in stroke patients unless they fail their initial swallow screen.

Dysphagia (difficulty swallowing) is a common disorder in patients who have suffered a stroke, occurring in 50–60% of acute stroke patients. It is associated with an increased risk of aspiration, pneumonia, prolonged hospital stay, disability, and death. Swallow screening is critical in the rapid identification of risk of aspiration in patients presenting with acute stroke symptoms. Because formal swallowing evaluation is not warranted in all patients with acute stroke, the purpose of a swallowing screen is to identify those who do not need a formal evaluation and who can safely take food and medication by mouth. Formal swallowing evaluations can be done in patients who don't pass the initial screening.

21

Don't routinely use graduated compression stockings in surgical patients as mechanical prophylaxis for preventing venous thromboembolism (VTE) after surgery, but do consider using intermittent pneumatic compression devices.

Thromboembolic disease is a significant cause of complications and mortality in hospitalized patients and a growing public health issue. Although anyone can develop a VTE, research shows that half of the VTE events in the outpatient setting are directly linked to a recent hospitalization. Many of these events can be prevented through pharmacological and/or mechanical VTE prophylaxis. Current guidelines that recommend mechanical devices demonstrate a preference for intermittent pneumatic compression-ipc (IPC) devices with no recommendations for graduated compression stockings (GCS), except for women at high risk for VTE after cesarean delivery. These IPC devices minimize adverse effects to skin, promote patient comfort, and permit clinician assessment compared to graduated compression stockings.

22

Don't apply continuous cardiac-respiratory or pulse oximetry monitoring to children and adolescents admitted to the hospital unless condition warrants continuous monitoring based on objectively scored cardiovascular, respiratory, and behavior parameters.

Nurses use continuous electrocardiography (ECG), respiratory, and pulse oximetry monitoring to track patient vital signs and trends, and to help identify signs of patient status deterioration. However, when pulse oximetry and physiologic monitoring are used inappropriately, significant cost burdens can affect the entire healthcare system. In addition, the high number of alarm alerts and level of noise created by these alarms leads to alarm fatigue. When high levels of false alarms occur in the work environment, clinically significant alarms may be masked by being silenced or unrecognized when clinicians become desensitized. In addition to alarm fatigue, continuous bedside monitoring of pediatric patients can provide a false sense of security that the patient is “safer” and that the nurse will note status changes in a patient more easily when a bedside monitor is used. Continuous bedside monitoring should not be used in place of hourly safety checks. Focused nursing assessments using a standardized early warning tool should be used to monitor changes in a pediatric patient's status to identify deteriorations.

23

Don't routinely repeat labs hemoglobin and hematocrit in the hemodynamically normal pediatric patients with isolated blunt solid organ injury.

Preset timed interval measurements of hemoglobin and hematocrit are no longer indicated as early detectors of instability. Clinical instability is defined by physiologic criteria such as age-specific tachycardia or hypotension, tachypnea, low urine output, altered mental status, or any significant clinical deterioration that warrants increased level of care and investigation. Therefore, the routine use of repeat laboratory studies in children with isolated solid organ injury who have physiologically normal vital signs for their age is not necessary.

24

Don't use physical or chemical restraints, outside of emergency situations, when caring for long-term care residents with dementia who display behavioral and psychological symptoms of distress; instead assess for unmet needs or environmental triggers and intervene using non-pharmacological approaches as the first approach to care whenever possible.

Behavioral and psychological symptoms of distress (BPSD) include aggression, agitation, wandering, disruptive vocalizations, anxiety, apathy, hallucinations, and depression. The majority of people living with dementia will experience these symptoms. They result in poor quality of life, more rapid cognitive and functional decline, high risk for abuse, caregiver burden, and tremendous cost to the US healthcare system. In fact, dementia care is among the most costly of diseases including diabetes, cancer and heart disease; and BPSD account for a staggering 30% of total dementia costs. Despite the high human and dollar costs associated with these symptoms, their treatment continues to challenge practitioners and remains a top research priority in long-term care settings. Because BPSD are often triggered by a change in physical condition, an unmet need or an environment that exceeds the person's stress threshold, it is important that these triggers be addressed as the first line of treatment rather than resorting to physical or chemical restraint, which carry a risk for adverse effects.

25

Don't remove hair at the surgical site including the hair on the patient's head, but if hair must be removed it should be clipped not shaved.

Removing hair at the surgical site has long been believed to be associated with an increased rate of surgical site infections because of razor-induced microtrauma. Specifically, shaving the patient's head prior to neurosurgery can disturb the natural protective effects of hair and skin flora, also causing micro-abrasions to the scalp that can increase the risk of infection. Postoperative wound infections increase the costs and the length of hospital stay. In any type of surgery there are times when hair removal should be considered. For example, during emergent craniotomies or any time a surgeon deems hair removal necessary for the surgical procedure. When hair removal is necessary, hair at the surgical site should be removed by clipping or depilatory methods. A razor should not be used. In a landmark nonexperimental study of 23,649 surgical wounds, Cruse (1973) found a 2.3% infection rate for surgical sites shaved with a razor, 1.7% for sites that were clipped, and 0.9% when no hair removal was performed. Yet shaving hair at the surgical site continues to be practiced. In addition, most patients dread the thought of having the hair on their head removed, and hair shaving can negatively affect their body image.

How This List Was Created

The American Academy of Nursing has convened a workgroup of member fellows who are leaders of professional nursing organizations representing a broad range of clinical expertise, practice settings and patient populations. The workgroup collaboratively identifies nursing/interdisciplinary interventions commonly used in clinical practice that do not contribute to improved patient outcomes or provide high value. An extensive literature search and review of practice guidelines is conducted for each new proposed recommendation for the list. The supporting evidence is then reviewed by the respective nursing organization(s) with the most relevant expertise to each recommendation. The Academy workgroup fellows narrow the recommendations through consensus, based on established criteria. The final recommendations are presented to the American Academy of Nursing's Board of Directors for approval to be added to the Choosing Wisely list created by the Academy.

The American Academy of Nursing's conflict of interests and disclosures policy can be found at www.AANnet.org.

Sources

1

Alfirevic Z, Devane D, Gyte GM. Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour. *Cochrane Database Syst Rev*. 2013 May 31;5:CD006066.

Creedon D, Akkerman D, Atwood L, Bates L, Harper C, Levin A, McCall C, Peterson D, Rose C, Setterlund L, Walkes B, Wingeier R. Management of labor. Bloomington (MN): Institute for Clinical Systems Improvement (ICS); 2013 Mar. 66 p.

Lawrence A, Lewis L, Hofmeyr GJ, Styles C. Maternal positions and mobility during first stage labour. *Cochrane Database Syst Rev*. 2013 Oct 9;10:CD003934.

2

Creditor MC. Hazards of hospitalization in the elderly. *Ann Intern Med*. 1993 Feb 1;118(3):219-23.

Gillis A, MacDonald B. Deconditioning in the hospitalized elderly. *Can Nurse*. 2005 Jun;101(6):16-20.

Kortebein P, Symons TB, Ferrando A, Paddon-Jones D, Ronsen O, Protas E, Conger S, Lombeida J, Wolfe R, Evans WJ. Functional impact of 10 days of bed rest in healthy older adults. *J Gerontol A Biol Sci Med Sci*. 2008 Oct;63(10):1076-81.

Doherty-King B, Bowers B. How nurses decide to ambulate hospitalized older adults: development of a conceptual model. *Gerontologist*. 2011 Dec;51(6):786-97.

Padula CA, Hughes C, Baumhover L. Impact of a nurse-driven mobility protocol on functional decline in hospitalized older adults. *J Nurs Care Qual*. 2009 Oct-Dec;24(4):325-31.

Pashikanti L, Von Ah D. Impact of early mobilization protocol on medical-surgical inpatient population. *Clin Nurse Spec*. 2012 Mar-Apr;26(2):87-94.

3

Bourbonniere M, Strumpf NE, Evans LK, Maislin G. Organizational characteristics and restraint use of hospitalized nursing home residents. *J Am Geriatr Soc*. 2003 Aug;51(8):1079-84.

Evans LK, Cotter VT. Avoiding restraints in patients with dementia: understanding, prevention, and management are the keys. *Am J Nurs*. 2008 Mar;108(3):40-9; quiz 50.

Evans LK, Strumpf NE. Two decades of research on physical restraint: impact on practice and policy. In Hinshaw AS, Grady PA (Eds.), pp. 167-184. *Shaping health policy through nursing research*. New York (NY):Springer.

Minnick AF, Mion LC, Johnson ME, Catrambone C, Leipzig R. Prevalence and variation of physical restraint use in acute care settings in the US. *J Nurs Scholarsh*. 2007;39(1):30-7.

4

Pilkington S. Causes and consequences of sleep deprivation in hospitalized patients. *Nurs Stand*. 2013;27(49):35-42.

Kamdar BB, Needham DM, Collop NA. Sleep deprivation in critical illness: its role in physical and psychological recovery. *J Intensive Care Med*. 2012 Mar-Apr;27(2):97-111.

Kamdar BB, King LM, Collop NA, Sakamuri S, Colantuoni E, Neufeld KJ, Bienvenu OJ, Rowden AM, Touradji P, Brower RG, Needham DM. The effect of a quality improvement intervention on perceived sleep quality and cognition in a medical ICU. *Crit Care Med*. 2013 Mar;41(3):800-9.

5

Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA; Healthcare Infection Control Practices Advisory Committee (HICPCA). Guideline for prevention of Catheter-Associated Urinary Tract Infections 2009. Centers for Disease Control. Atlanta (GA); 2009. 67 p.

Andreessen L, Wilde MH, Herendeen P. Preventing catheter-associated urinary tract infections in acute care: the bundle approach. *J Nurs Care Qual*. 2012 Jul-Sep;27(3):209-17.

Saint S, Greene MT, Kowalski CP, Watson SR, Hofer TP, Krein SL. Preventing catheter-associated urinary tract infection in the United States: a national comparative study. *JAMA Intern Med*. 2013 May 27;173(10):874-9.

Tenke P, Köves B, Johansen TE. An update on prevention and treatment of catheter-associated urinary tract infections. *Curr Opin Infect Dis*. 2014 Feb;27(1):102-7.

6

Aloe [Internet]. Atlanta (GA): American Cancer Society; 2011 Jul 22 [cited 2015 Apr 6]. Available from: <http://www.cancer.org/treatment/treatmentsandsideeffects/complementaryandalternativemedicine/herbsvitaminsandminerals/aloe>

Gosselin TK, Schneider SM, Plambeck MA, Rowe K. A prospective randomized, placebo-controlled skin care study in women diagnosed with breast cancer undergoing radiation therapy. *Oncol Nurs Forum*. 2010 Sep;37(5):619-26.

Heggie S, Bryant GP, Tripcony L, Keller J, Rose P, Glendenning M, Heath J. A phase III study on the efficacy of topical aloe vera gel on irradiated breast tissue. *Cancer Nurs*. 2002 Dec;25(6):442-51.

Kumar S, Juresic E, Barton M, Shafiq J. Management of skin toxicity during radiation therapy: a review of the evidence. *J Med Imaging Radiat Oncol*. 2010 Jun;54(3):264-79.

McQuestion M. Evidence-based skin care management in radiation therapy: clinical update. *Semin Oncol Nurs*. 2011 May;27(2):e1-17.

Merchant TE, Bosley C, Smith J, Baratti P, Pritchard D, Davis T, Li C, Xiong X. A phase III trial comparing an anionic phospholipid-based cream and aloe vera-based gel in the prevention of radiation dermatitis in pediatric patients. *Radiat Oncol*. 2007 Dec 19;2:45.

Olsen DL, Raub W Jr, Bradley C, Johnson M, Macias JL, Love V, Markoe A. The effect of aloe vera gel/mild soap versus mild soap alone in preventing skin reactions in patients undergoing radiation therapy. *Oncol Nurs Forum*. 2001 Apr;28(3):543-7.

Richardson J, Smith JE, McIntyre M, Thomas R, Pilkington K. Aloe vera for preventing radiation-induced skin reactions: a systematic literature review. *Clin Oncol (R Coll Radiol)*. 2005 Sep;17(6):478-84.

Salvo N, Barnes E, van Draanen J, Stacey E, Mitera G, Breen D, Giotis A, Czarnota G, Pang J, De Angelis C. Prophylaxis and management of acute radiation-induced skin reactions: a systematic review of the literature. *Curr Oncol*. 2010 Aug;17(4):94-112.

Schnur JB, Graff Zivin J, Mattson DM Jr, Green S, Jandorf LH, Wernicke AG, Montgomery GH. Acute skin toxicity-related, out-of-pocket expenses in patients with breast cancer treated with external beam radiotherapy: a descriptive, exploratory study. *Support Care Cancer*. 2012 Dec;20(12):3105-13.

Vogler BK, Ernst E. Aloe vera: a systematic review of its clinical effectiveness. *Br J Gen Pract*. 1999 Oct;49(447):823-8.

Williams MS, Burk M, Loprinzi CL, Hill M, Schomberg PJ, Nearhood K, O'Fallon JR, Laurie JA, Shanahan TG, Moore RL, Urias RE, Kuske RR, Engel RE, Eggleston WD. Phase III double-blind evaluation of an aloe vera gel as a prophylactic agent for radiation-induced skin toxicity. *Int J Radiat Oncol Biol Phys*. 1996 Sep 1;36(2):345-9.

7

Albers JW, Chaudhry V, Cavaletti G, Donehower RC. Interventions for preventing neuropathy caused by cisplatin and related compounds. *Cochrane Database Syst Rev.* 2011 Feb 16;(2):CD005228.

Hershman DL, Lacchetti C, Dworkin RH, Lavoie Smith EM, Bleeker J, Cavaletti G, Chauhan C, Gavin P, Lavino A, Lustberg MB, Paice J, Schneider B, Smith ML, Smith T, Terstriep S, Wagner-Johnston N, Bak K, Loprinzi CL; American Society of Clinical Oncology. Prevention and management of chemotherapy-induced peripheral neuropathy in survivors of adult cancers: American Society of Clinical Oncology clinical practice guideline. *J Clin Oncol.* 2014 Jun 20;32(18):1941-67.

Hershman DL, Unger JM, Crew KD, Minasian LM, Awad D, Moinpour CM, Hansen L, Lew DL, Greenlee H, Fehrenbacher L, Wade JL 3rd, Wong SF, Hortobagyi GN, Meyskens FL, Albain KS. Randomized double-blind placebo-controlled trial of acetyl-L-carnitine for the prevention of taxane-induced neuropathy in women undergoing adjuvant breast cancer therapy. *J Clin Oncol.* 2013 Jul 10;31(20):2627-33.

Peripheral Neuropathy [Internet]. Pittsburgh (PA): Oncology Nursing Society; 2015 [cited 2015 Apr 6]. Available from: <https://www.ons.org/practice-resources/pep/peripheral-neuropathy>.

8

Bower JE, Bak K, Berger A, Breitbart W, Escalante CP, Ganz PA, Schnipper HH, Lacchetti C, Ligibel JA, Lyman GH, Ogaily MS, Pirl WF, Jacobsen PB; American Society of Clinical Oncology. Screening, assessment, and management of fatigue in adult survivors of cancer: an American Society of Clinical Oncology clinical practice guideline adaptation. *J Clin Oncol.* 2014 Jun 10;32(17):1840-50.

Fulcher CD, Kim HJ, Smith PR, Sherner TL. Putting evidence into practice: evidence based interventions for depression. *Clin J Oncol Nurs.* 2014 Dec;18 Suppl:26-37.

Mitchell SA, Hoffman AJ, Clark JC, DeGennaro RM, Poirier P, Robinson CB, Weisbrod BL. Putting evidence into practice: an update of evidence-based interventions for cancer-related fatigue during and following treatment. *Clin J Oncol Nurs.* 2014 Dec;18 Suppl:38-58.

NCCN clinical practice guidelines in oncology: cancer-related fatigue [v.1.2014]. Fort Washington (PA): National Comprehensive Cancer Network; 2014.

Schmitz KH, Courneya KS, Matthews C, Demark-Wahnefried W, Galvão DA, Pinto BM, Irwin ML, Wolin KY, Segal RJ, Lucia A, Schneider CM, von Gruenigen VE, Schwartz AL; American College of Sports Medicine. American College of Sports Medicine roundtable on exercise guidelines for cancer survivors. *Med Sci Sports Exerc.* 2010 Jul;42(7):1409-26.

Fatigue [Internet]. Pittsburgh (PA): Oncology Nursing ; 2015 [cited 2015 Apr 6]. Available from: <https://www.ons.org/practice-resources/pep/fatigue>.

9

Dodd MJ, Dibble SL, Miaskowski C, MacPhail L, Greenspan D, Paul SM, Shiba G, Larson P. Randomized clinical trial of the effectiveness of 3 commonly used mouthwashes to treat chemotherapy-induced mucositis. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2000 Jul;90(1):39-47.

Eilers J, Harris D, Henry K, Johnson LA. Evidence-based interventions for cancer treatment-related mucositis: putting evidence into practice. *Clin J Oncol Nurs.* 2014 Dec;18 Suppl:80-96.

Kuk, JS, Parpia S, Sagar SM, Tsakiridis T, Kim D, Hodson DI, Zywine C, Wright JR. A randomized phase III trial of magic mouthwash and sucralfate versus benzydamine hydrochloride for prophylaxis of radiation-induced oral mucositis in head and neck cancer. *J Clin Oncol.* 2011 May 20 ASCO Annual Meeting Abstracts Part 1:29(15):5521.

Lalla RV, Bowen J, Barasch A, Elting L, Epstein J, Keefe DM, McGuire DB, Migliorati C, Nicolatou-Galitis O, Peterson DE, Raber-Durlacher JE, Sonis ST, Elad S; Mucositis Guidelines Leadership Group of the Multinational Association of Supportive Care in Cancer and International Society of Oral Oncology (MASCC/ISOO). MASCC/ISOO clinical practice guidelines for the management of mucositis secondary to cancer therapy. *Cancer.* 2014 May 15;120(10):1453-61.

Peterson DE, Bensadoun RJ, Roila F; ESMO Guidelines Working Group. Management of oral and gastrointestinal mucositis: ESMO Clinical Practice Guidelines. *Ann Oncol.* 2010 May;21 Suppl 5:v261-5.

Mucositis [Internet]. Pittsburgh (PA): Oncology Nursing; 2015 [cited 2015 Apr 6]. Available from: <https://www.ons.org/practice-resources/pep/mucositis>.

10

Abernethy AP, McDonald CF, Frith PA, Clark K, Herndon JE 2nd, Marcello J, Young IH, Bull J, Wilcock A, Booth S, Wheeler JL, Tulsy JA, Crockett AJ, Currow DC. Effect of palliative oxygen versus room air in relief of breathlessness in patients with refractory dyspnoea: a double-blind, randomised controlled trial. *Lancet.* 2010 Sep 4;376(9743):784-93.

Ben-Aharon I, Gafter-Gvili A, Leibovici L, Stemmer SM. Interventions for alleviating cancer-related dyspnea: a systematic review and meta-analysis. *Acta Oncol.* 2012 Nov;51(8):996-1008.

Clemens KE, Quednau I, Klaschik E. Use of oxygen and opioids in the palliation of dyspnoea in hypoxic and non-hypoxic palliative care patients: a prospective study. *Support Care Cancer.* 2009 Apr;17(4):367-77.

Kvale PA, Selecky PA, Prakash UB; American College of Chest Physicians. Palliative care in lung cancer: ACCP evidence-based clinical practice guidelines (2nd edition). *Chest.* 2007 Sep;132(3 Suppl):368S-403S.

Parshall MB, Schwartzstein RM, Adams L, Banzett RB, Manning HL, Bourbeau J, Calverley PM, Gift AG, Harver A, Lareau SC, Mahler DA, Meek PM, O'Donnell DE; American Thoracic Society Committee on Dyspnea. An official American Thoracic Society statement: update on the mechanisms, assessment, and management of dyspnea. *Am J Respir Crit Care Med.* 2012 Feb 15;185(4):435-52.

Uronis HE, Currow DC, McCrory DC, Samsa GP, Abernethy AP. Oxygen for relief of dyspnoea in mildly- or non-hypoxaemic patients with cancer: a systematic review and meta-analysis. *Br J Cancer.* 2008 Jan 29;98(2):294-9.

Dyspnea [Internet]. Pittsburgh (PA): Oncology Nursing; 2015 [cited 2015 Apr 6]. Available from: <https://www.ons.org/practice-resources/pep/dyspnea>

11

Non-medically indicated induction and augmentation of labor. *J Obstet Gynecol Neonatal Nurs.* 2014 Sep-Oct;43(5):678-81.

Bugg GJ, Siddiqui F, Thornton JG. Oxytocin versus no treatment or delayed treatment for slow progress in the first stage of spontaneous labour. *Cochrane Database Syst Rev.* 2013 Jun 23;6:CD007123.

Goer H, Roman A, Sakala A. Childbirth Connection. Vaginal or cesarean birth: What is at stake for women and babies? New York (NY): Childbirth Connection; 2012. 52 p. Available from: <http://transform.childbirthconnection.org/reports/cesarean/>.

Institute for Safe Medication Practices. ISMP's list of high-alert medications. ISMP Medication Safety Alert. 2007;5(8)1-4. Available from: <http://www.ismp.org/Newsletters/nursing/Issues/NurseAdviseERR200708.pdf>.

Martin JA, Hamilton BE, Ventura SJ, Osterman MJ, Wilson EC, Mathews TJ. Births: final data for 2010. *Natl Vital Stat Rep.* 2012 Aug 28;61(1):1-72.

Moore J, Low LK. Factors that influence the practice of elective induction of labor: what does the evidence tell us? *J Perinat Neonatal Nurs.* 2012 Jul-Sep;26(3):242-50.

Moore JE, Low LK, Tittler MG, Dalton VK, Sampsel CM. Moving toward patient-centered: women's decisions, perceptions, and experiences of the induction of labor process. *Birth.* 2014 Jun;41(2):138-46.

Zhang J, Troendle J, Reddy UM, Laughon SK, Branch DW, Burkman R, Landy HJ, Hibbard JU, Haberman S, Ramirez MM, Bailit JL, Hoffman MK, Gregory KD, Gonzalez-Quintero VH, Kominiarek M, Learman LA, Hatjis CG, van Veldhuisen P; Consortium on Safe Labor. Contemporary cesarean delivery practice in the United States. *Am J Obstet Gynecol.* 2010 Oct; 203(4), 326.e1–326.e10.

12

Opioid abuse, dependence, and addiction in pregnancy. ACOG committee opinion number 524. Washington (DC): American College of Obstetricians and Gynecologists. 2012 May. Available from: <http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Health-Care-for-Underserved-Women/Opioid-Abuse-Dependence-and-Addiction-in-Pregnancy>.

Criminalization of pregnant women with substance use disorders. *J Obstet Gynecol Neonatal Nurs*. 2015 Jan-Feb; 44(1), 155–7.

Medication use in pregnancy: a public health concern. Atlanta (GA): Centers for Disease Control and Prevention. 2015 Jan 16 [cited 2016 May 15]. Available from: <http://www.cdc.gov/pregnancy/meds/treatingfortwo/facts.html>.

Opioid painkillers widely prescribed among reproductive age women. Atlanta (GA): Centers for Disease Control and Prevention. 2015 Jan 22 [cited 2016 May 22]. Available from: <http://www.cdc.gov/media/releases/2015/p0122-pregnancy-opioids.html>.

Patrick SW, Schumacher RE, Benneyworth BD, Krans EE, McAllister JM, Davis MM. Neonatal abstinence syndrome and associated health care expenditures: United States, 2000-2009. *JAMA*. 2012 May 9;307(18):1934-40.

Addressing prescription drug abuse in the United States: current activities and future opportunities. Washington (DC): Department of Health and Human Services. 2013 Sep. 36 p.

Volkow ND. Prescription opioid and heroin use. Bethesda (MD): National Institute on Drug Abuse. 2014 Apr.

Whiteman VE, Salemi JL, Mogos MF, Cain MA, Aliyu MH, Salihu HM. Maternal opioid drug use during pregnancy and its impact on perinatal morbidity, mortality, and the costs of medical care in the United States. *J Pregnancy*. 2014:906723.

13

Section on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics*. 2012 Mar;129(3):e827-41.

AWHONN position statement. Breastfeeding. *J Obstet Gynecol Neonatal Nurs*. 2015 Jan-Feb; 44(1):145-50.

Brodribb W, Kruske S, Miller YD. Baby-friendly hospital accreditation, in-hospital care practices, and breastfeeding. *Pediatrics*. 2013 Apr;131(4):685-92.

Conde-Agudelo A, Díaz-Rossello L. Kangaroo mother care to reduce morbidity and mortality in low birth weight infants. *Cochrane Database Syst Rev*. 2014 Apr 22;4:CD002771.

Marín Gabriel MA, Llana Martín I, López Escobar A, Fernández Villalba E, Romero Blanco I, Touza Pol P. Randomized controlled trial of early skin-to-skin contact: effects on the mother and the newborn. *Acta Paediatr*. 2010 Nov;99(11):1630-4.

Moore ER, Anderson GC. Randomized controlled trial of very early mother-infant skin-to-skin contact and breastfeeding status. *J Midwifery Womens Health*. 2007 Mar-Apr;52(2):116-25.

Moore ER, Anderson GC, Bergman N. Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database Syst Rev*. 2007 Jul 18;(3):CD003519.

Breastfeeding key to saving children's lives: ten steps to successful breastfeeding highlighted during World Breastfeeding Week. Geneva (Switzerland): World Health Organization. 2010 Jul 30. Available from: http://www.who.int/mediacentre/news/notes/2010/breastfeeding_20100730/en/.

14

American Geriatrics Society abstracted clinical practice guideline for postoperative delirium in older adults. *J Am Geriatr Soc*. 2015 Jan;63(1):142-50.

Diagnostic and statistical manual of mental disorders. (5th ed.). Washington (DC): American Psychiatric Association. 2013.

Barr J, Fraser GL, Puntillo K, Ely EW, Gélinas C, Dasta JF, Davidson JE, Devlin JW, Kress JP, Joffe AM, Coursin DB, Herr DL, Tung A, Robinson BR, Fontaine DK, Ramsay MA, Riker RR, Sessler CN, Pun B, Skrobik Y, Jaeschke R; American College of Critical Care Medicine. Clinical practice guidelines for the management of pain, agitation, and delirium in adult patients in the intensive care unit. *Crit Care Med*. 2013 Jan;41(1):263-306.

Campbell N, Boustani MA, Ayub A, Fox GC, Munger SL, Ott C, Guzman O, Farber M, Ademuyiwa A, Singh R. Pharmacological management of delirium in hospitalized adults—a systematic evidence review. *J Gen Intern Med*. 2009 Jul;24(7):848-53.

By the American Geriatrics Society 2015 Beers Criteria Update Expert Panel. American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. *J Am Geriatr Soc*. 2015 Nov;63(11):2227-46.

Hawkins SB, Bucklin M, Muzyk AJ. Quetiapine for the treatment of delirium. *J Hosp Med*. 2013 Apr;8(4):215-20.

Inouye SK, Marcantonio ER, Metzger ED. Doing damage in delirium: the hazards of antipsychotic treatment in elderly persons. *Lancet Psychiatry*. 2014 Sep 1;1(4):312-5.

15

Voyer P, Champoux N, Desrosiers J, Landreville P, McCusker J, Monette J, Savoie M, Richard S, Carmichael PH. Recognizing acute delirium as part of your routine [RADAR]: a validation study. *BMC Nurs*. 2015 Apr 1;14:19.

Inouye SK, Westendorp RG, Saczynski JS. Delirium in elderly people. *Lancet*. 2014 Mar 8;383(9920):911-22.

Fick DM, Steis MR, Waller JL, Inouye SK. Delirium superimposed on dementia is associated with prolonged length of stay and poor outcomes in hospitalized older adults. *J Hosp Med*. 2013 Sep;8(9):500-5.

Steis MR, Fick DM. Delirium superimposed on dementia: accuracy of nurse documentation. *J Gerontol Nurs*. 2012 Jan;38(1):32-42.

Kolanowski AM, Fick DM, Yevchak AM, Hill NL, Mulhall PM, McDowell JA. Pay attention! The critical importance of assessing attention in older adults with dementia. *J Gerontol Nurs*. 2012 Nov 15;38(11):23-7.

Leslie DL, Inouye SK. The importance of delirium: economic and societal costs. *J Am Geriatr Soc*. 2011 Nov; 59 Suppl 2:S241-3.

Williams KN, Herman RE. Linking resident behavior to dementia care communication: effects of emotional tone. *Behav Ther*. 2011 Mar;42(1):42-6. doi: 10.1016/j.beth.2010.03.003. Epub 2010 Oct 1.

Fick DM, Hodo DM, Lawrence F, Inouye SK. Recognizing delirium superimposed on dementia: assessing nurses' knowledge using case vignettes. *J Gerontol Nurs*. 2007 Feb;33(2):40-7.

16

Tekes A, Jackson EM, Ogborn J, Liang S, Bledsoe M, Durand DJ, Jallo G, & Huisman TAGM. How to reduce head CT orders in children with hydrocephalus using the lean six sigma methodology: experience at a major quaternary care academic children's center. *Am J Neurorad*. 2016; jan 21, 2016 as 10.3174/ajnr.A4658.

Brenner D, Elliston C, Hall E, Berdon W. Estimated risks of radiation-induced fatal cancer from pediatric CT. *AJR Am J Roentgen* 2001;176(2):289-96.

Hall EJ, Brenner DJ. Cancer risks from diagnostic radiology. *Br J Radiol* 2008;81:362–78.

Miglioretti DL, Johnson E, Williams A, Greenlee RT, Weinmann S, Solberg LI, Feigelson HS, Roblin D, Flynn MJ, Vanneman N, Smith-Bindman R. The use of computed tomography in pediatrics and the associated radiation exposure and estimated cancer risk. *JAMA Pediatr*. 2013;167(8):700-707. doi:10.1001/jamapediatrics.2013.311.

Pearce MS, Salotti JA, Little MP, et al. Radiation exposure from CT scans in childhood and subsequent risk of leukemia and brain tumours: a retrospective cohort study. *The Lancet* 2012;380:499 – 505.

Ashley WW, McKinstry RC, Leonard JR, Smyth MD, Lee BC, & Park TS. Use of rapid-sequence magnetic resonance imaging for evaluation of hydrocephalus in children. *Journal of Neurosurgery: Pediatrics*. 2005. Vol. 103(2), 124-130.

O'Neill BR, Pruthi S, Bains H, Robison R, Ojemann J, Ellenbogen R, Avellino A, Browd S. Rapid sequence magnetic resonance imaging in the assessment of children with hydrocephalus. *World Neurosurgery*, 2013; 80(6), e307-e312.

17

- American Academy of Pediatrics Subcommittee on Febrile Seizures. (2011). Febrile seizures: guidelines for the neurodiagnostic evaluation of the child with a simple febrile seizure. *Pediatrics*, 127 (2), 389-394.
- El-Radhi, A., Sahib, A. (2015). Management of seizures in children. *British Journal of Nursing*. 24 (3), 152-155.
- Graves, R.C., Oehler, K., Tingle, L.E. (2012) Febrile seizures: risks, evaluation, and prognosis. *American Family Physician*. 15(85), 149-153.
- Harini, C., Nagarajan, E., Kimia, A., de Carvalho, R., An, S., Bergin, A., Takeoka, M., Pearl, P., Loddenkemper, T. (2015) Utility of initial EEG in first complex febrile seizure. *Epilepsy and Behavior*. 52 (PT A), 200-204.
- Oluwabusi, T., Sood, S.K. (2012) Update on the management of simple febrile seizures: Emphasis on minimal intervention. *Current Opinion in Pediatrics*. 24 (2) 259-265.

18

- Brallier, J., Deiner, S. (2015) The elderly spine surgery patient: pre and intraoperative management of drug therapy. *Drugs & Aging* 32(8) 601-9
- Choma, T., Rehtine, G., McGuire, R., Brodke, D. (2015) Treating the aging spine. *Journal of American Academy of Orthopedic Surgeons*. 23(12) 91-100.
- Epstein, N.E. (2011) Spine surgery in geriatric patients: sometimes unnecessary, too much, or too little. *Surgical Neurology International*. 2, 188-194.
- Garrido, M.M., Prigerson, H.G., Penrod, J.D., Jones, S.C., Boockvar, K.S. (2014). Benzodiazepine and sedative-hypnotic use among older seriously ill veterans: Choosing wisely? *Clinical Therapeutics*. 36(11) 1547-1554.
- Huang, A.R., Mallet, L., Rochefort, C.M., Eguale, T., Buckeridge, D.L., Tamblyn, R. (2012) Medication related falls in the elderly: causative factors and preventive strategies. *Drugs & Aging*. 29(9) 359-376.
- Neutel, C.I., Perry, S., Maxwell, C. (2002) Medication use and risk of falls. *Pharmacoepidemiology Drug Safety*. 11(2)97-104.

19

- Baird LC, Gonda D, Cohen SR, Evers LJ, LeFloch N, Levy ML, Meltzer HS. "Craniofacial reconstruction as a treatment for elevated intracranial pressure." *Child's Nervous System*. 2012; 28(3):411-418.
- Cartwright CC & Igbaseimokumo U. "Lumbar puncture opening pressure is not a reliable measure of intracranial pressure in children." *Journal of Child Neurology*. 2014; 30(2):170-3.
- Eidlitz-Markus T, Stiebel-Kalish H, Rubin Y, Shuper A. CSF pressure measurement during anesthesia: an unreliable technique. *Paediatric Anaesthesia*. 2005; 15:1078-1082.
- Horton CH. "Continuous intracranial pressure monitoring: a last resort in pseudotumor cerebri." *Journal of Neuro-Ophthalmology*. 2011; 31:199-201.
- Warden KF, Alizai AM, Trobe JD, Hoff JT. Short-term continuous intraparenchymal intracranial pressure monitoring in presumed idiopathic intracranial hypertension. *Journal of Neuroophthalmology*. 2011; 31:202-205.
- Wiegand C & Richards P. "Measurement of intracranial pressure in children: a critical review of current methods." *Developmental Medicine and Child Neurology*. 2007; 49:935-941.

20

- Jauch, E., Saver, J., Adams, H., Bruno, A., Connors, J., Demaerschalk, B., Khatri, P., et al. (2013) AHA / ASA guidelines for the early management of patients with acute ischemic stroke: A guideline for healthcare professionals from the American Heart Association / American Stroke Association. *Stroke*. 44, 870-947.
- Kenmuir, C., Hammer, M., Tudor, J., Reddy, V., Wechsler, L., Jadhav, A., (2015). Predictors of outcome in patients presenting with acute ischemic stroke and mild stroke scale scores. *Journal of Stroke and Cerebrovascular Disease*. 24(7) 1685-1689.
- Martino, R., Maki, E., Diamant, N. (2014) Identification of dysphagia using the Toronto Bedside Swallowing Screening Test (TOR-BSST): Are 10 teaspoons of water necessary? *International Journal of Speech-Language Pathology*. 16 (3): 193-198.
- Schepp, S., Tirschewill, D., Miller, R., Longstreth, W. (2012) Swallowing screens after acute stroke: A systematic review. *Stroke*. 43, 869-871.
- Summers, D. Leonard, A., Wentworth, D., Saver, J., Simpson, J., Spilker, J., Hock, N...et al. (2009). Comprehensive overview of nursing and interdisciplinary care of the acute ischemic stroke patient. A scientific statement from the American Heart Association. *Stroke*. 40, 1-35.

21

- Dunn N, Ramos R. Preventing Venous Thromboembolism: The Role of Nursing With Intermittent Pneumatic Compression. *Am J Crit Care*. 2017 Mar; 26(2):164-167.
- Guyatt GH, Akl EA, Crowther M, Gutterman DD, Schünemann HJ; American College of Chest Physicians Antithrombotic Therapy and Prevention of Thrombosis Panel. Executive summary: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. 2012 Feb; 141(2 Suppl):7S-47S.
- Kakkos SK, Caprini JA, Geroulakos N, Stansby G, Reddy DJ, Ntouvas I. Combined intermittent compression and pharmacologic prophylaxis for prevention of venous thromboembolism. *Cochrane Database of Systematic Review*. 2016, Issue 9. No: CD005258.
- Qaseem A, Chou R, Humphrey LL, Starkey M, Shekelle P; Clinical Guidelines Committee of the American College of Physicians. Venous thromboembolism prophylaxis in hospitalized patients: a clinical practice guideline from the American College of Physicians. *Ann Intern Med*. 2011 Nov 1;155(9):625-32.
- Raskob GE, Silverstein R, Bratzler DW, Heit JA, White RH. Surveillance for deep vein thrombosis and pulmonary embolism: recommendations from a national workshop. *Am J Prev Med*. 2010 Apr;38 (4 Suppl): S502-9.

22

- Fuijkschot, J., Vernhout, B., & Lemson, J., Draaisma, J., (2015). Validation of a Paediatric Early Warning Score: first results and implications of usage. *European Journal of Pediatrics*, 174(1), 15-21. doi:10.1007/s00431-014-2357-8
- Gazarian, P. K. (2014). Nurses' response to frequency and types of electrocardiography alarms in a non-critical care setting: a descriptive study. *Int J Nurs Stud*, 51(2), 190-197. doi:10.1016/j.ijnurstu.2013.05.014
- Karnik, A., Bonafide, C.P. (2015). A framework for reducing alarm fatigue on pediatric inpatient units. *Hospital Pediatrics*, 5(3), 160-163.
- Murray, J. S. W., L.A.; Pignataro, S.; Volpe, D. (2015). An integrative review of pediatric early warning system scores. *Pediatric Nursing*, 41(4), 165-174.
- Sendelbach, S., Wahl, S., Anthony, A., & Shotts, P. (2015). Stop the Noise: A Quality Improvement Project to Decrease Electrocardiographic Nuisance Alarms. *Crit Care Nurse*, 35(4), 15-22; quiz 11p following 22. doi:10.4037/ccn2015858
- Watkins, T., Whisman, L., & Booker, P. (2016). Nursing assessment of continuous vital sign surveillance to improve patient safety on the medical/surgical unit. *J Clin Nurs*, 25(1-2), 278-281. doi:10.1111/jocn.13102

23

- Acker S, Petrun B, Partrick D, Roosevelt, G, Bensard D. Lack of utility of repeat monitoring of hemoglobin and hematocrit following blunt solid organ injury in children. *J Trauma Acute Care Surg*. 2015; 79: 991-994.
- Fallon S, Delemos D, Akinkuotu A, Christopher D, Naik-Mathuria B. The use of an institutional pediatric abdominal trauma protocol improves resource use. *J Trauma Acute Care Surg*. 2016; 80: 57-63.
- Golden J, Mitchell I, Kuzniewski S, Lipskar A, Prince J, Bank A, Stylianos S, Rosen G. Reducing scheduled phlebotomy in stable pediatric patients with blunt liver or spleen injury. *J Pediatr Surg*. 2014; 49: 759-762.
- Holmes JF, Lillis K, Monroe D, Borgianni D, Kerrey B, Mahajn P, Adegas K, Ellison A, Yen K, Atabaki S, Menaker J, Bonsu B, Quayle KS, Garcia M, Rogers A, Blumber S, Lee L, Tunik M, Kooistra J, Kowk M, Cook L, Dean JM, Sokolove PE, Wisne DH, Ehrlich P, Cooper A, Dayan PS, Wootton-Geroges S, Kuppermann N, Pediatric Emergency Care Applied Research Network (PECARN). Identifying children at very low risk of clinically important blunt abdominal injuries. *Ann Emerg Med*. 2013; 107-116.

24

- Evans, L. K., & Strumpf, N. E. (1989). Tying down the elderly. A review of the literature on physical restraint. *Journal of the American Geriatrics Society*, 37(1), 65-74.
- Kales, H. C., Gitlin, L. N., Lyketsos, C. G., & Detroit Expert Panel on Assessment and Management of Neuropsychiatric Symptoms of Dementia. (2014). Management of neuropsychiatric symptoms of dementia in clinical settings: Recommendations from a multidisciplinary expert panel. *Journal of the American Geriatrics Society*, 62(4), 762-769. doi:10.1111/jgs.12730
- Kolanowski, A. M., Litaker, M., Buettner, L., Moeller, J., & Costa, P. (2011). A Randomized Clinical Trial of Theory-based Activities for the Behavioral Symptoms of Dementia in Nursing Home Residents. *Journal of The American Geriatrics Society*, 59(6), 1032-1041.
- Kovach, C. R., Logan, B. R., Joosse, L. L., & Noonan, P. E. (2012). Failure to identify behavioral symptoms of people with dementia and the need for follow-up physical assessment. *Research in Gerontological Nursing*, 5(2), 89-93. doi:10.3928/19404921-20110503-01
- Kovach, C. R., Logan, B. R., Noonan, P. E., Schlidt, A. M., Smerz, J., Simpson, M., & Wells, T. (2006). Effects of the Serial Trial Intervention on discomfort and behavior of nursing home residents with dementia. *American Journal of Alzheimer's Disease and Other Dementias*, 21(3), 147-155. doi:10.1177/1533317506288949
- Maust, D. T., Kim, H. M., Seyfried, L. S., Chiang, C., Kavanagh, J., Schneider, L. S., & Kales, H. C. (2015). Antipsychotics, other psychotropics, and the risk of death in patients with dementia: Number needed to harm. *JAMA Psychiatry*, 72(5), 438-445. doi:10.1001/jamapsychiatry

25

- Cruse, P.J. A five-year prospective study of 23,649 surgical wounds. *Arch Surg*. 1973;107(2):206–210.
- National Institute for Health and Care Excellence. (2013). Surgical site infection. Quality standard [QS49]. Retrieved from <https://www.nice.org.uk/Guidance/QS49>
- Sebastian, S. (2012). Does preoperative scalp shaving result in fewer postoperative wound infections when compared with no scalp shaving? A systematic review. *J Neurosc Nurs*. 44(3):149-156.
- Tanner J, Norrie P, Melen K. Preoperative hair removal to reduce surgical site infection. *Cochrane Database Syst Rev*. 2011;11:CD004122.
- Tanner, J., Moncaster, K., & Woodings, D. "Preoperative Hair Removal: A Systematic Review". *Journal of Perioperative Practice* 17.3 (2007): 118-121, 124-132. Print.
- WHO: Patient Safety. WHO Guidelines for Safe Surgery. 2009.

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The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.



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For more information or to see other lists of Things Providers and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't perform preoperative medical tests for eye surgery unless there are specific medical indications.

For many, preoperative tests are not necessary because eye surgeries are not lengthy and don't pose serious risks. An EKG should be ordered if patients have heart disease. A blood glucose test should be ordered if patients have diabetes. A potassium test should be ordered if patients are on diuretics. In general, patients scheduled for surgery do not need medical tests unless the history or physical examination indicate the need for a test, e.g., the existence of conditions noted above. Institutional policies should consider these issues.

2

Don't routinely order imaging tests for patients without symptoms or signs of significant eye disease.

If patients do not have symptoms or signs of significant disease pathology, then clinical imaging tests are not generally needed because a comprehensive history and physical examination will usually reveal if eye disease is present or is getting worse. Examples of routine imaging include: visual-field testing; optical coherence tomography (OCT) testing; retinal imaging of patients with diabetes; and neuroimaging or fundus photography. If symptoms or signs of disease are present, then imaging tests may be needed to evaluate further and to help in treatment planning.

3

Don't order antibiotics for adenoviral conjunctivitis (pink eye).

Adenoviral conjunctivitis and bacterial conjunctivitis are different forms of infection that can be diagnosed by the ophthalmologist by clinical signs and symptoms, and if needed, by cultures. Antibiotics are useful for patients with bacterial conjunctivitis, particularly those with moderate to severe bacterial conjunctivitis. However, they are not useful for adenoviral conjunctivitis, and the overuse of antibiotics can lead to the emergence of bacteria that don't respond readily to available treatments. In cases of diagnostic uncertainty, patients may be followed closely to see if their condition resolves on its own, or if further treatment is required.

4

Don't routinely provide antibiotics before or after intravitreal injections.

The routine use of antibiotics before or after intravitreal injections is unnecessary because research has shown that topical antibiotics don't prevent the occurrence of eye infection. The risks of antibiotic eye drops include allergic reactions. The overuse and repeated exposure to antibiotics can lead to the emergence of bacteria that don't respond readily to available treatments. Routine antisepsis is appropriate and important for prevention of eye infection.

5

Don't place punctal plugs for mild dry eye before trying other medical treatments.

Medical treatments to address dry eye are available, such as artificial tears, lubrication and hot, moist compresses. These medical methods, as well as ways to modify the environment, should be tried first to improve dry eye and normalize the tear film before using punctal plugs. If the patient's tear film and eyelids have been treated and dry eye symptoms persist, then punctal plugs can be added.

How This List Was Created

The American Academy of Ophthalmology's Medical Director of Health Policy and Health Policy Committee led the Academy's list development process. Members of the Health Policy Committee initially identified potential recommendations based on relevance, appropriateness and potential for improvement and efficiency. Through society notifications and newsletter notices, other ophthalmic organizations and subspecialty societies and members were invited to offer feedback and recommend ideas to be included in the final recommendations. Health Policy Committee members and the Medical Director of Health Policy reviewed the ideas and supporting evidence, and ranked them in order of potential impact. The top five recommendations were presented to the Academy's Board of Trustees for approval.

The American Academy of Ophthalmology's disclosure and conflict of interest policy can be found at www.aao.org.

Sources

- Schein OD, Katz J, Bass EB, Tielsch JM, Lubomski LH, Feldman MA, Petty BG, Steinberg EP. The value of routine preoperative medical testing before cataract surgery. *N Engl J Med* [Internet]. 2000;342:168-75.
- Keay L, Lindsley K, Tielsch J, Katz J, Schein O. Routine preoperative medical testing for cataract surgery. *Cochrane Database Syst Rev*. 2012, Issue 3. Art. No.: CD007293. DOI: 10.1002/14651858.CD007293.pub3.
- Bartley GB, Narr BJ. Preoperative medical examinations for patients undergoing ophthalmic surgery. *Am J Ophthalmol* 1991; 112(6):725-7.
- Keay L, Lindsley K, Tielsch J, Katz J, Schein O. Routine preoperative medical testing for cataract surgery. *Cochrane Database of Syst Rev*. 2009, Issue 2. Art. No.: CD007293. DOI: 10.1002/14651858.CD007293.pub2.
- Imasogie N, Wong DT, Luk K, Chung F. Elimination of routine testing in patients undergoing cataract surgery allows substantial savings in laboratory costs. A brief report. *Can J Anesth* [Internet]. 2003; 50(3):246-8.
- Bass EB, Steinberg EP, Luthra R, Tielsch JM, Jowitt JC, Shoukey PD, Petty BG, Feldman MA, Steinwachs DM. Do ophthalmologists, anesthesiologists and internists agree about preoperative testing in healthy patients undergoing cataract surgery? *Arch Ophthalmol* [Internet]. 1995;113(10):1248-56.
- American Academy of Ophthalmology Preferred Practice Patterns Committee. Preferred Practice Pattern® Guidelines. Comprehensive Adult Medical Eye Evaluation [Internet]. San Francisco, CA: American Academy of Ophthalmology;2010 [cited 2012 28 Sep]. Available from: one.aao.org/CE/PracticeGuidelines/PPP_Content.aspx?cid=64e9df91-dd10-4317-8142-6a87eee7f517.
- American Academy of Ophthalmology Retina Panel. Preferred Practice Pattern® Guidelines. Idiopathic Macular Hole [Internet]. San Francisco, CA: American Academy of Ophthalmology; 2008 [cited 2012 28 Sep]. Available from: one.aao.org/CE/PracticeGuidelines/PPP_Content.aspx?cid=6f2be59d-6481-4c64-9a3e-8d1dabec9ffa.
- American Academy of Ophthalmology Retina Panel. Preferred Practice Pattern® Guidelines. Age-Related Macular Degeneration [Internet]. San Francisco, CA: American Academy of Ophthalmology; 2008 [cited 2012 28 Sep]. Available from: one.aao.org/CE/PracticeGuidelines/PPP_Content.aspx?cid=f413917a-8623-4746-b441-f817265eafb4.
- American Academy of Ophthalmology Retina Panel. Preferred Practice Pattern® Guidelines. Diabetic Retinopathy [Internet]. San Francisco, CA: American Academy of Ophthalmology; 2008 [cited 2012 28 Sep]. Available from: one.aao.org/CE/PracticeGuidelines/PPP_Content.aspx?cid=d0c853d3-219f-487b-a524-326ab3cccd9a.
- Javitt JC, Canner JK, Frank RG, Steinwachs DM, Sommer A. Detecting and treating retinopathy in patients with Type 1 diabetes mellitus – A health policy model. *Ophthalmology*. 1990;97(4):483-95.
- Khalaf SS, Al-bdour MD, Al-Til MI. Clinical biomicroscopy versus fluorescein angiography: effectiveness and sensitivity in detecting diabetic retinopathy. *E J Ophthalmol*. 2007;17(1):84–88.
- McDonald HR, Williams GA, Scott IU, Haller JA, Maguire MA, Marcus DM. Laser scanning imaging for macular disease: a report by the American Academy of Ophthalmology. *Ophthalmology* [Internet]. 2007;114:1221-8.
- Wilkinson CP. The clinical examination. Limitations and overutilization of angiographic services. *Ophthalmology*. 1986;93(3):401-4.
- Wykes WN, Livesay S. Review of fluorescein angiographs performed in one year. *Brit J Ophthalmol* [Internet].1991;75(7):398–400.
- Macular Photocoagulation Study Group. Argon laser photocoagulation for neovascular maculopathy. Five-year results from randomized clinical trials. *Arch Ophthalmol* [Internet]. 1991;109(8):1109-14.
- Macular Photocoagulation Study Group. Laser photocoagulation of subfoveal neovascular lesions of age-related macular degeneration. Updated findings from two clinical trials. *Arch Ophthalmol* [Internet]. 1993;111(9):1200-9.
- Macular Photocoagulation Study Group. Laser photocoagulation for juxtafoveal choroidal neovascularization. Five-year results from randomized clinical trials. *Arch Ophthalmol* [Internet]. 1994;112(4):500-9.
- Early Treatment Diabetic Retinopathy Study Research Group. Photocoagulation for diabetic macular edema. Early Treatment Diabetic Retinopathy Study report number 1. *Arch Ophthalmol* [Internet]. 1985;103(12):1796-806.
- Early Treatment Diabetic Retinopathy Study Research Group. Focal photocoagulation treatment of diabetic macular edema. Relationship of treatment effect to fluorescein angiographic and other retinal characteristics at baseline: ETDRS report number 19. *Arch Ophthalmol* [Internet]. 1995;113(9):1144-55.
- American Academy of Ophthalmology Retina Panel. Preferred Practice Pattern® Guidelines. Conjunctivitis - Limited revision [Internet]. San Francisco, CA: American Academy of Ophthalmology; 2011 [cited 2012 Sep 28]. Available from: www.aao.org/ppp.
- Sheikh A, Hurwitz B. Antibiotics versus placebo for acute bacterial conjunctivitis. *Cochrane Database Syst Rev* 2006 Issue 2. Art No: CD001211. DOI: 10.1002/14651858.CD001211.pub2.

4

- American Academy of Ophthalmology, Practicing Ophthalmologists Learning System. Intravitreal injections [Internet]. San Francisco: American Academy of Ophthalmology, 2008 Nov. [cited 2012 Sep 28]; Available from: one.aao.org/CE/PracticeGuidelines/ClinicalStatements_Content.aspx?cid=404813e9-b3dc-4d6d-a2c5-d1f1e78a926b#section4.
- Bhavsar AR, Googe JM, Stockdale CR Bressler NM, Brucker AJ, Elman MJ, Glassman AR. Diabetic Retinopathy Clinical Research Network. Risk of endophthalmitis after intravitreal drug injection when topical antibiotics are not required. The Diabetic Retinopathy Clinical Research Network Laser-Ranibizumab-Triamcinolone Clinical trials. Arch Ophthalmol [Internet]. 2009 Dec;127(12):1581-3.
- Scott IU, Flynn HW. The role of topical antibiotic prophylaxis for intravitreal injections. Arch Ophthalmol [Internet]. 2007 Jul;125(7):974-6.
- Bhatt SS, Stepien KE, Joshi K. Prophylactic antibiotic use after intravitreal injection: Effect on endophthalmitis rate [Internet]. Retina. 2011 Nov;31(10):2032-6.
- Kim SJ, Toma HS, Midha, Cherney EF, Recchia FM, Doherty TJ. Antibiotic resistance of conjunctiva and nasopharynx evaluation study: A prospective study of patients undergoing intravitreal injections. Ophthalmol [Internet]. 2010 Dec(12):117-2372-8.
- Kim SJ, Toma KS. Ophthalmic antibiotics and antimicrobial resistance. A randomized, controlled study of patients undergoing intravitreal injections. Ophthalmol [Internet]. 2011 Jul(7);118:1358–1363.
- Cheung CSY; Wong AWT, Kertes PJ, Devenyi RG, Lam WC. Incidence of endophthalmitis and use of antibiotic prophylaxis after intravitreal injections. Ophthalmol [Internet]. 2012 Aug;119(8):1609-14.
- Milder E, Vander J, Shah C, Garg S. Changes in antibiotic resistance patterns of conjunctival flora due to repeated use of topical antibiotics after intravitreal injections. Ophthalmol [Internet]. 2012 Jul;119(7):1420-4.

5

- American Academy of Ophthalmology Retina Panel. Preferred Practice Pattern® Guidelines. Conjunctivitis - Limited revision [Internet]. San Francisco, CA: American Academy of Ophthalmology; 2011 [cited 2012 Sep 28]. Available from: www.aao.org/ppp.
- Ervin AM, Wojciechowski R, Schein O. Punctal occlusion for dry eye syndrome. Cochrane Database Syst Rev. 2010, Issue 9. Art. No.: CD006775. DOI: 10.1002/14651858.CD006775.pub2.
- Altan-Yaycioglu R, Gencoglu EA, Akova YA, Dursun D, Cengiz F, Akman A. Silicone versus collagen plugs for treating dry eye: Results of a prospective randomized trial including lacrimal scintigraphy. Am J Ophthalmol [Internet]. 2005 Jul;140(1):88–93.
- Nava-Castaneda A, Tovilla-Canales JL, Rodriguez L, Tovilla Y Pomar JL, Jones CE. Effects of lacrimal occlusion with collagen and silicone plugs on patients with conjunctivitis associated with dry eye. Cornea [Internet]. 2003 Jan;22(1):10-4.
- Tai MC, Cosar CB, Cohen EJ, Rapuano CJ, Laibson PR. The clinical efficacy of silicone punctal plug therapy. Cornea [Internet]. 2002 Mar;21(3):135-9.
- Horwath-Winter J, Thaci A, Gruber A, Boldin I. Long-term retention rates and complications of silicone punctal plugs in dry eye. Am J Ophthalmol [Internet]. 2007 Sep;144(3):441-4.
- Mazow ML, McCall T, Prager TC. Lodged intracanalicular plugs as a cause of lacrimal obstruction. Ophthal Plast Reconstr Surg [Internet]. 2007 Mar-Apr;23(2):138-42.
- SmartPlug Study Group. Management of complications after insertion of the SmartPlug punctal plug: a study of 28 patients. Ophthalmology [Internet]. 2006 Oct;113(10):1859.
- Marcet MM, Shtein RM, Bradley EA, Deng SX, Meyer DR, Bilyk JR, Yen MT, Lee WB, Mawn LA. Safety and Efficacy of Lacrimal Drainage System Plugs for Dry Eye Syndrome: A Report by the American Academy of Ophthalmology. Ophthalmology. 2015 May 30. pii: S0161-6420(15)00417-0.

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The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.



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About the American Academy of Ophthalmology

The American Academy of Ophthalmology is the largest national membership association of Eye M.D.s. Eye M.D.s are ophthalmologists, medical and osteopathic doctors who provide comprehensive eye care, including medical, surgical and optical care. Eye M.D.s are dedicated to enhancing the quality of life for every individual they treat by helping each to see his or her best and by protecting their patients' vision and eye health throughout life. More than 90 percent of practicing U.S. Eye M.D.s are Academy members, and the Academy has more than 7,000 international members. Academy members include experts among all sub-specialties of ophthalmology.



For more information, visit www.aao.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Avoid performing routine post-operative deep vein thrombosis ultrasonography screening in patients who undergo elective hip or knee arthroplasty.

Since ultrasound is not effective at diagnosing unsuspected deep vein thrombosis (DVT) and appropriate alternative screening tests do not exist, if there is no change in the patient's clinical status, routine post-operative screening for DVT after hip or knee arthroplasty does not change outcomes or clinical management.

2

Don't use needle lavage to treat patients with symptomatic osteoarthritis of the knee for long-term relief.

The use of needle lavage in patients with symptomatic osteoarthritis of the knee does not lead to measurable improvements in pain, function, 50-foot walking time, stiffness, tenderness or swelling.

3

Don't use glucosamine and chondroitin to treat patients with symptomatic osteoarthritis of the knee.

Both glucosamine and chondroitin sulfate do not provide relief for patients with symptomatic osteoarthritis of the knee.

4

Don't use lateral wedge insoles to treat patients with symptomatic medial compartment osteoarthritis of the knee.

In patients with symptomatic osteoarthritis of the knee, the use of lateral wedge or neutral insoles does not improve pain or functional outcomes. Comparisons between lateral and neutral heel wedges were investigated, as were comparisons between lateral wedged insoles and lateral wedged insoles with subtalar strapping. The systematic review concludes that there is only limited evidence for the effectiveness of lateral heel wedges and related orthoses. In addition, the possibility exists that those who do not use them may experience fewer symptoms from osteoarthritis of the knee.

5

Don't use post-operative splinting of the wrist after carpal tunnel release for long-term relief.

Routine post-operative splinting of the wrist after the carpal tunnel release procedure showed no long-term difference in range of motion, grip or lateral pinch strength. In addition, the research showed no difference in wound complication rates.

How This List Was Created

The American Academy of Orthopaedic Surgeons (AAOS) routinely develops evidence-based clinical practice guidelines as valuable tools to advance the physician-patient communications process and enhance the diagnosis and treatment of musculoskeletal conditions. AAOS physician volunteer work groups develop evidence-based clinical practice guidelines to serve as an educational tool based on an assessment of the current scientific and clinical information and accepted approaches to treatment. The most recent approved clinical practice guidelines have been published in the *Journal of Bone and Joint Surgery*. AAOS staff, led by the medical director, conducted a review of the approved clinical practice guidelines previously developed by the work groups and selected a variety of topics frequently used in orthopaedic surgical practice. After input from the orthopaedic specialty society leaders and approval from the AAOS Presidential Leadership and Board of Directors, the final five topics were selected for this campaign. The AAOS disclosure and conflict of interest policy can be found at www.aaos.org.

Sources

- Abraham P, Ternisien C, Hubert L, Pidhorz L, Saumet JL. Does venous microemboli detection add to the interpretation of D-dimer values following orthopedic surgery? *Ultrasound Med Biol*. 1999;25(4):637-40.
- American Academy of Orthopaedic Surgeons. Clinical Practice Guideline on Preventing Venous Thromboembolic Disease in Patients Undergoing Elective Hip and Knee Arthroplasty. Rosemont (IL): American Academy of Orthopaedic Surgeons. 2011 Sep. Available from: http://www.aaos.org/research/guidelines/VTE/VTE_full_guideline.pdf.
- Bounameaux H, Miron MJ, Blanchard J, de Moerloose P, Hoffmeyer P, Leyvraz PF. Measurement of plasma D-dimer is not useful in the prediction or diagnosis of postoperative deep vein thrombosis in patients undergoing total knee arthroplasty. *Blood Coagul Fibrinolysis*. 1998;9(8):749-52.
- Ciccone WJ II, Fox PS, Neumyer M, Rubens D, Parrish WM, Pellegrini VD Jr. Ultrasound surveillance for asymptomatic deep venous thrombosis after total joint replacement. *J Bone Joint Surg Am*. 1998;80(8):1167-74.
- Davidson BL, Elliott CG, Lensing AW, The RD Heparin Arthroplasty Group. Low accuracy of color Doppler ultrasound in the detection of proximal leg vein thrombosis in asymptomatic high-risk patients. *Ann Intern Med*. 1992;117(9):735-8.
- Garino JP, Lotke PA, Kitziger KJ, Steinberg ME. Deep venous thrombosis after total joint arthroplasty: the role of compression ultrasonography and the importance of the experience of the technician. *J Bone Joint Surg Am*. 1996;78(9):1359-65.
- Larcom PG, Lotke PA, Steinberg ME, Holland G, Foster S. Magnetic resonance venography versus contrast venography to diagnose thrombosis after joint surgery. *Clin Orthop Relat Res*. 1996;(331):209-15.
- Lensing AW, Doris CI, McGrath FP, Cogo A, Sabine MJ, Ginsberg J, Prandoni P, Turpie AG, Hirsh J. A comparison of compression ultrasound with color Doppler ultrasound for the diagnosis of symptomless postoperative deep vein thrombosis. *Arch Intern Med*. 1997;157(7):765-8.
- Mont MA, Jacobs JJ, Boggio LN, Bozic KJ, Della Valle CJ, Goodman SB, Lewis CG, Yates AJ, Watters WC, Turkelson CM, Wies JL, Donnelly P, Patel N, Sluka P. AAOS clinical practice guideline summary preventing venous thromboembolic disease in patients undergoing elective hip and knee arthroplasty. *JAAOS*. 2011Dec;19(12):768-76.
- Niimi R, Hasegawa M, Sudo A, Shi D, Yamada T, Uchida A. Evaluation of soluble fibrin and D-dimer in the diagnosis of postoperative deep vein thrombosis. *Biomarkers*. 2010;15(2):149-57.
- Pellegrini VD Jr, Donaldson CT, Farber DC, Lehman EB, Everts CM. The John Charnley Award: prevention of readmission for venous thromboembolic disease after total hip arthroplasty. *Clin Orthop Relat Res*. 2005;441:56-62.
- Pellegrini VD Jr, Donaldson CT, Farber DC, Lehman EB, Everts CM. The Mark Coventry Award: prevention of readmission for venous thromboembolism after total knee arthroplasty. *Clin Orthop Relat Res*. 2006;452:21-7.
- Robinson KS, Anderson DR, Gross M, Petrie D, Leighton R, Stanish W, Alexander D, Mitchell M, Flemming B, Gent M. Ultrasonographic screening before hospital discharge for deep venous thrombosis after arthroplasty: the post-arthroplasty screening study. A randomized, controlled trial. *Ann Intern Med*. 1997 Sep 15;127(6):439-45.
- Schmidt B, Michler R, Klein M, Faulmann G, Weber C, Schellong S. Ultrasound screening for distal vein thrombosis is not beneficial after major orthopedic surgery. A randomized controlled trial. *Thromb Haemost*. 2003;90(5):949-54.
- Westrich GH, Schneider R, Ghelman B, et al. Comparison between color Doppler imaging and ascending venography in the detection of deep venous thrombosis following total joint arthroplasty: a prospective study. *Contemp Surg* 1997;51:225-34.
- American Academy of Orthopaedic Surgeons. Clinical Practice Guideline on the Treatment of Osteoarthritis of the Knee (Non-Arthroplasty). Rosemont (IL): American Academy of Orthopaedic Surgeons. 2008 Dec. Available from: <http://www.aaos.org/research/guidelines/OAKguideline.pdf>.
- Arden NK, Reading IC, Jordan KM, Thomas L, Platten H, Hassan A, Ledingham J. A randomised controlled trial of tidal irrigation versus corticosteroid injection in knee osteoarthritis: the KIVIS Study. *Osteoarthritis Cartilage*. 2008;16(6):733-39.
- Bradley JD, Heilman DK, Katz BP, Gsell P, Wallick JE, Brandt KD. Tidal irrigation as treatment for knee osteoarthritis: a sham-controlled, randomized, double-blinded evaluation. *Arthritis Rheum*. 2002;46(1):100-8.
- Chang RW, Falconer J, Stulberg SD, Arnold WJ, Manheim LM, Dyer AR. A randomized, controlled trial of arthroscopic surgery versus closed-needle joint lavage for patients with osteoarthritis of the knee. *Arthritis Rheum*. 1993;36:289-96.
- Dawes PT, Kirlew C, Haslock I. Saline washout for knee osteoarthritis: results of a controlled study. *Clin Rheumatol*. 1987;6:61-3.
- Ike RW, Arnold WJ, Rothschild EW, Shaw HL. Tidal irrigation versus conservative medical management in patients with osteoarthritis of the knee: a prospective randomized study. Tidal Irrigation Cooperating Group. *J Rheumatol*. 1992;19:772-9.
- Richmond J, Hunter D, Irrgang J, Jones MH, Levy B, Marx R, Snyder-Mackler L, Watters WC, Haralson RH, Turkelson CM, Wies JL, Boyer KM, Anderson S, St Andre J, Sluka P, McGowan R; American Academy of Orthopaedic Surgeons. Treatment of osteoarthritis of the knee (nonarthroplasty). *JAAOS*. 2009;17(9):591-600.
- Vad VB, Bhat AL, Sculco TP, Wickiewicz TL. Management of knee osteoarthritis: knee lavage combined with hylan versus hylan alone. *Arch Phys Med Rehabil*. 2003;84(5):634-7.
- American Academy of Orthopaedic Surgeons. Clinical Practice Guideline on the Treatment of Osteoarthritis of the Knee (Non-Arthroplasty). Rosemont (IL): American Academy of Orthopaedic Surgeons, 2008 Dec. Available from: <http://www.aaos.org/research/guidelines/OAKguideline.pdf>.
- Altman RD, Marcussen KC. Effects of a ginger extract on knee pain in patients with osteoarthritis. *Arthritis Rheum*. 2001;44(11):2531-8.
- Bourgeois P, Chales G, Dehais J, Delcambre B, Kuntz JL, Rozenberg S. Efficacy and tolerability of chondroitin sulfate 1200mg/day versus chondroitin sulfate 3 x 400 mg/day versus placebo. *Osteoarthritis Cartilage*. 1998;6 Suppl A:25-30.
- Bucsi L, Poor G. Efficacy and tolerability of oral chondroitin sulfate as a symptomatic slow-acting drug for osteoarthritis (SYSADOA) in the treatment of knee osteoarthritis. *Osteoarthritis Cartilage*. 1998;6 Suppl A:31-6.
- Cibere J, Kopec JA, Thorne A, Singer J, Canvin J, Robinson DB, Pope J, Hong P, Grant E, Esdaile JM. Randomized, double-blind, placebo-controlled glucosamine discontinuation trial in knee osteoarthritis. *Arthritis Rheum*. 2004;51(5):738-45.
- Clegg DO, Reda DJ, Harris CL, Klein MA, O'Dell JR, Hooper MM, Bradley JD, Bingham CO, Weisman MH, Jackson CG, Lane NE, Cush JJ, Moreland LW, Schumacher HR, Oddis CV, Wolfe F, Molitor JA, Yocum DE, Schnitzer TJ, Furst DE, Sawitzke AD, Shi H, Brandt KD, Moskowitz RW, Williams HJ. Glucosamine, chondroitin sulfate, and the two in combination for painful knee osteoarthritis. *N Engl J Med*. 2006;354(8):795-808.
- Das A, Hammad TA. Efficacy of a combination of FCHG49 glucosamine hydrochloride, TRH122 low molecular weight sodium chondroitin sulfate and manganese ascorbate in the management of knee osteoarthritis. *Osteoarthritis Cartilage*. 2000;8(5):343-50.
- Giordano N, Fioravanti A, Papakostas P, Montella A, Giorgi G, Nuti R. The efficacy and tolerability of glucosamine sulfate in the treatment of knee osteoarthritis: a randomized, double-blind, placebo-controlled trial. *Curr Ther Res Clin Exper*. 2009;70:185-96.
- Haupt JB, McMillan R, Wein C, Paget-Dellio SD. Effect of glucosamine hydrochloride in the treatment of pain of osteoarthritis of the knee. *J Rheumatol*. 1999;26(11):2423-30.
- Hughes R, Carr A. A randomized, double-blind, placebo-controlled trial of glucosamine sulphate as an analgesic in osteoarthritis of the knee. *Rheumatology*. 2002;41(3):279-84.
- Kahan A, Uebelhart D, De Vathaire F, Delmas PD, Reginster JY. Long-term effects of chondroitins 4 and 6 sulfate on knee osteoarthritis: the study on osteoarthritis progression prevention, a two-year, randomized, double-blind, placebo-controlled trial. *Arthritis Rheum*. 2009;60(2):524-33.
- Mazieres B, Combe B, Phan VA, Tondut J, Grynfeldt M. Chondroitin sulfate in osteoarthritis of the knee: a prospective, double blind, placebo controlled multicenter clinical study. *J Rheumatol*. 2001;28(1):173-81.
- Mazieres B, Hucher M, Zaim M, Garnero P. Effect of chondroitin sulphate in symptomatic knee osteoarthritis: a multicentre, randomised, double-blind, placebo-controlled study. *Ann Rheum Dis*. 2007;66(5):639-45.

3

- McAlindon T, Formica M, Lavalley M, Lehmer M, Kabbara K. Effectiveness of glucosamine for symptoms of knee osteoarthritis: results from an internet-based randomized double-blind controlled trial. *Am J Med.* 2004;117(9):643-9.
- Moller I, Perez M, Monfort J, Benito P, Cuevas J, Perna C, Domenech G, Herrero M, Montell E, Verges J. Effectiveness of chondroitin sulphate in patients with concomitant knee osteoarthritis and psoriasis: a randomized, double-blind, placebo-controlled study. *Osteoarthritis Cartilage.* 2010 Jun 18;Suppl 1:S32-40.
- Noack W, Fischer M, Forster KK, Rovati LC, Setnikar I. Glucosamine sulfate in osteoarthritis of the knee. *Osteoarthritis Cartilage.* 1994;2(1):51-59.
- Pavelka K Jr, Sedlackova M, Gatterova J, Becvar R, Pavelka K Sr. Glycosaminoglycan polysulfuric acid (GAGPS) in osteoarthritis of the knee. *Osteoarthritis Cartilage.* 1995;3(1):15-23.
- Pavelka K, Coste P, Geher P, Krejci G. Efficacy and safety of piasclidine 300 versus chondroitin sulfate in a 6 months treatment plus 2 months observation in patients with osteoarthritis of the knee. *Clin Rheumatol.* 2010;29(6):659-70.
- Rai J, Pal SK, Gul A, Senthil R, Singh H. Efficacy of chondroitin sulfate and glucosamine sulfate in the progression of symptomatic knee osteoarthritis: a randomized, placebo-controlled, double blind study. *Bull Postgrad Inst Med Ed Res Chandigarh.* 2004;38(1):18-22.
- Richmond J, Hunter D, Irrgang J, Jones MH, Levy B, Marx R, Snyder-Mackler L, Watters WC, Haralson RH, Turkelson CM, Wies JL, Boyer KM, Anderson S, St Andre J, Sluka P, McGowan R; American Academy of Orthopaedic Surgeons. Treatment of osteoarthritis of the knee (nonarthroplasty). *JAAOS.* 2009;17(9):591-600.
- Rindone JP, Hiller D, Collocott E, Nordhaugen N, Arriola G. Randomized, controlled trial of glucosamine for treating osteoarthritis of the knee. *West J Med.* 2000;172(2):91-4.
- Samson DJ, Grant MD, Ratko TA, Bonnell CJ, Ziegler KM, Aronson N. Treatment of primary and secondary osteoarthritis of the knee. Rockville (MD): Agency for Healthcare Research and Quality. 2007 Sep 1; Report No. 157.
- Tao QW, Xu Y, Jin DE, Yan XP. Clinical efficacy and safety of Gubitong Recipe in treating osteoarthritis of knee joint. *Chin J Integr Med.* 2009;15(6):458-61.
- Trc T, Bohmova J. Efficacy and tolerance of enzymatic hydrolysed collagen (EHC) versus glucosamine sulphate (GS) in the treatment of knee osteoarthritis (KOA). *Int Orthop.* 2011;35:341-8.
- Uebelhart D, Malaise M, Marcolongo R, De Vathaire F, Piperno M, Maillieux E, Fioravanti A, Matoso L, Vignon E. Intermittent treatment of knee osteoarthritis with oral chondroitin sulfate: a one-year, randomized, double-blind, multicenter study versus placebo. *Osteoarthritis Cartilage.* 2004;12(4):269-76.
- Zakeri Z, Izadi S, Bari Z, Soltani F, Narouie B, Ghasemi-Rad M. Evaluating the effects of ginger extract on knee pain, stiffness and difficulty in patients with knee osteoarthritis. *J Med Plant Res.* 2011;5(15):3375-9.

4

- American Academy of Orthopaedic Surgeons. Clinical practice guideline on the treatment of osteoarthritis of the knee (non-arthroplasty). Rosemont (IL): American Academy of Orthopaedic Surgeons, 2008 Dec. Available from: <http://www.aaos.org/research/guidelines/OAKguideline.pdf>.
- Baker K, Goggins J, Xie H, Szumowski K, Lavalley M, Hunter DJ, Felson DT. A randomized crossover trial of a wedged insole for treatment of knee osteoarthritis. *Arthritis Rheum.* 2007;56(4):1198-203.
- Bennell KL, Bowles KA, Payne C, Cicuttini F, Williamson E, Forbes A, Hanna F, Davies-Tuck M, Harris A, Hinman RS. Lateral wedge insoles for medial knee osteoarthritis: 12 month randomised controlled trial. *BMJ.* 2011;342:d2912.
- Brouwer RW, Jakma TS, Verhagen AP, Verhaar JA, Bierma-Zeinstra SM. Braces and orthoses for treating osteoarthritis of the knee. *Cochrane Database Syst Rev.* 2005;1:CD004020.
- Maillefert JF, Hudry C, Baron G, Kieffert P, Bourgeois P, Lechevalier D, Coutaux A, Dougados M. Laterally elevated wedged insoles in the treatment of medial knee osteoarthritis: a prospective randomized controlled study. *Osteoarthritis Cartilage.* 2001;9(8):738-45.
- Nigg BM, Emery C, Hiemstra LA. Unstable shoe construction and reduction of pain in osteoarthritis patients. *Med Sci Sports Exerc.* 2006;38(10):1701-8.
- Pham T, Maillefert JF, Hudry C, Kieffert P, Bourgeois P, Lechevalier D, Dougados M. Laterally elevated wedged insoles in the treatment of medial knee osteoarthritis. A two-year prospective randomized controlled study. *Osteoarthritis Cartilage.* 2004;12(1):46-55.
- Richmond J, Hunter D, Irrgang J, Jones MH, Levy B, Marx R, Snyder-Mackler L, Watters WC, Haralson RH, Turkelson CM, Wies JL, Boyer KM, Anderson S, St Andre J, Sluka P, McGowan R; American Academy of Orthopaedic Surgeons. Treatment of osteoarthritis of the knee (nonarthroplasty). *JAAOS.* 2009;17(9):591-600.
- Toda Y, Segal N, Kato A, Yamamoto S, Irie M. Effect of a novel insole on the subtalar joint of patients with medial compartment osteoarthritis of the knee. *J Rheumatol.* 2001;28:2705-10.
- Toda Y, Tsukimura N. A comparative study on the effect of the insole materials with subtalar strapping in patients with medial compartment osteoarthritis of the knee. *Mod Rheumatol* 2004;14(6):459-65.
- Toda Y, Segal N. Usefulness of an insole with subtalar strapping for analgesia in patients with medial compartment osteoarthritis of the knee. *Arthritis Rheum.* 2002;47:468-73.
- Toda Y, Tsukimura N. A six month follow-up of a randomized trial comparing the efficiency of a lateral-wedge insole with subtalar strapping and in-shoe lateral-wedge insole in patients with varus deformity osteoarthritis of the knee. *Arthritis Rheum.* 2004;50:3129-36.
- Toda Y, Tsukimura N. A 2-year follow-up of a study to compare the efficiency of lateral-wedged insoles with subtalar strapping and in-shoe lateral-wedged insoles in patients with varus deformity osteoarthritis of the knee. *Osteoarthritis Cartilage.* 2006;14:231-7.

5

- American Academy of Orthopaedic Surgeons. Management of carpal tunnel syndrome evidence-based clinical practice guideline. Rosemont (IL): American Academy of Orthopaedic Surgeons, published 2016 Feb 29. Available from: www.aaos.org/ctsguideline.
- Bury TF, Akelman E, Weiss AP. Prospective, randomized trial of splinting after carpal tunnel release. *Ann Plast Surg.* 1995 Jul;35(1):19-22.
- Cook AC, Szabo RM, Birkholz SW, King EF. Early mobilization following carpal tunnel release. A prospective randomized study. *J Hand Surg [Br].* 1995 Apr;20(2):228-30.
- Finsen V, Andersen K, Russwurm H. No advantage from splinting the wrist after open carpal tunnel release. A randomized study of 82 wrists. *Acta Orthop Scand.* 1999 Jun;70(3):288-92.
- Martins RS, Siqueira MG, Simplicio H. Wrist immobilization after carpal tunnel release: a prospective study. *Arq Neuro-Psiquiatr.* 2006;64(3 A).
- Ritting AW, Leger R, O'Malley MP, Mogielnicki H, Tucker R, Rodner CM. Duration of postoperative dressing after mini-open carpal tunnel release: a prospective, randomized trial. *J Hand Surg Am.* 2012 Jan;37(1):3-8.

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About the American Academy of Orthopaedic Surgeons

The American Academy of Orthopaedic Surgeons (AAOS) is proud to be a partner in the *Choosing Wisely*[®] campaign. As the premier provider of education for orthopaedic surgeons and allied health professionals, the Academy champions the interests of patients and advances the highest quality of bone and joint health. The more than 37,000 orthopaedic surgeon members aim to increase people's quality of life by improving mobility, reducing pain and returning patients to their jobs and hobbies.

The AAOS has been a leader in developing quality improvement and safety programs—from the "Sign Your Site" campaign aimed at eliminating wrong-site surgery to the introduction of evidence-based clinical practice guidelines and appropriate use criteria to enhance the diagnosis and treatment of musculoskeletal conditions. By partnering in the *Choosing Wisely* campaign, the AAOS hopes to facilitate dialogue between patients and physicians about appropriately using diagnostic and therapeutic interventions and avoiding those that are unnecessary.

For more information, visit www.aaos.org.



Ten Things Physicians and Patients Should Question

1

Don't order computed tomography (CT) scan of the head/brain for sudden hearing loss.

Computed tomography scanning is expensive, exposes the patient to radiation and offers no useful information that would improve initial management. CT scanning may be appropriate in patients with focal neurologic findings, a history of trauma or chronic ear disease.

2

Don't prescribe oral antibiotics for uncomplicated acute tympanostomy tube otorrhea.

Oral antibiotics have significant adverse effects and do not provide adequate coverage of the bacteria that cause most episodes; in contrast, topically administered products do provide coverage for these organisms. Avoidance of oral antibiotics can reduce the spread of antibiotic resistance and the risk of opportunistic infections.

3

Don't prescribe oral antibiotics for uncomplicated acute external otitis.

Oral antibiotics have significant adverse effects and do not provide adequate coverage of the bacteria that cause most episodes; in contrast, topically administered products do provide coverage for these organisms. Avoidance of oral antibiotics can reduce the spread of antibiotic resistance and the risk of opportunistic infections.

4

Don't obtain radiographic imaging for patients who meet diagnostic criteria for uncomplicated acute rhinosinusitis.

Imaging of the paranasal sinuses, including plain film radiography, computed tomography (CT) and magnetic resonance imaging (MRI) is unnecessary in patients who meet the clinical diagnostic criteria for uncomplicated acute rhinosinusitis. Acute rhinosinusitis is defined as up to four weeks of purulent nasal drainage (anterior, posterior or both) accompanied by nasal obstruction, facial pain-pressure-fullness or both. Imaging is costly and exposes patients to radiation. Imaging may be appropriate in patients with a complication of acute rhinosinusitis, patients with comorbidities that predispose them to complications and patients in whom an alternative diagnosis is suspected.

5

Don't obtain computed tomography (CT) or magnetic resonance imaging (MRI) in patients with a primary complaint of hoarseness prior to examining the larynx.

Examination of the larynx with mirror or fiberoptic scope is the primary method for evaluating patients with hoarseness. Imaging is unnecessary in most patients and is both costly and has potential for radiation exposure. After laryngoscopy, evidence supports the use of imaging to further evaluate 1) vocal fold paralysis, or 2) a mass or lesion of the larynx.

Ten Things Physicians and Patients Should Question

6

Don't place ear tubes in otherwise healthy children who have had a single episode of ear fluid lasting less than 3 months.

Ear fluid of short duration is likely to resolve spontaneously. The child should be monitored to ensure resolution of the fluid. In children with comorbid conditions or speech delay, earlier tube placement may be appropriate.

7

Don't order imaging studies in patients with non-pulsatile bilateral tinnitus, symmetric hearing loss and an otherwise normal history and physical examination.

The utility of imaging procedures in primary tinnitus is undocumented; imaging is costly, has potential for radiation exposure and does not change management.

8

Don't order more than one computerized tomography (CT) scan of the paranasal sinuses within 90 days to evaluate uncomplicated chronic rhinosinusitis patients when the paranasal sinus CT obtained is of adequate quality and resolution to be interpreted by the clinician and used for clinical decision-making and/or surgical planning.

Computerized tomography scanning is expensive, exposes the patient to ionizing radiation and offers no additional information that would improve initial management. Multiple CT scans within 90 days may be appropriate in patients with complicated sinusitis or where an alternative diagnosis is suspected.

9

Don't routinely use perioperative antibiotics for elective tonsillectomy in children.

Oral antibiotics may have significant adverse effects and do not provide demonstrable benefit after tonsillectomy. Avoidance of oral antibiotics can reduce the spread of antibiotic resistance and the risk of opportunistic infections.

10

Don't routinely perform sinonasal imaging in patients with symptoms limited to a primary diagnosis of allergic rhinitis alone.

History, physical examination and allergy testing are the cornerstones of diagnosis of allergic rhinitis. The utility of imaging for allergic rhinitis is unproven.

How This List Was Created (1–5)

The American Academy of Otolaryngology—Head and Neck Surgery Foundation’s (AAO-HNSF) Patient Safety and Quality Improvement (PSQI) Committee was charged with developing the Foundation’s recommendations for the *Choosing Wisely* campaign. The PSQI Committee initially sought the input of the Specialty Society Advisory Council (SSAC) and requested each member society submit potential topics along with supporting evidence. From those submissions, an initial list of 20 items was distributed to Academy and Foundation committees and the Guidelines Development Task Force (GDTF) for review.

PSQI Committee leadership reviewed feedback from the committees and identified six potential recommendations for inclusion in the campaign. The six topics were selected based on their supporting evidence (for example, clinical practice guidelines), committee support, and the current use (frequency) of the test or procedure. The members of SSAC ranked the six topics, and the top five topics were submitted to the Foundation board for approval.

How This List Was Created (6–10)

The American Academy of Otolaryngology—Head and Neck Surgery Foundation’s (AAO-HNSF) Patient Safety and Quality Improvement (PSQI) Committee was charged with developing a second AAO-HNSF list. The PSQI Committee sought the input of the Specialty Society Advisory Council (SSAC) and requested each member society submit a list of potential topics along with supporting evidence. From the submissions received, an initial list of proposed topics was developed and distributed to Academy and Foundation committees and the Guidelines Development Task Force (GDTF) for review. Committees were asked to provide their support for any of the proposed topics, reasons why a topic should not be included, as well as identifying any additional topics for consideration along with supporting evidence.

PSQI Committee leadership reviewed all submitted feedback and identified seven potential topics for inclusion in the campaign. The seven topics were selected based on their supporting evidence (for example, AAO-HNSF clinical practice guidelines), committee support, and the current use (frequency) of the test or procedure. The members of SSAC were asked to rank the seven topics; the seven topics were submitted to the AAO-HNSF Board for approval and the top five were submitted to the Choosing Wisely campaign.

AAO-HNSF’s disclosure and conflict of interest policy can be found at www.entnet.org.

Sources

- 1 Stachler RJ, Chandrasekhar SS, Archer SM, Rosenfeld RM, Schwartz SR, Barrs DM, Brown SR, Fife TD, Ford P, Ganiats TG, Hollingsworth DB, Lewandowski CA, Montano JJ, Saunders JE, Tucci DL, Valente M, Warren BE, Yaremchuk KL, Robertson PJ. Clinical practice guideline: Sudden hearing loss. *Otolaryngol Head Neck Surg* [Internet]. 2012 Mar [cited 2012 Oct 18];146(3 Suppl):S1-S5.
- 2 Goldblatt EL, Dohar J, Nozza RJ, Nielsen RW, Goldberg T, Sidman JD, Seidlin M. Topical ofloxacin versus systemic amoxicillin/clavulanate in purulent otorrhea in children with tympanostomy tubes. *Int J Pediatr Otorhinolaryngol*. 1998 Nov 15;46(1-2):91-101.
- 3 Rosenfeld RM, Schwartz SR, Pynnonen MA, Tunkel DE, Hussey HM, Fichera JS, Grimes AM, Hackell JM, Harrison MF, Haskell H, Haynes DS, Kim TW, Lafreniere DC, LeBlanc K, Mackey WL, Netterville JL, Pipan ME, Raol NP, Schellhase KG. Clinical practice guideline: Tympanostomy tubes in children. *Otolaryngol Head Neck Surg*. 2013 Jul;149(1 Suppl):S1-S5.
- 4 Rosenfeld RM, Piccirillo JF, Chandrasekhar SS, Brook I, Kumar KA, Kramper M, Orlandi RR, Palmer JN, Patel, ZM, Peters A, Walsh S, Corrigan MD. Clinical practice guideline: adult sinusitis. *Otolaryngol Head Neck Surg*. 2015 Apr;152(2 Suppl):S1-S39.
- 5 Schwartz SR, Cohen SM, Dailey SH, Rosenfeld RM, Deutsch ES, Gillespie MB, Granieri E, Hapner ER, Kimball CE, Krouse HJ, McMurray JS, Medina S, O’Brien K, Ouellette DR, Messinger-Rapport BJ, Stachler RJ, Storde S, Thompson DM, Stemple JC, Willging JP, Cowley T, McCoy S, Bernad PG, Patel MM. Clinical practice guideline: Hoarseness (dysphonia). *Otolaryngol Head Neck Surg* [Internet]. 2009 Sep [cited 2012 Oct 18];141(3 Suppl 2):S1-S31.
- 6 Rosenfeld RM, Schwartz SR, Pynnonen MA, Tunkel DE, Hussey HM, Fichera JS, Grimes AM, Hackell JM, Harrison MF, Haskell H, Haynes DS, Kim TW, Lafreniere DC, LeBlanc K, Mackey WL, Netterville JL, Pipan ME, Raol NP, Schellhase KG. Clinical practice guideline: Tympanostomy tubes in children. *Otolaryngol Head Neck Surg*. 2013 Jul;149(1 Suppl):S1-S5.
- 7 Tunkel DE, Bauer CA, Sun GH, Rosenfeld RM, Chandrasekhar SS, Cunningham ER Jr, Archer SM, Blakley BW, Carter JM, Granieri EC, Henry JA, Hollingsworth D, Khan FA, Mitchell S, Monfared A, Newman CW, Omole FS, Phillips CD, Robinson SK, Taw MB, Tyler RS, Waguespack R, Whamond EJ. Clinical practice guideline: tinnitus. *Otolaryngol Head Neck Surg*. 2014 Oct;151(2):S1-S40.
- 8 Rosenfeld RM, Piccirillo JF, Chandrasekhar SS, Brook I, Kumar KA, Kramper M, Orlandi RR, Palmer JN, Patel, ZM, Peters A, Walsh S, Corrigan MD. Clinical practice guideline: adult sinusitis. *Otolaryngol Head Neck Surg*. 2015 Apr;152(2 Suppl):S1-S39.
- 9 Baugh RF, Archer SM, Mitchell RB, Rosenfeld RM, Amin R, Burns JJ, Darrow DH, Giordano T, Litman RS, Li KK, Mannix ME, Schwartz RH, Setzen G, Wald ER, Wall E, Sandberg G, Patel MM. Clinical practice guideline: tonsillectomy in children. *Otolaryngol Head Neck Surg*. 2011 Jan;144(1 Suppl): S1-S30.
- 10 Seidman MD, Gurgel RK, Lin SY, Schwartz SR, Baroody FM, Bonner JR, Dawson DE, Dykewicz MS, Hackell JM, Han JK, Ishman SL, Krouse HJ, Malekzadeh S, Mims JW, Omole FS, Reddy WD, Wallace DV, Walsh SA, Warren BE, Wilson MN, Nnacheta LC. Clinical practice guideline: allergic rhinitis. *Otolaryngol Head Neck Surg*. 2015 Feb;152(1 Suppl):S1-S43.

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About the American Academy of Otolaryngology—Head and Neck Surgery and Its Foundation

The American Academy of Otolaryngology—Head and Neck Surgery Foundation is the world’s largest organization representing nearly 12,000 otolaryngologist–head and neck surgeons who treat the ear, nose, throat, and related structures of the head and neck. Medical disorders in this specialty are among the most common affecting patients, young and old. The AAO-HNSF works to advance the art, science, and ethical practice of otolaryngology–head and neck surgery through education, research, and lifelong learning.

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Five Things Physicians and Patients Should Question

1

Antibiotics should not be used for apparent viral respiratory illnesses (sinusitis, pharyngitis, bronchitis and bronchiolitis).

Although overall antibiotic prescription rates for children have fallen, they still remain alarmingly high. Unnecessary medication use for viral respiratory illnesses can lead to antibiotic resistance and contributes to higher health care costs and the risks of adverse events.

2

Cough and cold medicines should not be prescribed or recommended for respiratory illnesses in children under four years of age.

Research has shown these products offer little benefit to young children and can have potentially serious side effects. Many cough and cold products for children have more than one ingredient, increasing the chance of accidental overdose if combined with another product.

3

Computed tomography (CT) scans are not necessary in the immediate evaluation of minor head injuries; clinical observation/Pediatric Emergency Care Applied Research Network (PECARN) criteria should be used to determine whether imaging is indicated.

Minor head injuries occur commonly in children and adolescents. Approximately 50% of children who visit hospital emergency departments with a head injury are given a CT scan, many of which may be unnecessary. Unnecessary exposure to x-rays poses considerable danger to children including increasing the lifetime risk of cancer because a child's brain tissue is more sensitive to ionizing radiation. Unnecessary CT scans impose undue costs to the health care system. Clinical observation prior to CT decision-making for children with minor head injuries is an effective approach.

4

Neuroimaging (CT, MRI) is not necessary in a child with simple febrile seizure.

CT scanning is associated with radiation exposure that may escalate future cancer risk. MRI also is associated with risks from required sedation and high cost. The literature does not support the use of skull films in the evaluation of a child with a febrile seizure. Clinicians evaluating infants or young children after a simple febrile seizure should direct their attention toward identifying the cause of the child's fever.

5

Computed tomography (CT) scans are not necessary in the routine evaluation of abdominal pain.

Utilization of CT imaging in the emergency department evaluation of children with abdominal pain is increasing. The increased lifetime risk for cancer due to excess radiation exposure is of special concern given the acute sensitivity of children's organs. There also is the potential for radiation overdose with inappropriate CT protocols.



Five More Things Physicians and Patients Should Question

6

Don't prescribe high-dose dexamethasone (0.5mg/kg per day) for the prevention or treatment of bronchopulmonary dysplasia in pre-term infants.

High-dose dexamethasone (0.5 mg/kg day) does not appear to confer additional therapeutic benefit over lower doses and is not recommended. High doses also have been associated with numerous short- and long-term adverse outcomes, including neurodevelopmental impairment.

7

Don't perform screening panels for food allergies without previous consideration of medical history.

Ordering screening panels (IgE tests) that test for a variety of food allergens without previous consideration of the medical history is not recommended. Sensitization (a positive test) without clinical allergy is common. For example, about 8% of the population tests positive to peanuts but only approximately 1% are truly allergic and exhibit symptoms upon ingestion. When symptoms suggest a food allergy, tests should be selected based upon a careful medical history.

8

Avoid using acid blockers and motility agents such as metoclopramide (generic) for physiologic gastroesophageal reflux (GER) that is effortless, painless and not affecting growth. Do not use medication in the so-called "happy-spitter."

There is scant evidence that gastroesophageal reflux (GER) is a causative agent in many conditions though reflux may be a common association. There is accumulating evidence that acid-blocking and motility agents such as metoclopramide (generic) are not effective in physiologic GER. Long-term sequelae of infant GER is rare, and there is little evidence that acid blockade reduces these sequelae. The routine performance of upper gastrointestinal (GI) tract radiographic imaging to diagnose GER or gastroesophageal disease (GERD) is not justified. Parents should be counseled that GER is normal in infants and not associated with anything but stained clothes. GER that is associated with poor growth or significant respiratory symptoms should be further evaluated.

9

Avoid the use of surveillance cultures for the screening and treatment of asymptomatic bacteriuria.

There is no evidence that surveillance urine cultures or treatment of asymptomatic bacteriuria is beneficial. Surveillance cultures are costly and produce both false positive and false negative results. Treatment of asymptomatic bacteriuria is harmful and increases exposure to antibiotics, which is a risk factor for subsequent infections with a resistant organism. This also results in the overall use of antibiotics in the community and may lead to unnecessary imaging.

10

Infant home apnea monitors should not be routinely used to prevent sudden infant death syndrome (SIDS).

There is no evidence that the use of infant home apnea monitors decreases the incidence of SIDS; however, they might be of value for selected infants at risk for apnea or cardiovascular events after discharge but should not be used routinely.

How This List Was Created

The American Academy of Pediatrics (AAP) employed a three-stage process to develop its list. Using the Academy's varied online, print and social media communication vehicles, the first stage invited leadership of the Academy's 88 national clinical and health policy-driven committees, councils and sections to submit potential topics via an online survey. The second stage involved expert review and evaluation of the management groups that oversee the functions of the committees, councils and sections. Based on a set of criteria (evidence to document unproven clinical benefit, potential to cause harm, over-prescribed and utilized, and within the purview of pediatrics) a list of more than 100 topics was narrowed down to five. Finally, the list was reviewed and approved by the Academy's Board of Directors and Executive Committee.

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Sources

- Wald ER, Applegate KE, Bordley C, Darrow DH, Glode MP, Marcy SM, Nelson CE, Rosenfeld RM, Shaikh N, Smith MJ, Williams PV, Weinberg ST. Clinical practice guideline for the diagnosis and management of acute bacterial sinusitis in children aged 1 to 18 years. *Pediatrics*. Jul 2013;132(1):e262-80

Ralston SL, Lieberthal AS, Meissner HC, Alverson BK, Baley JE, Gadomski AM, Johnson DW, Light MJ, Marafa NF, Mendonca EA, Phelan KJ, Zorc JJ, Stanko-Lopp D, Brown MA, Nathanson I, Rosenblum E, Sayles III S, Hernandez-Cancio S. Clinical practice guideline for the diagnosis, management, and prevention of bronchiolitis. *Pediatrics*. Nov 2014;134(5):e1474-502.

Hersh AL, Jackson MA, Hicks LA, and the Committee on Infectious Diseases. Principles of judicious antibiotic prescribing for upper respiratory tract infections in pediatrics. *Pediatrics*. Dec 2013;132(6):1146-1154.

American Academy of Pediatrics. Antimicrobial resistance and antimicrobial stewardship: appropriate and judicious use of antimicrobial agents. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, eds. *Red Book: 2015 Report of the Committee on Infectious Diseases*. Elk Grove village, IL: American Academy of Pediatrics; 2015:874-880.
- Carr BC. Efficacy, abuse, and toxicity of over-the-counter cough and cold medications in the pediatric population. *Curr Opin Pediatrics*. 2006 Apr;18(2):184-88.

Irwin RS, Baumann MH, Bolser DC, Boulet LP, Braman SS, Brightling CE, Brown KK, Canning BJ, Chang AB, Dicipinigitis PV, Eccles R, Glomb WB, Goldstein LB, Graham LM, Hargreave FE, Kvale PA, Lewis SZ, McCool FD, McCrory DC, Prakash UB, Pratter MR, Rosen MJ, Schulman E, Shannon JJ, Smith Hammond C, Tarlo SM; American College of Chest Physicians (ACCP). Diagnosis and management of cough executive summary: ACCP evidence-based clinical practice guidelines. *Chest*. 2006 Jan;129(1_suppl): 1S-23S.

Isbister GK, Prior F, Kilham HA. Restricting cough and cold medications in children. *J Paediatr Child Health [Internet]* 2012 Feb;48(2):91-8.

Schaeffer MK, Shehab N, Cohen AL, Budnitz DS. Adverse events from cough and cold medication in children. *Pediatrics [Internet]*. 2008 Apr;121(4):783-87.

Sharfstein JM, North M, Serwint JR. Over the counter but no longer under the radar – pediatric cough and cold medications. *N Eng J Med [Internet]*. 2007 Dec 6;357(23):2321-4.
- Dunning J, Batchelor J, Stratford-Smith P, Teece S, Browne J, Sharpin C, Mackway-Jones K. A meta-analysis of variables that predict significant intracranial injury in minor head trauma. *Arch Dis Child [Internet]*. 2004 Jul;89(7):653-9.

Kuppermann N, Holmes JF, Dayan PS, Hoyle JD Jr, Atabaki SM, Holubkov R, Nadel FM, Monroe D, Stanley RM, Borgianni DA, Badawy MK, Schunk JE, Quayle KS, Mahajan P, Lichenstein R, Lillis KA, Tunik MG, Jacobs ES, Callahan JM, Gorelick MH, Glass TF, Lee LK, Bachman MC, Cooper A, Powell EC, Gerardi MJ, Melville KA, Muizelaar JP, Wisner DH, Zupan SJ, Dean JM, Wootton-Gorges SL; Pediatric Emergency Care Applied Research Network (PECARN). Identification of children at very low-risk of clinically-important brain injuries after head trauma: A prospective cohort study. *Lancet [Internet]*. 2009 Oct;374(9696):1160-70.

Nigrovic LE, Schunk JE, Foerster A, Cooper A, Miskin M, Atabaki SM, Hoyle J, Dayan PS, Holmes JF, Kuppermann N, Traumatic Brain Injury Group for the Pediatric Emergency Care Applied Research Network. The effect of observation on cranial computed tomography utilization for children after blunt head trauma. *Pediatrics [Internet]*. 2011 Jun;127(6):1067-1073.

Ryan ME, Palasis S, Saigal G, Singer AD, Karmazyn B, Dempsey ME, Dillman JR, Dory CE, Garber M, Hayes LL, Iyer RS, Mazzola CA, Raske ME, Rice HE, Rigsby CK, Sierzewski PR, Strouse PJ, Westra SJ, Wootton-Gorges SL, Coley BD. Appropriateness criteria head trauma—child. *J Am Coll of Radiol*. Oct 2014;11(10):939-47.
- American Academy of Pediatrics. Subcommittee on Febrile Seizures. Febrile Seizures: Guideline for the neurodiagnostic evaluation of the child with a simple febrile seizure. *Pediatrics [Internet]*. 2011 Feb;127(2):389-394.
- Brenner DJ, Hall EJ. Computed tomography – an increasing risk of radiation exposure. *N Eng J Med [Internet]*. 2007 Nov 29;357:2277-2284.

Burr A, Renaud EJ, Manno M, Makris J, Cooley E, DeRoss A, Hirsh M. Glowing in the dark: Time of day as a determinant of radiographic imaging in the evaluation of abdominal pain in children. *J Pediatr Surg [Internet]*. 2011 Jan;46(1):188-191.

Kim K, Kim YH, Kim SY, Lee YJ, Kim KP, Lee HS, Ahn S, Kim T, Hwang SS, Song KJ, Kang SB, Kim DW, Park SH, Lee KH. Low-dose abdominal CT for evaluating suspected appendicitis. *N Engl J Med [Internet]*. 2012 Apr 26;366:1596-1605.

Stewart K, Olcott W, Jeffrey RB. Sonography for appendicitis: Nonvisualization of the appendix is an indication for active clinical observation rather than direct referral for computed tomography. *J Clin Ultrasound [Internet]*. 2012 Oct;40(8):455-61.

Pearce MS, Salotti JA, Little MP, McHugh K, Lee C, Kim KP, Howe NL, Ronckers CM, Rajaraman P, Craft AW, Parker L, Berrington de González A. Radiation exposure from CT scans in childhood and subsequent risk of leukaemia and brain tumours: A retrospective cohort study. *Lancet [Internet]* 2012 Aug 4;380(9840):499-505.

Saito JM. Beyond appendicitis: Evaluation and surgical treatment of pediatric acute abdominal pain. *Curr Opin Pediatr [Internet]*. 2012 Jun;24(3):357-364.

6

Watterberg KL; American Academy of Pediatrics Committee on Fetus and Newborn. Policy statement—postnatal corticosteroids to prevent or treat bronchopulmonary dysplasia. *Pediatrics*. 2010 Oct;126(4):800–8.

7

Sicherer SH, Wood RA; American Academy of Pediatrics Section on Allergy and Immunology. Allergy testing in childhood: using allergen-specific IgE tests. *Pediatrics*. 2012 Jan;129(1):193–7.

8

Lightdale JR, Gremse DA; American Academy of Pediatrics Section on Gastroenterology, Hepatology, and Nutrition. Gastroesophageal reflux: management guidance for the pediatrician. *Pediatrics*. 2013 May;131(5):e1684–95.

9

Kemper KJ, Avner ED. The case against screening urinalysis for asymptomatic bacteriuria in children. *Am J Dis Child*. 1992 Mar;146(3):343–6.

Nicolle LE. Asymptomatic bacteriuria: when to screen and when to treat. *Infect Dis Clin North Am*. 2003 Jun;17(2):367–94.

Roberts KB, Downs SM, Finnell SM, Hellerstein S, Shortliffe LD, Wald ER, Zerlin JM. American Academy of Pediatrics Subcommittee on Urinary Tract Infection, Steering Committee on Quality Improvement and Management. Urinary tract infection: clinical practice guideline for the diagnosis and management of the initial UTI in febrile infants and children 2 to 24 months. *Pediatrics*. Sep 2011;128(3):595–610.

10

Moon RY; American Academy of Pediatrics Task Force on Sudden Infant Death Syndrome. SIDS and other sleep-related infant deaths: expansion of recommendations for a safe infant sleeping environment. *Pediatrics*. 2011 Nov;128(5):1030–9.

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Five Things Physicians and Patients Should Question

1

Avoid ordering LH and FSH and either estradiol or testosterone for children with pubic hair and/or body odor but no other signs of puberty.

Premature adrenarche is usually the diagnosis and does not involve activation of the pituitary- gonadal axis but is due to an early increase in adrenal androgens. DHEA-S levels are elevated for age but do not alter the management of this common and generally benign condition.

2

Avoid ordering screening tests looking for chronic illness or an endocrine cause, including CBC, CMP, IGF-1, thyroid tests, and celiac antibodies, in healthy children who are growing at or above the 3rd percentile for height with a normal growth rate (i.e., not crossing percentiles) and with appropriate weight gain.

Even in children who are below the 3rd percentile for height with a normal history and physical exam, the incidence of newly diagnosed pathology was found to be only about 1%. In patients who have significant short stature (e.g. ≤ -2.5 SD) or who are well below their genetic potential based on parental heights, tiered or sequential screening may be considered.

3

Avoid ordering Vitamin D concentrations routinely in otherwise healthy children, including children who are overweight or obese.

Although a 25-hydroxyvitamin D concentration, reflecting both vitamin D synthesis and intake, is the correct screening lab to monitor for vitamin D deficiency, current evidence is not sufficient to suggest that screening in otherwise healthy including children who are overweight or obese is necessary or safe.

Global consensus recommendations caution against population-based screening for vitamin D deficiency (1). The US Preventive Services Task Force also has noted that variability of current assays and unclear cutoffs for deficiency may lead to "misclassification" of persons as having vitamin D deficiency, and that this misclassification "could outweigh any benefits if there are harms" (2). The American Academy of Pediatrics report on Optimizing Bone Health in Children and Adolescents advises screening for vitamin D deficiency only in patients with disorders associated with low bone mass such as rickets and/or a history of recurrent, low-trauma fractures (3).

It has been shown that children who are overweight or obese have a greater likelihood of having low vitamin D levels (4). If the history suggests an obese child has insufficient dietary intake of vitamin D (e.g., little milk intake), a vitamin D supplement should be recommended, which is more cost-effective than 25-hydroxyvitamin D measurements for both screening and monitoring therapy.

4

Avoid routinely measuring thyroid function and/or insulin levels in children with obesity.

TSH levels can be slightly elevated in obesity but this is more likely a consequence of obesity and rarely true hypothyroidism [1, 2]. Free T4 levels are usually normal and if so there is no proven benefit to treatment when TSH is minimally elevated. Testing thyroid function in otherwise healthy children should be considered only if stature and/or height velocity is decreased in relation to the stage of puberty [3, 4].

There are significant limitations in the use of insulin levels as a marker of insulin resistance; furthermore, it is not necessary to order this test to establish a weight control management plan [3, 5]. (This item submitted jointly with the AAP Section on Obesity)

5

Avoid routinely ordering thyroid ultrasounds in children who have simple goiters or autoimmune thyroiditis.

Limit this study to children who have asymmetric thyroid enlargement, palpable nodules, or concerning cervical lymphadenopathy. Ultrasound can detect nodules that elude palpation, and one prospective series found that 31.5% of patients with Hashimoto's thyroiditis will have thyroid nodules [2]. The majority of these lesions, however, are not harmful. Overuse of ultrasonography results in needless health care costs and time expenditures for families. More importantly, insignificant findings can create anxiety within patients and parents who are fearful of thyroid cancer. In some cases, the abnormal findings will lead to additional radiographic studies, fine needle aspiration, or aggressive treatment of "pseudo-disease" that will not improve the health of patients.

There is a known association of thyroid cancer with Hashimoto's thyroiditis, and a pathologic diagnosis of papillary carcinoma was made in 3% of patients in the study cited above [2]. However, there is insufficient evidence to conclude that detecting nodules before they are palpable leads to better outcomes [1]. It seems prudent, therefore, to perform a careful annual physical exam of the thyroid, as recommended for all children who are at increased risk of thyroid cancer [2]. If that exam reveals asymmetry, palpable nodules or significant cervical adenopathy then ultrasonography is indicated [2].

How This List Was Created

The American Academy of Pediatrics' Section on Endocrinology (SOEn) consists of pediatric endocrinologists, pediatricians, and allied health care professionals who are actively involved in some aspect of the study of endocrinological disease in infants, children and adolescents. SOEn strives to inform pediatricians, parents, communities and policy makers on endocrinological disease in children. Thus, the Executive Committee of SOEn was queried to develop a list of on diagnostic and management decisions that have resulted in patient harm either from a misdiagnosis or inappropriate therapy. The list was shared with membership of the Section on Endocrinology for feedback and then finalized by the SOEn Executive Committee. These five clinical issues are the result. Consensus on the items was received from 20 AAP expert groups. The list was critically reviewed and approved by the AAP Executive Committee.

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Sources

- 1 Kaplowitz P, Bloch C, the SECTION ON ENDOCRINOLOGY. Evaluation and Referral of Children with Signs of Early Puberty. *Pediatrics*. 2016;137(1):e20153732
- 2 Sisley S, Trujillo MV, Khoury J, Backeljauw P. Low incidence of pathology detection and high cost of screening in the evaluation of asymptomatic short children. *J Pediatr*. 2013 Oct;163(4):1045-51.
- 3 Munns CF, Shaw N, Kiely M, Specker BL, Thacher TD, et al. Global Consensus Recommendation on Prevention and Management of Nutritional Rickets. *J Clin Endocrinol Metab*. 2016 Feb;101(2):394-415. Co-Published in *Horm Res Paediatr*. 2016;85(2):83-106.
LeBlanc E, Chou R, Zakher B, et al. Screening for Vitamin D Deficiency: Systematic Review for the U.S. Preventive Services Task Force Recommendation [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2014 Nov. (*Evidence Syntheses*, No. 119.)
Optimizing Bone Health in Children and Adolescents Golden N, Abrams S, COMMITTEE ON NUTRITION *Pediatrics* Sep 2014, 2014-2173.
Turer CB, Lin H, Flores G. Prevalence of vitamin D deficiency among overweight and obese US children. *Pediatrics* December 2012;doi:10.1542/peds2012-1711
- 4 Gertig, A.M., E. Niechcial, and B. Skowronska. Thyroid axis alterations in childhood obesity. *Pediatr Endocrinol Diabetes Metab*, 2012. 18(3): p. 116-9.
Grandone, A., et al., Thyroid function derangement and childhood obesity: an Italian experience. *BMC Endocr Disord*, 2010. 10: p. 8.
August, G.P., et al., Prevention and treatment of pediatric obesity: an endocrine society clinical practice guideline based on expert opinion. *J Clin Endocrinol Metab*, 2008. 93(12): p. 4576-99.
Reinehr, T., et al., Definable somatic disorders in overweight children and adolescents. *J Pediatr*, 2007. 150(6): p. 618-22, 622 e1-5.
Levy-Marchal, C., et al., Insulin resistance in children: consensus, perspective, and future directions. *J Clin Endocrinol Metab*, 2010. 95(12): p. 5189-98.
- 5 Corrias A, Cassio A, Weber G, et al. Study Group for Thyroid Diseases of the Italian Society for Pediatric Endocrinology and Diabetology: Thyroid Nodules and Cancer in Children and Adolescents Affected by Autoimmune Thyroiditis. *Arch Pediatr Adolesc Med*. 2008;162(6):526-531.
Francis G, Waguespack S, Bauer A, et al. Management Guidelines for Children with Thyroid Nodules and Differentiated Thyroid Cancer: *Thyroid*. 2015 Jul 1; 25(7): 716–759.

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Five Things Physicians and Patients Should Question

1

Avoid routine use of anti-reflux medications for treatment of symptomatic gastroesophageal reflux disease (GERD) or for treatment of apnea and desaturation in preterm infants.

Gastroesophageal reflux is normal in infants. There is minimal evidence that reflux causes apnea and desaturation. Similarly, there is little scientific support for the use of H2 antagonists, proton-pump inhibitors, and motility agents for the treatment of symptomatic reflux. Importantly, several studies show that their use may have adverse physiologic effects as well as an association with necrotizing enterocolitis, infection and, possibly, intraventricular hemorrhage and mortality.

2

Avoid routine continuation of antibiotic therapy beyond 48 hours for initially asymptomatic infants without evidence of bacterial infection.

There is insufficient evidence to support antibiotic treatment for more than 48 hours to rule out bacterial infection in asymptomatic term and preterm infants. Current blood culturing systems identify the great majority of pathologic organisms prior to 48 hours. Prolonged antibiotic use may be associated with necrotizing enterocolitis and death in extremely low birthweight infants.

3

Avoid routine use of pneumograms for pre-discharge assessment of ongoing and/or prolonged apnea of prematurity.

Cardio-respiratory events are common in both term and preterm infants. Although there may be a role for pneumograms in selected cases where the etiology of the events is in doubt, they have not been shown to reduce acute life-threatening events or mortality from their routine use.

4

Avoid routine daily chest radiographs without an indication for intubated infants.

Although intermittent chest radiographs may identify unexpected findings, there is no evidence documenting the effectiveness of daily chest X-rays to reduce adverse outcomes. Further, this practice is associated with increased radiation exposure.

5

Avoid routine screening term-equivalent or discharge brain MRIs in preterm infants.

Findings on term-equivalent magnetic resonance imaging (MRI) correlate with neurodevelopmental outcomes at discharge and at 2 and 5 years of age. There is, however, insufficient evidence that the routine use of term-equivalent or discharge screening brain MRIs in preterm infants improves long-term outcome.

How This List Was Created

The American Academy of Pediatrics Section on Perinatal Pediatrics (SoPPE) Executive Committee employed a national survey of representative newborn medicine providers from SoPPE and the Vermont-Oxford Network. Survey recipients were asked to consider the range of testing and treatments conducted on high and low risk newborns. They were then asked them to provide examples of tests and treatments that, in their opinion, best met any or all of the following criteria: there is evidence of lack of efficacy, there is insufficient evidence of efficacy, or the test or treatment unnecessarily utilized staffing or material resources. Among the recipients, 1047 responded with a total of 2870 suggestions of tests and treatments. These responses were then collated and presented to an expert panel of 51 individuals representing 28 national and regional stakeholder perinatal care organizations. A modified Delphi process utilizing electronic survey techniques was used to narrow the list to the Top 5 over three rounds. During the initial round, the panel reduced the top 22 general categories of tests and treatments to 13. The reintroduction of specific clinical contexts, derived from the original survey, resulted in 24 items that were reduced to 12 in the second round. In the final round, the panel was provided with GRADE (Grades of Recommendation, Assessment, Development and Evaluation) literature summaries of the top 12 to ensure that all current evidence was considered. The final list was reviewed and approved by the Academy's Board of Directors and Executive Committee.

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Sources

- Beck-Sague CM, Azimi P, Fonseca SN, Baltimore RS, Powell DA, Bland LA, Arduino MJ, McAllister SK, Huberman RS, Sinkowitz RL, et al. Bloodstream infections in neonatal intensive care unit patients: results of a multicenter study. *Pediatr Infect Dis J*. 1994 Dec;13(12):1110-6.
Bianconi S, Gudavalli M, Sutija VG, Lopez AL, Barillas-Arias L, Ron N. Ranitidine and late-onset sepsis in the neonatal intensive care unit. *J Perinat Med*. 2007; 35(2):147-50.
Chung EY, Yardley J. Are there risks associated with empiric acid suppression treatment of infants and children suspected of having gastroesophageal reflux disease? *Hosp Pediatr*. 2013 Jan;3(1):16-23.
Guillet R, Stoll BJ, Cotten CM, Gantz M, McDonald S, Poole WK, Phelps DL; National Institute of Child Health and Human Development Neonatal Research Network. Association of H2-blocker therapy and higher incidence of necrotizing enterocolitis in very low birth weight infants. *Pediatrics*. 2006 Feb;117(2):e137-42.
Hibbs AM, Lorch SA. Metoclopramide for the treatment of gastroesophageal reflux disease in infants: a systematic review. *Pediatrics*. 2006 Aug;118(2):746-52.
Rojas MA, Efrim MM, Lozano JM, Bose CL, Rojas MX, Rondón MA, Ruiz G, Piñeros JG, Rojas C, Robayo G, Hoyos A, Gosendi MH, Cruz H, O'Shea M, Leon A. Risk factors for nosocomial infections in selected neonatal intensive care units in Colombia, South America. *J Perinatol*. 2005 Aug;25(8):537-41.
Terrin G, Passariello A, De Curtis M, Manguso F, Salvia G, Lega L, Messina F, Paludetto R, Canani RB. Ranitidine is associated with infections, necrotizing enterocolitis, and fatal outcome in newborns. *Pediatrics*. 2012 Jan;129(1):e40-5.
van der Pol RJ, Smits MJ, van Wijk MP, Omari TI, Tabbers MM, Benninga MA. Efficacy of proton-pump inhibitors in children with gastroesophageal reflux disease: a systematic review. *Pediatrics*. 2011 May;127(5):925-35.
Wheatley E, Kennedy KA. Cross-over trial of treatment for bradycardia attributed to gastroesophageal reflux in preterm infants. *J Pediatrics*. 2009 Oct;155(4):516-21.
- Cotten CM, Smith PB. Duration of empirical antibiotic therapy for infants suspected of early-onset sepsis. *Curr Opin Pediatr*. 2013 Apr;25(2):167-71.
Cotten CM, Taylor S, Stoll B, Goldberg RN, Hansen NI, Sánchez PJ, Ambalavanan N, Benjamin DK Jr; NICHD Neonatal Research Network. Prolonged duration of initial empirical antibiotic treatment is associated with increased rates of necrotizing enterocolitis and death for extremely low birth weight infants. *Pediatrics*. 2009 Jan;123(1):58-66.
Garcia-Prats JA, Cooper TR, Schneider VF, Stager CE, Hansen TN. Rapid detection of microorganisms in blood cultures of newborn infants utilizing an automated blood culture system. *Pediatrics*. 2000 Mar;105(3 Pt 1):523-7.
- Di Fiore T. Use of sleep studies in the neonatal intensive care unit. *Neonatal Netw*. 2005 Jan;24(1):23-30.
Ramanathan R, Corwin MJ, Hunt CE, Lister G, Tinsley LR, Baird T, Silvestri JM, Crowell DH, Hufford D, Martin RJ, Neuman MR, Weese-Mayer DE, Cupples LA, Peucker M, Willinger M, Keens TG; Collaborative Home Infant Monitoring Evaluation (CHIME) Study Group. Cardiorespiratory events recorded on home monitors: Comparison of healthy infants with those at increased risk for SIDS. *JAMA*. 2001 May 2;285(17):2199-207.
- Greenough A, Dimitriou G, Alvares BR, Karani J. Routine daily chest radiographs in ventilated, very low birth weight infants. *Eur J Pediatr*. 2001 Mar;160(3):147-9.
Spitzer AR, Greer JG, Antunes M, Szema KF, Gross GW. The clinical value of screening chest radiography in the neonate with lung disease. *Clin Pediatr (Phila)*. 1993 Sep;32(9):514-9.
- Iwata S, Nakamura T, Hizume E, Kihara H, Takashima S, Matsuishi T, Iwata O. Qualitative brain MRI at term and cognitive outcomes at 9 years after very preterm birth. *Pediatrics*. 2012 May;129(5):e1138-47.
Janvier A, Barrington K. Trying to predict the future of ex-preterm infants: who benefits from a brain MRI at term? *Acta Paediatr*. 2012 Oct;101(10):1016-7.
Miller SP, Ferriero DM, Leonard C, Piecuch R, Glidden DV, Partridge JC, Perez M, Mukherjee P, Vigneron DB, Barkovich AJ. Early brain injury in premature newborns detected with magnetic resonance imaging is associated with adverse early neurodevelopmental outcome. *J Pediatr*. 2005 Nov;147(5):609-16.
Nongena P, Ederies A, Azzopardi DV, Edwards AD. Confidence in the prediction of neurodevelopmental outcome by cranial ultrasound and MRI in preterm infants. *Arch Dis Child Fetal Neonatal Ed*. 2010 Nov; 95(6):F388-90.
Pearce R, Baardsnes J. Term MRI for small preterm babies: do parents really want to know and why has nobody asked them? *Acta Paediatr*. 2012 Oct;101(10):1013-5.
Setänen S, Haataja L, Parkkola R, Lind A, Lehtonen L. Predictive value of neonatal brain MRI on the neurodevelopmental outcome of preterm infants by 5 years of age. *Acta Paediatr*. 2013 May;102(5):492-7.
Woodward LJ, Anderson PJ, Austin NC, Howard K, Inder TE. Neonatal MRI to predict neurodevelopmental outcomes in preterm infants. *N Engl J Med*. 2006 Aug 17; 355(7):685-94.
Woodward LJ, Clark CA, Bora S, Inder TE. Neonatal white matter abnormalities an important predictor of neurocognitive outcome for very preterm children. *PLoS One*. 2012;7(12):e51879.

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About the American Academy of Pediatrics Section on Perinatal Pediatrics

The American Academy of Pediatrics is an organization of 62,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults. The Section on Perinatal Pediatrics, the largest specialty subgroup of the Academy, is the home organization for 3500 specialists in Neonatal-Perinatal Medicine and focuses on ensuring the optimal health and well-being of babies and mothers through core activities in advocacy, education, outreach, and clinical and academic support.



For more information, visit www.aap.org.

For more information or to see other lists of Things Clinicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1 Do not order a screening hip ultrasound to rule out developmental hip dysplasia or developmental hip dislocation if the baby has no risk factors and has a clinically stable hip examination.

Hip dysplasia/dislocation is relatively rare, with incidence of approximately 7 per 1,000 births. Studies have shown that universal screening programs for developmental hip instability using ultrasounds to assess otherwise normal appearing hips have a nearly negligible positive yield. There is a substantial false positive rate, with an associated increase in treatment rate, suggesting that babies without hip pathology are being treated. When there are no physical findings or underlying risk factors for hip dysplasia/dislocation in a newborn, a hip ultrasound is costly, time-intensive and the findings may be misleading to parents and physicians. This recommendation is in accordance with the 2016 AAP clinical report regarding the use of ultrasound in early detection of developmental dysplasia of the hip (see reference: "Evaluation and Referral for Developmental Dysplasia of the Hips in Infants").

2 Do not order radiographs or advise bracing or surgery for a child less than 8 years of age with simple in-toeing gait.

Mild in-toeing is usually a physiologic phenomenon reflecting ongoing maturation of the skeleton. Metatarsus adductus, femoral anteversion, and tibial torsion all contribute to in-toeing and tend to improve with growth. Simply monitoring gait for continued improvement at normal well child examination intervals is adequate until the age of 7–8 unless there is severe tripping and falling or asymmetry. It is not possible to alter the natural evolution using physical therapy, bracing or shoe inserts.

3 Do not order custom orthotics or shoe inserts for a child with minimally symptomatic or asymptomatic flat feet.

Flexible flat feet are normal physiologic variants commonly found in children and adults. Unlike a painful or rigid flatfoot that requires further workup, if an arch is present when standing on tiptoe, the foot can be managed with observation or over-the-counter orthotics. The use of custom orthotic devices to provide support for the foot does not aid in the development of the arch.

4 Do not order advanced imaging studies (MRI or CT) for most musculoskeletal conditions in a child until all appropriate clinical, laboratory and plain radiographic examinations have been completed.

History, physical examination, and appropriate radiographs remain the primary diagnostic modalities in pediatric orthopaedics, as they are both diagnostic and prognostic for the great majority of pediatric musculoskeletal conditions. Examples of such conditions would include, but not be limited to, the work up of injury or pain (spine, knees and ankles), possible infection, and deformity. MRI examinations and other advanced imaging studies are costly, frequently require sedation in the young child (5 years old or less), and may not result in appropriate interpretation if clinical correlations cannot be made. Many conditions require specific MRI sequences or protocols best ordered by the specialist who will be treating the patient. Inappropriately obtained MRIs may need to be repeated in those circumstances. Additionally, a significant dose of radiation is delivered to the patient during a CT scan, so their utility in a specific case would be best confirmed prior to ordering. Therefore, in those conditions where advanced imaging is indicated, it has greater value when it is used to answer a specific question that arises from a thorough clinical and appropriate radiographic evaluation. Additionally, if you believe findings warrant additional advanced imaging, discuss with the consulting orthopaedic surgeon to make sure the optimal studies are ordered.

5 Do not order follow-up X-rays for buckle (or torus) fractures if they are no longer tender or painful.

Buckle (torus) fractures are very common injuries in young children, especially in the distal radius. The fracture is one of compression, where the metaphyseal bone impacts on itself, and actually becomes denser. These fractures are inherently stable and do not necessarily require a formal cast, unless severe pain or fracture instability necessitates a cast for 4 weeks. Instead immobilization with a simple wrist brace or removable splint is often preferable. The mild cortical angular deformity reliably remodels over time and requires no intervention or monitoring. If the fracture is non-tender to palpation at 4 weeks post-injury, no follow-up radiograph is required, and full activities may be resumed.

How This List Was Created

The Pediatric Orthopaedic Society of North America (POSNA) Evidence Based Medicine Committee and the Advocacy Committee worked together during 2014 and 2015 to develop five items in the practice of Pediatric Orthopaedics of tests or procedures that should not be done routinely. Approximately 20 members of these two committees participated in the process. Each surgeon, in a blinded fashion, submitted 5 items each from their practices and experience of tests or procedures that they found were commonly over-utilized. The items were tallied in order of number of times that item was listed by each surgeon. A total of 30 items were submitted. Both committees then agreed on final list of 5 items based of frequency of responses and importance of the condition. The Evidence Based Committee reviewed the appropriate literature to provide references and support for each item. The Executive Committee of the Orthopaedic Section of the American Academy of Pediatrics (AAP) reviewed the 5 listed items and provided further feedback. POSNA Board of Directors provided further feedback and voted on the final list. Various expert committees and sections of the AAP reviewed and approved the list. The AAP Executive Committee granted final approval of the list.

Sources

- Mahan ST, Katz JN, Kim YJ. To screen or not to screen? A decision analysis of the utility of screening for developmental dysplasia of the hip. *J Bone Joint Surg Am.* 2009 Jul;91(7):1705-1719.
- Laborie LB, Markestad TH, Davidsen H, Bruras KR, Aukland SM, Bjortlykke JA, Reigstad H, Indrekvam K, Lehmann TG, Engesaeter IO, Engesaeter LB, Rosendahl K. Selective ultrasound screening for developmental hip dysplasia: effect on management and late detected cases. A prospective study during 1991-2006. *Pediatr Radiol.* 2014 Apr;44 (4): 410-424.
- Shorter D, Hong T, Osborn DA. Cochrane Review: Screening programs for developmental dysplasia of the hip in newborn infants. *Evid Based Child Health.* 2013; 8(1): 11-54.
- Shaw BA, Segal LS. Section on Orthopaedics. Evaluation and referral for developmental dysplasia of the hip in infants. *Pediatrics* 2016; 138(6).
- Fabry G, Cheng LX, Molenaers G. Normal and abnormal torsional development in children. *Clinical Orthopaedics and Related Research.* May 1994; (301):22-26.
- Fabry G, MacEwen GD, Sharnds AR, Jr. Torsion of the femur: A follow up study in normal and abnormal conditions. *J Bone Joint Surg. Am.* Dec 1973;55(8):1726-1738.
- Lincoln TL, Suen PW. Common rotational variations in children. The Journal of the American Academy of Orthopaedic Surgeons. Sep-Oct 2003; 11(5):312-320.
- Staheli LT, Corbett M, Wyss C, King H. Lower-extremity rotational problems in children. Normal values to guide management. *J Bone Joint Surg Am.* Jan 1985;67(1):39-47.
- Svenningsen S, Apalset K, Terjesen T, Anda S. Regression of femoral anteversion. A prospective study of in-toeing of children. *Acta Orthopaedica Scandinavica.* Apr 1989;60(2):170-173.
- Wenger DR, Mauldin D, Speck G, Morgan D, Lieber RL. Corrective shoes and inserts as treatment for flexible flatfoot in infants and children. *J Bone Joint Surg Am.* 1989 Jul;71(6):800-810.
- Staheli LT, Chew DE, Corbett M. The longitudinal arch: A survey of eight hundred and eighty-two feet in normal children and adults. *J Bone Joint Surg Am.* 1987 Mar;69(3):426-428.
- Piccolo CL, Galluzzo M, Ianniello S, Trinci M, Russo A, Rossi E, Zeconlini M, Laporta A, Guglielmi G, Muielle V. Pediatric musculoskeletal injuries: role of ultrasound and magnetic resonance imaging. *Musculoskelet Surg.* 2017 Mar; 101(Supple 1):85-102.
- LaBella CR, Henrikus W, Hewett TE. Anterior cruciate ligament Injuries: Diagnosis, Treatment, and Prevention. *Pediatrics* 2014;133(5):e1437-e1450.
- Tuite MJ, Kransdorf MJ, Beaman FD, Adler RS, Amini B, Appel M, Bernard SA, Dempsey ME, Fries IB, Greenspan BS, Khurana B, Mosher TJ, Walker EA, Ward RJ, Wessell DE, Weissman BN. ACR Appropriateness Criteria[®] Acute Trauma to the Knee. Available at <https://acsearch.acr.org/docs/69419/Narrative/> American College of Radiology. Revised 2014.
- Deyle GD. The role of MRI in musculoskeletal practice: a clinical perspective. *J Man Manip Ther.* 2011 Aug;19(3):152-161
- Bateni C, Bindra J, Haus B. MRI of sports injuries in children and adolescents: what's different from adults. *Current Radiology Reports.* 2014;2:45.
- Symons S, Rowsell M, Bhowal B, Diass JJ. Hospital versus home management of children with buckle fractures of the distal radius: A prospective randomized trial. *J Bone Joint Surg Br.* 2001;83:556-560.
- Van Bosse HJ, Patel RJ, Thacker M, Sala DA. Minimalistic approach to treating wrist torus fractures. *J Pediatric Orthop.* 2005 Jul-Aug;25(4):495-500.
- Williams KG, Smith G, Luhmann SJ, Mao J, Gunn JD, Luhmann JD. A randomized controlled trial of cast versus splint for distal radial buckle fracture: An evaluation of satisfaction, convenience, and preference. *Pediatric Emergency Care.* 2013 May;29(5):555-559.

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About the AAP-Section on Orthopaedics

The American Academy of Pediatrics is an organization of 66,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well-being of infants, children, adolescents and young adults. The Section on Orthopaedics was founded over 40 years ago for the primary purpose of improving the musculoskeletal health of children through mentorship, education, research, advocacy, and service. The Section includes over 150 pediatric orthopaedic surgeons and sports medicine physicians who often collaborate with members of international societies such as the Pediatric Orthopaedic Society of North America.



About the Pediatric Orthopaedic Society of North America

The Pediatric Orthopaedic Society of North America (POSNA) is a not-for-profit professional organization of over 1,400 surgeons, physicians, and allied health members passionately dedicated to advancing musculoskeletal care for children and adolescents through education, research, quality, safety and value initiatives, advocacy, and global outreach to children in underserved areas.



For more information or to see other lists of Things Providers and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't order repeat epidural steroid injections without evaluating the individual's response to previous injections.

Utilization of repeat epidural steroid injections has not been shown to improve patient outcomes. Physicians should consider patient re-evaluation prior to repeat epidural steroid injections.

2

Don't order an EMG for low back pain unless there is leg pain or sciatica.

Utilization of EMG studies for diagnosis of low back pain without leg pain is not supported. EMG studies have good specificity for the detection of lumbosacral radiculopathy in sciatica patients when appropriate electrodiagnostic criteria are used.

3

Don't prescribe bed rest for acute localized back pain without completing an evaluation.

Prolonged bed rest (more than 2 days) in acute localized low back pain has not been shown to improve long term function or pain. Bed rest prescriptions should be limited to less than 48 hours in patients with non-traumatic acute localized low back pain in the absence of traditional red flag signs, including, but not limited to, tumors, neurological issues, and weakness.

4

Don't order an imaging study for back pain without performing a thorough physical examination.

A thorough history and physical examination are necessary to guide imaging decisions. Ordering spine imaging without obtaining a history and physical examination has not been shown to improve patient outcomes and increases costs.

5

Don't prescribe opiates in acute disabling low back pain before evaluation and a trial of other alternatives is considered.

Early opiate prescriptions in acute disabling low back pain are associated with longer disability, increased surgical rates, and a greater risk of later opioid use. Opiates should be prescribed only after a physician evaluation by a licensed health care provider and after other alternatives are trialed.

How This List Was Created

The American Academy of Physical Medicine and Rehabilitation (AAPM&R) established a *Choosing Wisely*[®] task force to develop its list of recommendations. To ensure broad representation across our diverse specialty, members of this group were selected from varying practice settings and subspecialties within physical medicine & rehabilitation. The task force developed a list of topics they felt had the most impact on the field, which were then rated based upon their relevancy to the *Choosing Wisely*[®] campaign. Based on the task force ratings and a literature review, candidate recommendations were sent to relevant AAPM&R committees, councils and subject matter experts for review and comment. The task force reviewed this feedback and voted on the final “Top Five” recommendations, which were approved by the Evidence Based Practice Committee; Quality, Practice, Policy and Research Committee; and the Board of Governors.

AAPM&R’s disclosure and conflict of interest statements can be found at www.aapmr.org.

Sources

- 1 Novak S, Nemeth WC. The basis for recommending repeating epidural steroid injections for radicular low back pain: a literature review. *Arch Phys Med Rehabil.* 2008 Mar;89:543–52.
- 2 Tong HC. Specificity of needle electromyography for lumbar radiculopathy in 55- to 79-yr-old subjects with low back pain and sciatica without stenosis. *Am J Phys Med Rehabil.* 2011 Mar;90(3):233–8.
- 3 Dahm KT, Brurberg KG, Jamtvedt G, Hagen KB. Advice to rest in bed versus advice to stay active for acute low-back pain and sciatica. *Cochrane Database Syst Rev.* 2010 Jun 16;(6):CD007612.
- 4 Chou, Qaseem A, Owens DK, Shekelle P; Clinical Guidelines Committee of the American College of Physicians. Diagnostic imaging for low back pain: advice for high-value health care from the American College of Physicians. *Ann Intern Med.* 2011 Feb 1;154(3):181–9.
- 5 Webster BS, Verma SK, Gatchel RJ. Relationship between early opioid prescribing for acute occupational low back pain and disability duration, medical costs, subsequent surgery and late opioid use. *Spine.* 2007 Sep 1;32(19):2127–32.

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About the American Academy of Physical Medicine and Rehabilitation

The American Academy of Physical Medicine and Rehabilitation (AAPM&R) is proud to be a partner in the *Choosing Wisely*[®] campaign. AAPM&R is the national medical society representing more than 8,000 physiatrists, physicians who are specialists in the field of physical medicine and rehabilitation. Physiatrists treat adults and children with acute and chronic pain, persons who have experienced catastrophic events resulting in paraplegia, quadriplegia, traumatic brain injury, spinal cord injury, limb amputations, rheumatologic conditions, musculoskeletal injuries, and individuals with neurologic disorders or any other disease process that results in impairment and/or disability. With appropriate rehabilitation, many patients can regain significant function, live independently, and lead fulfilling lives.

To learn more about the AAPM&R, please visit www.aapmr.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1. Avoid polysomnography in chronic insomnia patients unless symptoms suggest a comorbid sleep disorder.

Chronic insomnia is diagnosed by a clinical evaluation that includes a thorough sleep history along with a medical, substance and psychiatric history. Some instruments can be helpful at the clinical encounter: these include self-administered questionnaires, sleep logs completed at home and symptom checklists. Although polysomnography (PSG) may confirm self-reported symptoms of chronic insomnia, it does not provide additional information necessary for diagnosis of chronic insomnia. However, PSG is indicated in some specific circumstances, for example when sleep apnea or sleep-related movement disorders are suspected, the initial diagnosis is uncertain, behavioral or pharmacologic treatment fails, or sudden arousals occur with violent or injurious behavior.

2. Avoid use of hypnotics as primary therapy for chronic insomnia in adults; instead offer cognitive-behavioral therapy, and reserve medication for adjunctive treatment when necessary.

Cognitive-behavioral therapy (CBT) for chronic insomnia involves a combination of behavioral modification, such as stimulus control and sleep restriction, and cognitive strategies, such as replacement of unrealistic fears about sleep with more positive expectations. In clinical trials, CBT is generally as effective as or more effective than hypnotics at improving sleep, and can be effective over an extended period of time without side-effects associated with hypnotics. Some patients may benefit from a limited course of hypnotics while CBT for chronic insomnia is initiated. Patients who have successfully used hypnotics for extended periods and are reluctant to discontinue their current treatment regimen may be reasonable candidates for continued pharmacologic treatment.

3. Don't prescribe medication to treat childhood insomnia, which usually arises from parent-child interactions and responds to behavioral intervention.

No medications are approved by the US Food and Drug Administration for the treatment of pediatric insomnia. As childhood insomnia usually arises due to parent-child interactions, treatment should involve efforts to improve relevant parent and child behavior, establish better sleep hygiene and manage expectations. Basic environmental, scheduling, sleep practice, and physiological features should be optimized before hypnotic use is considered for children. When necessary, hypnotics should be used short term, with caution and close monitoring for efficacy and side effects. Some children with significant developmental delay or cognitive impairment may not respond to behavioral management and may benefit from judicious use of hypnotics.

4. Don't use polysomnography to diagnose restless legs syndrome, except rarely when the clinical history is ambiguous and documentation of periodic leg movements is necessary.

Restless Legs Syndrome (RLS) is a neurologic disorder that can be diagnosed based on a patient's description of symptoms and additional clinical history. Polysomnography (PSG) generally does not provide additional information necessary to make the diagnosis. If a patient's clinical history for RLS is ambiguous, PSG to assess for periodic leg movements may be useful to help confirm an RLS diagnosis.

5. Don't perform positive airway pressure re-titration studies in asymptomatic, adherent sleep apnea patients with stable weight.

Re-titration of positive airway pressure (PAP) is not indicated for adult obstructive sleep apnea patients with stable weight whose symptoms are well controlled by their current PAP treatment. Follow-up PSG or re-titration is indicated for adult patients who are again symptomatic despite the continued, proper use of PAP, especially if they have gained substantial weight (e.g. 10% of original weight) since the last titration study. A new diagnostic PSG or re-titration may be indicated for patients who have lost substantial weight, to determine whether PAP treatment is still necessary.

How This List Was Created

The Executive Committee of the American Academy of Sleep Medicine developed 21 candidate recommendations for ways in which medical waste could be minimized while care for patients with sleep disorders is improved. Members of the Executive Committee then voted to assign priorities to each, and the top five were selected. Final wording of the five statements were approved by the full Board of Directors of the American Academy of Sleep Medicine. The Secretary/Treasurer and research staff of the American Academy of Sleep Medicine developed rationale and references for each recommendation. The final statements, explanations and citations were approved by a final vote of the Board of Directors.

The AASM disclosure and conflict of interest policy can be found at aasmnet.org.

Sources

- Schutte-Rodin S, Broch L, Buysse D, Dorsey C, Sateia M. Clinical guideline for the evaluation and management of chronic insomnia in adults. *J Clin Sleep Med*. 2008 Oct 15;4(5):487-504.

Sateia M, Doghramji K, Hauri P, Morin CM. Evaluation of chronic insomnia. *Sleep*. 2000 Mar 15;23(2):243-308.

Chesson A Jr, Hartse K, Anderson WM, Davila D, Johnson S, Littner M, Wise M, Rafecas J. Practice parameters for the evaluation of chronic insomnia. An American Academy of Sleep Medicine report. Standards of Practice Committee of the American Academy of Sleep Medicine. *Sleep*. 2000 Mar 15;23(2):237-41.

Reite M, Buysse D, Reynolds C, Mendelson W. The use of polysomnography in the evaluation of insomnia. *Sleep* 1995;18(1):58-70.
- Edinger JD, Wohlgemuth WK, Radtke RA, Marsh GR, Quillian RE. Cognitive behavioral therapy for treatment of chronic primary insomnia: a randomized controlled trial. *JAMA*. 2001 Apr 11;285(14):1856-64.

Sivertsen B, Omvik S, Pallesen S, et al. Cognitive behavioral therapy vs zopiclone for treatment of chronic primary insomnia in older adults: a randomized controlled trial. *JAMA*. 2006 Jun 28;295(14):2851-8.

Morin CM, Vallières A, Guay B, et al. Cognitive behavioral therapy, singly and combined with medication, for persistent insomnia: a randomized controlled trial. *JAMA* 2009 May 29;301(19):2005-15.
- Owens JA, Babcock D, Blumer J, Chervin R, Ferber R, Goetting M, Glaze D, Ivanenko A, Mindell J, Rappley M, Rosen C, Sheldon S. The use of pharmacotherapy in the treatment of pediatric insomnia in primary care: rational approaches. A consensus meeting summary. *J Clin Sleep Med*. 2005 Jan 15;1(1):49-59.

Owens JA, Mindell JA. Pediatric Insomnia. *Pediatr Clin N Am*. 2011 Jun;58(3):555-69.

Sheldon SH, Ferber R, Kryger MH, Gozal D, eds. *Principles and Practice of Pediatric Sleep Medicine: second edition*. London: Elsevier Saunders; 2012.
- Kushida CA, Littner MR, Morgenthaler T, Alessi CA, Bailey D, Coleman J Jr, Friedman L, Hirshkowitz M, Kapen S, Kramer M, Lee-Chiong T, Loubé DL, Owens J, Pancer JP, Wise M. Practice parameters for the indications for polysomnography and related procedures: an update for 2005. *Sleep*. 2005 Apr;28(4):499-521.

American Academy of Sleep Medicine. *International classification of sleep disorders, 3rd ed*. Darien, IL: American Academy of Sleep Medicine; 2014.
- Kushida CA, Littner MR, Morgenthaler T, Alessi CA, Bailey D, Coleman J Jr, Friedman L, Hirshkowitz M, Kapen S, Kramer M, Lee-Chiong T, Loubé DL, Owens J, Pancer JP, Wise M. Practice parameters for the indications for polysomnography and related procedures: An update for 2005. *Sleep*. 2005 Apr;28(4):499-521.

Epstein LJ, Kristo D, Strollo PJ Jr, Friedman N, Malhotra A, Patil SP, Ramar K, Rogers R, Schwab RJ, Weaver EM, Weinstein MD; Adult Obstructive Sleep Apnea Task Force of the American Academy of Sleep Medicine. Clinical guideline for the evaluation, management and long-term care of obstructive sleep apnea in adults. *J Clin Sleep Med*. 2009 Jun 15;5(3):263-76.

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About the AASM

The American Academy of Sleep Medicine (AASM) is the only professional society dedicated exclusively to the medical subspecialty of sleep medicine. As the leading voice in the sleep field, the AASM sets standards and promotes excellence in health care, education and research. Established in 1975 as the Association of Sleep Disorders Centers, the AASM has a combined membership of nearly 11,000 accredited member sleep centers and individual members, including physicians, scientists and other health care professionals.



To learn more about the AASM, visit www.aasmnet.org.

For more information or to see other lists of Things Provider and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't put asymptomatic children in weak reading glasses.

Low "farsightedness" is a normal finding in children. Children can easily focus to see at near, with their large accommodative reserve. If the reading glasses prescription is low (less than +2.00 diopters), their innate ability to focus can be used to see clearly at both distance and near. If the eyes are not crossed, prescription of weak glasses is generally not necessary.

2

Annual comprehensive eye exams are unnecessary for children who pass routine vision screening assessments.

Early childhood vision screening done as part of routine well-child care accurately identifies most children with significant eye problems that are otherwise asymptomatic. Annual comprehensive eye examinations increase financial costs, a child's absence from school and parental time away from work, with no evidence that the comprehensive exam detects asymptomatic vision problems better than timely, methodical and recurrent screening efforts. Comprehensive eye exams are appropriate for children who do not pass a vision screening.

3

Don't recommend vision therapy for patients with dyslexia.

Dyslexia is a language-based learning disorder in which a person has trouble understanding written words. This occurs because the brain has a problem distinguishing and separating the sounds in spoken words, called a phonological deficit. Dyslexia is not due to a vision disorder. Children with dyslexia do not have any more visual problems than children without dyslexia. Vision therapy does not work for this population because the eyes are not the problem.

4

Don't routinely order imaging for all patients with double vision.

Many people with double vision, or diplopia, want a CT scan or MRI to see if it is caused by a brain tumor or other serious problem. Much of the time, following a comprehensive eye evaluation, neither test is necessary. The most common causes of double vision are refractive error, dry eyes, cataract and non-neurologic eye misalignment, all readily diagnosed by a complete exam. Only a minority of cases of diplopia result from problems within the brain.

5

Don't order retinal imaging tests for children without symptoms or signs of eye disease.

Retinal imaging, such as taking a photograph or obtaining an Ocular Coherence Tomography (OCT) image of the back of a child's eye, can be useful for documenting or following known retinal or optic nerve pathology. These imaging studies should not be obtained routinely for documentation of normal ocular anatomy in asymptomatic children.

How This List Was Created

The President and the Executive Vice President of the American Association for Pediatric Ophthalmology and Strabismus met with its Board of Directors. These 10 pediatric ophthalmologists leading the American Association for Pediatric Ophthalmology and Strabismus then generated a list of 10 potential topics. Each individual ranked the topics and the top five recommendations were chosen. Each recommendation was sent to a recognized expert in that specific area or to a committee of experts to complete the template. The American Association for Pediatric Ophthalmology and Strabismus disclosure and conflict of interest policies can be found at www.aapos.org.

Sources

- 1 Donahue SP. How often are spectacles prescribed to “normal” preschool children? J AAPOS. 2004;8:224–9.
- 2 AAO/AAP/AAPOS/AACO. Eye examination in infants, children, and young adults by pediatricians. May 2007. Pediatrics 2007;120:683–4.
AAO/AAP/AAPOS. Vision screening for infants and children: a joint statement of the American Association for Pediatric Ophthalmology and Strabismus and the American Academy of Ophthalmology. 2007. Available from: http://www.aapos.org/client_data/files/2011/337_visionscreeningforinfantsandchildren2011.pdf.
AAPOS Vision Screening Recommendations. Available from: http://www.aapos.org/client_data/files/2013/595_aapos_visscreen.pdf.
- 3 Shaywitz SE. Overcoming dyslexia: a new and complete science-based program for overcoming reading problems at any level. New York, NY: Knopf; 2003.
Jennings AJ. Behavioural optometry—a critical review. Optom Pract. 2000;1:67–78.
Barrett B. A critical evaluation of the evidence supporting the practice of behavioural vision therapy. Ophthalmic Physiol Opt. 2009;29:4–25.
Fletcher JM, Currie D. Vision efficiency interventions and reading disability. Perspectives on Language and Literacy 2011;37:21–4.
Handler SM, Fierse WM; Section on Ophthalmology and Council on Children with Disabilities, American Academy of Ophthalmology, American Association for Pediatric Ophthalmology and Strabismus, American Association of Certified Orthoptists. Joint technical report—learning disabilities, dyslexia, and vision. Pediatrics. 2011;127:e818-56. Available at: <http://pediatrics.aappublications.org/content/127/3/e818.full.pdf+html>.
- 4 Lee MS. Diplopia: diagnosis and management. American Academy of Ophthalmology Focal points module. 2007:12.
- 5 Williams GA, Scott IU, Haller JA, Maguire AM, Marcus D, McDonald HR. Single-field fundus photography for diabetic retinopathy screening: A report by the American Academy of Ophthalmology. Ophthalmology. 2004 May;111(5):1055–62.

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About the American Association for Pediatric Ophthalmology and Strabismus

The American Association for Pediatric Ophthalmology and Strabismus (AAPOS) is the flagship specialty organization for pediatric ophthalmologists in the U.S. with more than 1,500 U.S. and international members. AAPOS's mission is to enhance the quality of health care by fostering excellence and professionalism in pediatric ophthalmology and adult strabismus. AAPOS provides information and advocacy for its members in ophthalmology, pediatrics and related subspecialties.

For more information or questions, please visit www.aapos.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.



Five Things Physicians and Patients Should Question

1

Don't perform surveillance esophagogastroduodenoscopy (EGD) in patients with compensated cirrhosis and small varices without red signs treated with non-selective beta blockers for preventing a first variceal bleed.

In patients with cirrhosis and small varices that have not bled and have no criteria for increased risk of bleeding (Child A, no red signs on varices), beta blockers can be used. In patients with cirrhosis and medium or large varices that have not bled and are not at the highest risk of bleeding (Child A and no red signs), beta blockers are preferred, adjusted to the maximal tolerated dose. In both scenarios, follow-up EGD is not necessary.

2

Don't continue treatment for hepatic encephalopathy indefinitely after an initial episode with an identifiable precipitant.

In circumstances where the precipitating factors are identified and well-controlled (e.g., recurrent infections, variceal bleeding) or liver function or nutritional status improved, prophylactic therapy may be discontinued.

3

Don't repeat hepatitis C viral load testing outside of antiviral therapy.

Highly-sensitive quantitative assays of hepatitis C RNA are appropriate at diagnosis and as part of antiviral therapy. Otherwise, the results of virologic testing do not change clinical management or outcomes.

4

Don't perform computed tomography or magnetic resonance imaging routinely to monitor benign focal lesions in the liver unless there is a major change in clinical findings or symptoms.

Patients with benign focal liver lesions (other than hepatocellular adenoma) who don't have underlying liver disease and have demonstrated clinical and radiologic stability do not need repeated imaging.

5

Don't routinely transfuse fresh frozen plasma and platelets prior to abdominal paracentesis or endoscopic variceal band ligation.

Routine tests of coagulation do not reflect bleeding risk in patients with cirrhosis and bleeding complications of these procedures are rare.

How This List Was Created

The American Association for the Study of Liver Diseases (AASLD) established a *Choosing Wisely*[®] Task Force in December 2013 to develop its list of recommendations. Members of this group were selected from the AASLD Practice Guidelines Committee to broadly represent varying practice settings and subspecialty expertise within the field of hepatology. Hepatologists with methodological experience in evidence-based medicine were also included. The working group solicited recommendations from the entire AASLD membership that should be considered for inclusion in the list of “Five Things Physicians and Patients Should Question”. These recommendations were then rated based upon judgments related to harm, benefit and excess resource utilization. Based on working group voting and literature review, a total of 10 suggestions were identified with subsequent voting by the working group to generate the final Top Five recommendations. These recommendations were submitted and approved by AASLD Governing Board.

AASLD’s disclosure and conflict of interest policy can be found at www.aasld.org.

Sources

- 1 Garcia-Tsao G, Sanyal AJ, Grace ND, Carey W; Practice Guidelines Committee of the American Association for the Study of Liver Diseases; Practice Parameters Committee of the American College of Gastroenterology. Prevention and management of gastroesophageal varices and variceal hemorrhage in cirrhosis. *Hepatology*. 2007;46(3):922–38.
 - 2 Amodio P, Bajaj J, Cordoba J, Ferenci P, Mullen K, Weissenborn K, Wong P, Vilstrup H; Practice Guidelines Committee of the American Association for the Study of Liver Diseases. Hepatic encephalopathy in chronic liver disease. *Hepatology*. 2014; [In Press].
 - 3 Ghany MG, Strader DB, Thomas DL, Seeff LB; American Association for the Study of Liver Diseases. Diagnosis, management, and treatment of hepatitis C: an update. *Hepatology*. 2009 Apr;49(4):1335–74.
 - 4 Bioulac-Sage P, Laumonier H, Couchy G, Le Bail B, Sa Cunha A, Rullier A, Laurent C, Blanc JF, Cubel G, Trillaud H, Zucman-Rossi J, Balabaud C, Saric J. Hepatocellular adenoma management and phenotypic classification: the Bordeaux experience. *Hepatology*. 2009;50(2):481–9.
 - 5 Runyon BA; AASLD. Introduction to the revised American Association for the Study of Liver Diseases Practice Guideline management of adult patients with ascites due to cirrhosis 2012. *Hepatology*. 2013 Apr;57(4):1651–3.
- Tripodi A, Mannucci PM. The coagulopathy of chronic liver disease. *N Engl J Med*. 2011 Jul 14;365(2):147–56.

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About the American Association for the Study of Liver Diseases

The American Association for the Study of Liver Diseases (AASLD) is the leading organization of scientists and health care professionals committed to preventing and curing liver disease. AASLD was founded in 1950 by a small group of leading liver specialists to bring together those who had contributed to the field of hepatology.

AASLD has grown to an international society responsible for all aspects of hepatology, and our annual meeting, The Liver Meeting[®], has grown in attendance from 12 to more than 9,500 physicians, surgeons, researchers and allied health professionals from around the world.

Hepatology has been recognized as a discipline only in the last few decades, and AASLD played a seminal and unifying role in focusing interest on hepatological problems, as well as the founding of other hepatological societies.

To learn more about the AASLD, visit www.aasld.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't transfuse more units of blood than absolutely necessary.

Each unit of blood carries risks. A restrictive threshold (7.0-8.0g/dL) should be used for the vast majority of hospitalized, stable patients without evidence of inadequate tissue oxygenation (evidence supports a threshold of 8.0g/dL in patients with pre-existing cardiovascular disease). Transfusion decisions should be influenced by symptoms and hemoglobin concentration. Single unit red cell transfusions should be the standard for non-bleeding, hospitalized patients. Additional units should only be prescribed after re-assessment of the patient and their hemoglobin value.

2

Don't transfuse red blood cells for iron deficiency without hemodynamic instability.

Blood transfusion has become a routine medical response despite cheaper and safer alternatives in some settings. Pre-operative patients with iron deficiency and patients with chronic iron deficiency without hemodynamic instability (even with low hemoglobin levels) should be given oral and/or intravenous iron.

3

Don't routinely use blood products to reverse warfarin.

Patients requiring reversal of warfarin can often be reversed with vitamin K alone. Prothrombin complex concentrates or plasma should only be used for patients with serious bleeding or requiring emergency surgery.

4

Don't perform serial blood counts on clinically stable patients.

Transfusion of red blood cells or platelets should be based on the first laboratory value of the day unless the patient is bleeding or otherwise unstable. Multiple blood draws to recheck whether a patient's parameter has fallen below the transfusion threshold (or unnecessary blood draws for other laboratory tests) can lead to excessive phlebotomy and unnecessary transfusions.

5

Don't transfuse O negative blood except to O negative patients and in emergencies for women of child bearing potential with unknown blood group.

O negative blood units are in chronic short supply due in part to overutilization for patients who are not O negative. O negative red blood cells should be restricted to: (1) O negative patients; or (2) women of childbearing potential with unknown blood group who require emergency transfusion before blood group testing can be performed.

How This List Was Created

Recommendations were drafted by a work group led by AABB Director Jeannie Callum, MD. Ten draft statements were edited by the AABB Clinical Transfusion Medicine Committee, chaired by Aaron Tobian, MD. In order to identify the top five statements, a random sampling of AABB physician members working in the field of transfusion medicine in hospitals, as well as all members of AABB's Clinical Transfusion Medicine Committee, were asked to rate the 10 draft statements. On a Likert scale, participants were asked to "indicate the importance of including each of the following transfusion-related statements in the *Choosing Wisely* campaign promoting the appropriate use of health care resources." The final top five statements were approved by the AABB Board of Directors.

AABB's disclosure and conflict of interest policy can be found at www.aabb.org.

Sources

- 1 Carson JL, Grossman BJ, Kleinman S, Tinmouth AT, Marques MB, Fung MK, Holcomb JB, Illoh O, Kaplan LJ, Katz LM, Rao SV, Roback JD, Shander A, Tobian AA, Weinstein R, Swinton McLaughlin LG, Djulbegovic B; Clinical Transfusion Medicine Committee of the AABB. Red blood cell transfusion: a clinical practice guideline from the AABB. *Ann Intern Med*. 2012 Jul 3;157(1):49–58.
- 2 AABB. Guidelines for patient blood management and blood utilization. Bethesda (MD): AABB; 2011. 52 p.
Lin DM, Lin ES, Tran MH. Efficacy and safety of erythropoietin and intravenous iron in perioperative blood management: a systematic review. *Transfus Med Rev*. 2013 Oct;27(4):221–34.
Friedman AJ, Chen Z, Ford P, Johnson CA, Lopez AM, Shander A, Waters JH, van Wyck D. Iron deficiency anemia in women across the life span. *J Womens Health (Larchmt)*. 2012 Dec;21(12):1282–9.
- 3 Holbrook A, Schulman S, Witt DM, Vandvik PO, Fish J, Kovacs MJ, Svensson PJ, Veenstra DL, Crowther M, Guyatt GH; American College of Chest Physicians. Evidence-based management of anticoagulant therapy: antithrombotic therapy and prevention of thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. 2012 Feb;141(2 Suppl):e152S–84S.
- 4 Napolitano LM, Kurek S, Luchette FA, Corwin HL, Barie PS, Tisherman SA, Hebert PC, Anderson GL, Bard MR, Bromberg W, Chiu WC, Cipolle MD, Clancy KD, Diebel L, Hoff WS, Hughes KM, Munshi I, Nayduch D, Sandhu R, Yelon JA; American College of Critical Care Medicine of the Society of Critical Care Medicine; Eastern Association for the Surgery of Trauma Practice Management Workgroup. Clinical practice guideline: red blood cell transfusion in adult trauma and critical care. *Crit Care Med*. 2009 Dec;37(12):3124–57.
- 5 The Chief Medical Officer's National Blood Transfusion Committee (UK). The appropriate use of group O RhD negative red cells. Manchester (UK): National Health Service; 2008. 4 p.

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the AABB

AABB is a not-for-profit association representing individuals and institutions involved in the field of transfusion medicine and cellular therapies. The association is committed to improving health by delivering standards, accreditation and professional educational programs that focus on optimizing patient and donor care and safety. AABB membership consists of approximately 1,800 institutions and 8,000 professional individuals, including roughly 1,600 physicians.



To learn more about the AABB, visit www.aabb.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.



Five Things Physicians and Patients Should Question

1 Don't administer steroids after severe traumatic brain injury.

Steroids are not recommended for improving outcomes or reducing intracranial pressure in patients with traumatic brain injury. High dose steroid administration may increase complication risk and may produce increased mortality.

2 Don't obtain imaging (plain radiographs, magnetic resonance imaging, computed tomography [CT], or other advanced imaging) of the spine in patients with non-specific acute low back pain and without red flags.

Imaging of the spine in patients with acute low back pain during the early phase of symptom onset is unnecessary. Red flags that may indicate that early imaging of the spine is required can include neurological deficit such as weakness or numbness, any bowel or bladder dysfunction, fever, history of cancer, history of intravenous drug use, immunosuppression, steroid use, history of osteoporosis or worsening symptoms.

3 Don't routinely obtain CT scanning of children with mild head injuries.

A mild traumatic brain injury is a temporary loss of neurologic function resulting from a blunt blow to the head or an acceleration/deceleration injury. There are predictors that a more severe injury has occurred and CT scanning may be appropriate. In patients younger than age two, a persistent altered mental status, non-frontal scalp hematoma, loss of consciousness for five seconds or more, severe injury mechanism, palpable skull fracture or not acting normally according to the parent may be signs of a more serious injury. In patients older than two, prolonged abnormal mental status, any loss of consciousness, history of vomiting, severe injury mechanism, clinical signs of basilar skull fracture or severe headache may also necessitate CT imaging. Any patient with a traumatic injury to the head that has any neurologic deficits should also be imaged if no other cause can be determined.

4 Don't routinely screen for brain aneurysms in asymptomatic patients without a family or personal history of brain aneurysms, subarachnoid hemorrhage (SAH) or genetic disorders that may predispose to aneurysm formation.

Family history of aneurysmal SAH increases an individual's risk of harboring an aneurysm. Screening patients without a family history or without a personal history of SAH is not indicated.

5 Don't routinely use seizure prophylaxis in patients following ischemic stroke.

Seizures may complicate the clinical course of patients who have suffered a stroke. However, there is no evidence that using prophylactic antiepileptic drugs prevents seizure occurrence. For patients who suffer a seizure after a stroke, seizure treatment may be required.

These items are provided solely for information and educational purposes and are not intended as a substitute for consultation with a medical professional. Patients with any specific questions about the items on this list or their individual situation should consult their physician. This Choosing Wisely[®] document does not represent a "standard of care," nor is it intended as a fixed treatment protocol. It is anticipated that there will be patients who will require less or more treatment than the average. It is also acknowledged that in atypical cases, treatment falling outside this recommendation list will sometimes be necessary. This document should not be seen as prescribing the type, frequency or duration of intervention. Treatment should be based on the individual patient's need and physician's professional judgment. This document is designed to function as a guide and should not be used as the sole reason for denial of treatment and services. This document is not intended to expand or restrict a health care provider's scope of practice or to supersede applicable ethical standards or provisions of law, but to encourage discussion of these issues between physician and patient, encourage active patient participation in health care decision-making, and foster greater mutual understanding.

How This List Was Created

The American Association of Neurological Surgeons' (AANS) and Congress of Neurological Surgeons' (CNS) Quality Improvement Workgroup and Joint Guidelines Committee, which included representatives from the clinical subspecialties in neurosurgery, developed an initial draft list of *Choosing Wisely*[®] recommendations, based on the scientific evidence, existing clinical practice and expert opinion. This list was then submitted to the leadership of the AANS/CNS clinical subspecialty sections (cerebrovascular, pain, pediatric neurosurgery, spine and peripheral nerve, stereotactic and functional, trauma and tumor) for review and feedback. In addition, we solicited feedback about the recommendations from the general membership of the AANS and CNS. The list was submitted to the AANS Board of Directors and CNS Executive Committee, which reviewed and approved the final set of *Choosing Wisely*[®] recommendations.

The AANS and CNS disclosure and conflict of interest policies can be found at www.aans.org and www.cns.org.

Sources

- 1 Bratton SL, Chestnut RM, Ghajar J, McConnell Hammond FF, Harris OA, Hartl R, Manley GT, Nemecek A, Newell DW, Rosenthal G, Schouten J, Shutter L, Timmons SD, Ullman JS, Videtta W, Wilberger JE, Wright DW. Guidelines for the management of severe traumatic brain injury. XV. Steroids. *J Neurotrauma*. 2007;24 Suppl 1:S91–5.
- 2 Chou R, Qaseem A, Snow V, Casey D, Cross JT Jr, Shekelle P, Owens DK. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. *Ann Intern Med*. 2007 Oct 2;147(7):478–91.
- 3 Kuppermann N, Holmes JF, Dayan PS, Hoyle JD Jr, Atabaki SM, Holubkov R, Nadel FM, Monroe D, Stanley RM, Borgialli DA, Badawy MK, Schunk JE, Quayle KS, Mahajan P, Lichenstein R, Lillis KA, Tunik MG, Jacobs ES, Callahan JM, Gorelick MH, Glass TF, Lee LK, Bachman MC, Cooper A, Powell EC, Gerardi MJ, Melville KA, Muizelaar JP, Wisner DH, Zupspan SJ, Dean JM, Wootton-Gorges SL. Identification of children at very low risk of clinically-important brain injuries after head trauma: a prospective cohort study. *Lancet*. 2009 Oct 3;374(9696):1160–70.
- 4 Bederson JB, Awad IA, Wiebers DO, Piepgras D, Haley EC Jr, Brott T, Hademenos G, Chyatte D, Rosenwasser R, Caroselli C. Recommendations for the management of patients with unruptured intracranial aneurysms: a statement for healthcare professionals from the Stroke Council of the American Heart Association. *Circulation* 2000, 102 (18): 2300–8.
- 5 Kwan J, Wood E. Antiepileptic drugs for the primary and secondary prevention of seizures after stroke. *Cochrane Database of Systematic Reviews* 2010, Issue 1. Art. No.: CD005398. DOI: 10.1002/14651858.CD005398.pub2.

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About the American Association of Neurological Surgeons and the Congress of Neurological Surgeons

The American Association of Neurological Surgeons (AANS), founded in 1931, and the Congress of Neurological Surgeons (CNS), founded in 1951, are the two largest scientific and educational associations for neurosurgical professionals in the world. These groups represent over 8,000 neurosurgeons worldwide. The AANS is dedicated to advancing the specialty of neurological surgery in order to promote the highest quality of patient care. The CNS exists to enhance health and improve lives worldwide through the advancement of education and scientific exchange. Neurological surgery is the medical specialty concerned with the prevention, diagnosis, treatment and rehabilitation of disorders that affect the entire nervous system, including the spinal column, spinal cord, brain and peripheral nerves.

For more information, please visit www.aans.org, www.cns.org or www.neurosurgeryblog.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Ten Things Physicians and Patients Should Question

1

Don't do a needle electromyography (EMG) test for isolated neck or back pain after a motor vehicle accident, as a needle EMG is unlikely to be helpful.

Needle EMG for neck pain without arm pain, arm tingling, arm weakness, or arm numbness does not improve outcomes but does increase costs. The same is true of needle EMG for back pain without lower limb pain, lower limb tingling, lower limb weakness, or lower limb numbness. Neck and back pain are both common reasons for physician visits.

2

Don't perform dermatomal somatosensory evoked potentials (SEPs) for a pinched nerve in the neck or back, as they are an unproven diagnostic procedure.

Although techniques such as needle EMG and nerve conduction studies can be helpful to diagnose pinched nerve in the neck (cervical radiculopathy) or back (lumbar radiculopathy), dermatomal SEP is of unproven worth for this purpose but does increase costs. There are a number of causes of neck, shoulder, and upper limb pain besides cervical radiculopathy. There are also a number of causes of back, hip, thigh, and lower limb pain besides lumbar radiculopathy.

3

Don't do a four limb needle EMG/nerve conduction study (NCS) testing for neck and back pain after trauma.

Although techniques such as needle EMG and NCS can be helpful to diagnose pinched nerve in the neck or back (cervical or lumbar radiculopathy), four limb needle EMG/NCS is not needed and is not considered appropriate testing but does increase costs. Four limb needle EMG/NCS is, however, rarely needed to evaluate patients for ALS, polyradiculoneuropathy, or multiple mononeuropathies.

4

Don't do nerve conduction studies without also doing a needle EMG for testing for radiculopathy, a pinched nerve in the neck or back.

For diagnosis of a pinched nerve in the neck or back, nerve conduction studies alone cannot make the diagnosis. Needle EMG is necessary to identify and characterize the disease process.

5

Don't do a magnetic resonance imaging (MRI) scan of the spine or brain for patients with only peripheral neuropathy (without signs or symptoms suggesting a brain or spine disorder).

Because the vast majority of people with peripheral neuropathy (also called polyneuropathy) have the longest nerves of the body primarily affected (mostly in the toes and feet but sometimes also in the hands), there is essentially no justification for MRI imaging of the brain or spine in these cases.

6

Don't use intravenous immunoglobulin (IVIG) in the treatment of idiopathic length dependent axonal polyneuropathy.

IVIG is an expensive therapy with side effects that may include severe allergic reactions, headaches and blood clots. It is recommended for use in Guillain-Barre Syndrome, chronic inflammatory demyelinating polyradiculoneuropathy and multifocal motor neuropathy, but not other polyneuropathies.

7

Don't routinely use B vitamin supplements for the treatment of polyneuropathy or neuropathic pain unless a deficiency exists.

There is no indication for supplementing with B vitamins in patients with polyneuropathy unless a deficiency has been detected or is highly likely secondary to other medical factors (e.g., gastric bypass surgery). In addition to being an unnecessary expense, excessive vitamin B-6 can lead to toxicity and cause worsening neuropathy.

8

Don't perform nerve conduction studies or electromyography for muscle pain in the absence of other abnormalities on examination or laboratory testing.

Muscle pain or myalgias are common. The likelihood of finding a muscle disease in an individual with muscle pain who has a normal neurologic exam and laboratory tests is quite low.

9

Don't choose opioids or narcotics as the first choice of treatment for neuropathic pain.

Opioids and narcotics include drugs such as hydrocodone, oxycodone, fentanyl and others. Risks related to the use of these drugs include uncontrollable sleepiness and slow or stopped breathing. They are a leading cause of addiction and avoidable death. Opioids may be less risky when used for a short time after some surgeries or when used for pain related to deadly cancers. There are many effective, safer options for neuropathic pain.

10

Don't have genetic testing for nerve and muscle diseases prior to having a discussion with your physician or a genetics professional.

Genetic testing is now widely available and can be ordered directly by patients from home. Due to the potential implications of test results and the complexity of testing, patients are advised to speak with their physician or genetic counselor prior to having testing performed. Pre-testing counseling will help patients select appropriate testing, understand the limitations of testing, potential out-of-pocket costs and the effect that positive test results may have on the patient and their family.

How This List Was Created

The Professional Practice Committee (PPC) of the American Association of Neuromuscular & Electrodiagnostic Medicine (AANEM) developed this list of recommendations. The PPC includes both neurologists and physical medicine and rehabilitation (PMR) physicians who come from varying practice settings and also includes the AANEM's representatives to the American Medical Association (AMA) Current Procedural Terminology Panel and Relative Value Update Committee. The PPC members identified areas to be included on this list based on the greatest potential for overuse/misuse, quality improvement and availability of strong evidence-based research/support in the literature. The committee's recommendations were discussed at an AANEM Board meeting that included chairs from AANEM committees. The PPC reviewed the feedback from this group and voted on the final Top Five recommendations. These were then approved by the AANEM Board of Directors.

AANEM's disclosure and conflict of interest policy can be found at www.aanem.org.

Sources

- 1 Braddom RL, Spitz L, Rivner MH. Frequency of radiculopathies in motor vehicle accidents. *Muscle Nerve*. 2009 Apr;39: 545-7.
Ovadia D, Steinberg EL, Nissan MN, Dekel S. Whiplash injury – a retrospective study on patients seeking compensation. *Injury*. 2002 Sep;33(7): 569-73.
Steinberg EL, Ovadia D, Nissan M, Menahem A, Dekel S. Whiplash injury: is there a role for electromyography studies? *Arch Orthop Trauma Surg*. 2005 Feb;125(1):46-50.
Suri P, Hunter DJ, Jouve C, Hartigan C, Limke J, Pena E, Swaim B, Li L, Rainville J. Inciting events associated with lumbar disc herniation. *Spine Journal*. 2010 may;10:388-95.
- 2 American Academy of Neurology. Assessment: Dermatomal somatosensory evoked potentials. Therapeutics and Technology Assessment Subcommittee. *Neurology*. 1997 Oct;49(4):1127-30.
Rodriguez AA, Kanis L, Rodriguez AA, Lane D. Somatosensory evoked potentials from dermatomal stimulation as an indicator of L5 and S1 radiculopathy. *Arch Phys Med Rehab*. 1987 Jun;68(6):366-8.
Yazicioglu K, Ozgül A, Kalyon TA, Gündüz S, Arpacioğlu O, Bilgiç F. The diagnostic value of dermatomal somatosensory evoked potentials in lumbosacral disc herniations: a critical approach. *Electromyogr Clin Neurophysiol*. 1999 Apr-May;39(3): 175-81.
- 3 Braddom RL, Spitz L, Rivner MH. Frequency of radiculopathies in motor vehicle accidents. *Muscle Nerve*. 2009 Apr;39: 545-7.
Ovadia D, Steinberg EL, Nissan MN, Dekel S. Whiplash injury – a retrospective study on patients seeking compensation. *Injury*. 2002 Sep;33(7): 569-73.
Steinberg EL, Ovadia D, Nissan M, Menahem A, Dekel S. Whiplash injury: is there a role for electromyography studies? *Arch Orthop Trauma Surg*. 2005 Feb;125(1):46-50.
- 4 Dillingham TR, Lauder TD, Andary M, Kumar S, Pezzin LE, Stephens RT, Shannon S. Identifying lumbosacral radiculopathies: an optimal electromyographic screen. *Am J Phys Med Rehabil*. 2000 Nov-Dec;79(6):496-503.
Dillingham TR, Lauder TD, Andary M, Kumar S, Pezzin LE, Stephens RT, Shannon S. Identification of cervical radiculopathies: optimizing the electromyographic screen. *Am J Phys Med Rehabil*. 2001 Feb;80(2):84-91.
- 5 England, JD Gronseth GS, Franklin G, Carter GT, Kinsella LJ, Cohen JA, Asbury AK, Szigeti K, Lupski JR, Latov N, Lewis RA, Low PA, Fisher MA, Herrmann DN, Howard JF Jr, Lauria G, Miller RG, Polydefkis M, Sumner AJ; American Academy of Neurology. Practice Parameter: evaluation of distal symmetric polyneuropathy: role of laboratory and genetic testing (an evidence-based review). Report of the American Academy of Neurology, American Association of Neuromuscular and Electrodiagnostic Medicine, and American Academy of Physical Medicine and Rehabilitation. *Neurology*. 2009 Jan 13;72(2):185-92.
- 6 Patwa et al. *Neurology*. 2012 Mar 27;78(13): 1009-15.
Feasby et al. *Transfus Med Rev*. 2007 Apr;21(2 Supp 1): S57-107.
Donofrio PD et al. *Muscle Nerve*. 2009 Nov;40(5):890-900. doi: 10.1002/mus.21433.
- 7 Brill V et al. *Neurology*. 2011 May 17;76(20):1758-65.
Kulkantrakorn K. *Neurol Sci*. 2014 Nov;35(11):1827-30.
Pluijijms et al. *Pain Pract*. 2011 Mar-Apr;11(2):191-8.
- 8 Echaniz-Laguna, A, Chanson, J. *Muscle Nerve*. 2016 Aug;54(2):321-324
- 9 Scholten PM, Harden RN. Assessing and Treating Patients With Neuropathic Pain. *PM R*. 2015;7(11Suppl):S257-69.
- 10 AANEM Position Statement. The Utility of Genetic Testing in Neuromuscular Disease: A Consensus from the AANEM on the Clinical Usefulness of Genetic Testing in the Diagnosis of Neuromuscular Disease. April 2016.
ACMG Board of Directors. *Genet Med*. 2015, Dec; 18:207-208, advance online publication, Dec 17, 2015; doi:10.1038/gim.2015.190.

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About American Association of Neuromuscular & Electrodiagnostic Medicine

- The American Association of Neuromuscular & Electrodiagnostic Medicine (AANEM) was founded in 1953. We are a nonprofit membership association dedicated to the advancement of neuromuscular, musculoskeletal, and electrodiagnostic medicine. Our nearly 4,500 members, neurologists and physiatrists and other allied health professionals and researchers, are working to improve the quality of medical care provided to patients with muscle and nerve disorders.
- To learn more about the AANEM, visit www.aanem.org.



For more information or to see other lists of Things Clinicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1 Do not obtain spinal imaging for patients with acute low-back pain during the six (6) weeks after onset in the absence of red flags.

In the absence of red flags, evidence-based guidelines do not support the routine use of spinal imaging for patients with acute back pain of less than six weeks duration. Red flags include history of cancer, fracture or suspected fracture based on clinical history, progressive neurologic symptoms and infection, as well as conditions that potentially preclude a dynamic thrust to the spine, such as osteopenia, osteoporosis, axial spondyloarthritis and tumors. Unnecessary imaging incurs monetary cost, exposes the patient to ionizing radiation, and can result in labeling patients with conditions that are not clinically meaningful, creating a false sense of vulnerability and disability. Indeed, several studies have shown that the routine use of radiographs in the care of low-back pain may result in worse outcomes than without their use.

2 Do not perform repeat imaging to monitor patients' progress.

With few exceptions (e.g., the long-term management of idiopathic scoliosis) radiographic findings should not be used as outcome measures for low-back pain. There is currently no data available to support a relationship between changes in alignment or other structural characteristics and patient improvement. This practice increases costs, exposes patients unnecessarily to ionizing radiation and may distract from more meaningful outcomes. Furthermore, there is no known correlation between performing routine or repeat imaging studies to monitor a patient's condition and improved clinical outcomes or meaningful changes in patient management. Repeat imaging is appropriate only if strong clinical indications exist, such as a major change in diagnosis, documented worsening of symptoms or significant progression of disease. Failure to respond to treatment is not an indication for repeat imaging.

3 Avoid protracted use of passive or palliative physical therapeutic modalities for low-back pain disorders unless they support the goal(s) of an active treatment plan.

Passive physical therapeutic modalities are defined as those interventions applied to a patient with no active participation on the part of the patient. These include heat, cold, electrical stimulation and ultrasound. These passive therapies can play an important role in facilitating patient participation in an active treatment program. However, the use of passive therapies untethered to the goal of increasing physical activity can be harmful, as it can lead to patient inactivity, prolonged recovery and increased costs. For any patient with a low-back pain disorder to achieve an optimal clinical outcome, an essential element is to restore, maintain or increase the level of physical activity. The evidence demonstrates that both general physical activity (e.g., walking, jogging, biking) and specific exercise regimens are effective in treating and preventing low-back pain and may lead to better outcomes when combined with spinal manipulation.

4 Do not provide long-term pain management without a psychosocial screening or assessment.

There is a high probability that any person with a chronic pain syndrome has a concomitant psychological disorder, most notably depression and/or anxiety. The relationship between chronic pain and depression/anxiety is well established. The causal arrow between pain and these disorders can point in either direction and over time may form a positive feedback loop between these two elements. Screening tools are available that will aid in the detection of potential depression/anxiety, and, when indicated, a referral may be most appropriate for more extensive evaluation and treatment. In addition, lesser psychological factors such as catastrophizing and fear avoidance behavior may interfere with a patient's recovery and should be recognized by the clinician. Recognizing indicators of patient psychosocial health behavioral factors can affect a patient's recovery and/or compliance with treatment and may decrease the risk of developing chronic illness/pain. Tools such as StarTBack 9 screening tool, PHQ-9 depression scale and the Fear Avoidance Belief Questionnaire are examples.

5 Do not prescribe lumbar supports or braces for the long-term treatment or prevention of low-back pain.

While there may be limited benefit in the short term, the prolonged use of lumbar supports is not supported by the literature for the treatment or prevention of low-back pain. Numerous systematic reviews have found limited to no value for their use in this context. The literature clearly demonstrates that such passive therapies are contrary to the currently accepted central principle of low-back pain care, which is that the patient must engage in an active rehabilitative regimen to achieve the best outcomes.

How This List Was Created

The American Chiropractic Association (ACA) utilized its Committee on Quality Assurance and Accountability (CQAA) to serve as an expert task force of doctors of chiropractic (DCs) to identify areas/items common to the practice of chiropractic for which recommendations were supported by clinical research and would result in high-value, cost-effective services and improved patient outcomes. A literature search was conducted and the task force collaboratively identified a draft list of six recommendations based upon established *Choosing Wisely*[®] criteria. The list was submitted to the ACA Board of Governors for initial review. After further refinement, the final list of five strategies was selected, submitted to and approved by the ACA Board of Governors.

Choosing Wisely[®] recommendations 1 and 2 are performance measures approved by Centers for Medicare and Medicaid Services (CMS) for the 2017 Spine IQ Qualified Clinical Data Registry for Conservative Spine Care.

ACA's disclosure and conflict of interest policy can be found at www.acatoday.org.

Sources

1

Chou R, Fu R, Carrino JA, Deyo RA. Imaging strategies for low-back pain: systematic review and meta-analysis. *Lancet*. 2009 Feb 7;373(9662):463-72.

Bussi eres AE, Taylor JA, Peterson C. Diagnostic imaging practice guidelines for musculoskeletal complaints in adults—an evidence-based approach—part 3: spinal disorders. *J Manipulative Physiol Ther*. 2008 Jan;31(1):33-88.

Kendrick D, Fielding K, Bentley E, Miller P, Kerslake R, Pringle M. The role of radiography in primary care patients with low back pain of at least 6 weeks duration: a randomised (unblinded) controlled trial. *Health Technol Assess*. 2001;5(30):1-69.

Vining RD, Potocki E, McLean I, Seidman M, Morgenthal AP, Boysen J, Goertz C. Prevalence of radiographic findings in individuals with chronic low back pain screened for a randomized controlled trial: secondary analysis and clinical implications. *J Manipulative Physiol Ther*. 2014 Nov-Dec;37(9):678-87.

National Guideline Clearinghouse (NGC). Guideline summary: ACR Appropriateness Criteria[®] low back pain. In: National Guideline Clearinghouse (NGC) [Web site]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); [2016 Jan 22]. Available from: <https://www.guideline.gov/summaries/summary/49915>

Brinjikji W, Luetmer PH, Comstock B, Bresnahan BW, Chen LE, Deyo RA, Halabi S, Turner JA, Avins AL, James K, Wald JT, Kallmes DF, Jarvik JG. Systematic literature review of imaging features of spinal degeneration in asymptomatic populations. *AJNR Am J Neuroradiol*. 2015 Apr;36(4):811-6.

2

Brinjikji W, Luetmer PH, Comstock B, Bresnahan BW, Chen LE, Deyo RA, Halabi S, Turner JA, Avins AL, James K, Wald JT, Kallmes DF, Jarvik JG. Systematic literature review of imaging features of spinal degeneration in asymptomatic populations. *AJNR Am J Neuroradiol*. 2015 Apr;36(4):811-6.

Matsumoto M, Okada E, Toyama Y, Fujiwara H, Momoshima S, Takahata T. Tandem age-related lumbar and cervical intervertebral disc changes in asymptomatic subjects. *Eur Spine J*. 2013 Apr;22(4):708-13.

Okada E, Matsumoto M, Fujiwara H, Toyama Y. Disc degeneration of cervical spine on MRI in patients with lumbar disc herniation: comparison study with asymptomatic volunteers. *Eur Spine J*. 2011 Apr;20(4):585-91.

Chou R, Fu R, Carrino JA, Deyo RA. Imaging strategies for low-back pain: systematic review and meta-analysis. *Lancet*. 2009 Feb 7;373(9662):463-72.

Kendrick D, Fielding K, Bentley E, Kerslake R, Miller P, Pringle M. Radiography of the lumbar spine in primary care patients with low back pain: randomised controlled trial. *BMJ* 2001 Feb 17; 322(7283): 400-5.

Bussi eres AE, Taylor JA, Peterson C. Diagnostic imaging practice guidelines for musculoskeletal complaints in adults-an evidence-based approach-part 3: spinal disorders. *J Manipulative Physiol Ther*. 2008 Jan;31(1):33-88.

National Guideline Clearinghouse (NGC). Guideline summary: ACR Appropriateness Criteria[®] low back pain. In: National Guideline Clearinghouse (NGC) [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2001 Jul 31 [updated 2016 Jan 22; cited 2017 May 4]. Available from: <https://www.guideline.gov/summaries/summary/49915>

3

Ebadi S, Henschke N, Nakhostin Ansari N, Fallah E, van Tulder MW. Therapeutic ultrasound for chronic low-back pain. *Cochrane Database Syst Rev*. 2014 Mar 14;(3):CD009169.

McGregor AH, Probyn K, Cro S, Dor e CJ, Burton AK, Balagu e F, Pincus T, Fairbank J. Rehabilitation following surgery for lumbar spinal stenosis. *Cochrane Database Syst Rev*. 2013 Dec;(12):CD009644.

Khadilkar A, Odebiyi DO, Brosseau L, Wells GA. Transcutaneous electrical nerve stimulation (TENS) versus placebo for chronic low-back pain. *Cochrane Database Syst Rev*. 2008 Oct 8;(4):CD003008.

Steffens D, Maher CG, Pereira LS, Stevens ML, Oliveira VC, Chapple M, Teixeira-Salmela LF, Hancock MJ. Prevention of Low Back Pain: A Systematic Review and Meta-analysis. *JAMA Intern Med*. 2016 Feb;176(2):199-208.

Chou R, Deyo R, Friedly J, et al. Noninvasive Treatments for Low Back Pain. Comparative Effectiveness Review No. 169. [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2016 Feb. (Comparative Effectiveness Reviews, No. 169.) [cited 2017 May 4]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK350276/>

Cancelliere C, Donovan J, Stochkendahl MJ, Biscardi M, Ammendolia C, Myburgh C, Cassidy JD. Factors affecting return to work after injury or illness: best evidence synthesis of systematic reviews. *Chiropr Man Therap*. 2016 Sep 8;24(1):32.

Kamper SJ, Apeldoorn AT, Chiarotto A, Smeets RJ, Ostelo RW, Guzman J, van Tulder MW. Multidisciplinary biopsychosocial rehabilitation for chronic low back pain. *Cochrane Database Syst Rev*. 2014 Sep 2;(9):CD000963.

Wertli MM, Eugster R, Held U, Steurer J, Kofmehl R, Weiser S. Catastrophizing-a prognostic factor for outcome in patients with low back pain: a systematic review. *Spine J*. 2014 Nov 1;14(11):2639-57.

Taylor JB, Goode AP, George SZ, Cook CE. Incidence and risk factors for first-time incident low back pain: a systematic review and meta-analysis. *Spine J*. 2014 Oct 1;14(10):2299-319.

Daubs MD, Norvell DC, McGuire R, Molinari R, Hermsmeyer JT, Fournay DR, Wolinsky JP, Brodke D. Fusion versus nonoperative care for chronic low back pain: do psychological factors affect outcomes? *Spine (Phila Pa 1976)*. 2011 Oct 1;36(21 Suppl):S96-109.

Foster NE, Mullis R, Hill JC, Lewis M, Whitehurst DGT, Konstantinou, K, Main C, Somerville S, Sowden G, Wathall S, Young J, Hay E. Effect of Stratified Care for Low Back Pain in Family Practice (IMPACT Back): A Prospective Population-Based Sequential Comparison. *Ann Fam Med* 2014; 12(2):102-11.

Kronenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med* 2001; 16(9):606-13.

George SZ, Fritz JM, McNeil DW. Fear-avoidance beliefs as measured by the fear-avoidance beliefs questionnaire: change in fear-avoidance beliefs questionnaire is predictive of change in self-report of disability and pain intensity for patients with acute low back pain. *Clin J Pain* 2006; 22(2):197-203.

Kawchuk GN, Edgecombe TL, Wong AY, Cojocar A, Prasad N; A non-randomized clinical trial to assess the impact of nonrigid, inelastic corsets on spine function in low back pain participants and asymptomatic controls. *Spine J*. 2015 Oct 1;15(10):2222-7.

Morrisette DC, Cholewicki J, Logan S, Seif G, McGowan S; A randomized clinical trial comparing extensible and inextensible lumbosacral orthoses and standard care alone in the management of lower back pain. *Spine (Phila Pa 1976)*. 2014 Oct 1;39(21):1733-42.

van Duijvenbode I, Jellema P, van Poppel M, van Tulder MW. Lumbar supports for prevention and treatment of low back pain. *Cochrane Database of Systematic Reviews* 2008, Issue 2. Art. No.: CD001823.

Chou R, Deyo R, Friedly J, et al. Noninvasive Treatments for Low Back Pain. Comparative Effectiveness Review No. 169. [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2016 Feb. (Comparative Effectiveness Reviews, No. 169.) [cited 2017 May 4]. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK350276/>

Qaseem A, Wilt TJ, McLean RM, Forciea MA; Clinical Guidelines Committee of the American College of Physicians. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. *Ann Intern Med*. 2017;166(7):514-530.

Azadinia F, Ebrahimi E Takamjani, Kamyab M, Parnianpour M, Cholewicki J, Maroufi N. Can lumbosacral orthoses cause trunk muscle weakness? A systematic review of literature. *Spine J*. 2017;17(4):589-602.

About the ABIM Foundation

The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.



To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the American Chiropractic Association

The American Chiropractic Association (ACA) is the largest professional association in the United States representing doctors of chiropractic. Chiropractors focus on disorders of the musculoskeletal system and the nervous system, and the effects of these disorders on general health and function. Chiropractic services are used most often to treat conditions such as back pain, neck pain, pain in the joints of the arms or legs, and headaches. Widely known for their expertise in spinal manipulation, chiropractors practice a hands-on, drug-free approach to health care that includes patient examination, diagnosis and treatment. On behalf of its members, ACA educates the public about the benefits of chiropractic services, supports research, and provides professional and educational opportunities for chiropractors, with the goal of advancing high-quality patient care. ACA promotes the highest standards of ethics and evidence-informed patient care, and is proud to partner with the *Choosing Wisely*® campaign.



To learn more about ACA, visit www.acatoday.org.

Five Things Physicians and Patients Should Question

1

Don't perform stress cardiac imaging or advanced non-invasive imaging in the initial evaluation of patients without cardiac symptoms unless high-risk markers are present.

Asymptomatic, low-risk patients account for up to 45 percent of unnecessary "screening." Testing should be performed only when the following findings are present: diabetes in patients older than 40-years-old; peripheral arterial disease; or greater than 2 percent yearly risk for coronary heart disease events.

2

Don't perform annual stress cardiac imaging or advanced non-invasive imaging as part of routine follow-up in asymptomatic patients.

Performing stress cardiac imaging or advanced non-invasive imaging in patients without symptoms on a serial or scheduled pattern (e.g., every one to two years or at a heart procedure anniversary) rarely results in any meaningful change in patient management. This practice may, in fact, lead to unnecessary invasive procedures and excess radiation exposure without any proven impact on patients' outcomes. An exception to this rule would be for patients more than five years after a bypass operation.

3

Don't perform stress cardiac imaging or advanced non-invasive imaging as a pre-operative assessment in patients scheduled to undergo low-risk non-cardiac surgery.

Non-invasive testing is not useful for patients undergoing low-risk non-cardiac surgery (e.g., cataract removal). These types of tests do not change the patient's clinical management or outcomes and will result in increased costs.

4

Don't perform echocardiography as routine follow-up for mild, asymptomatic native valve disease in adult patients with no change in signs or symptoms.

Patients with native valve disease usually have years without symptoms before the onset of deterioration. An echocardiogram is not recommended yearly unless there is a change in clinical status.

5

Don't perform routine electrocardiography (ECG) screening as part of pre-operative or pre-procedural evaluations for asymptomatic patients with low perioperative risk of death or myocardial infarction.

Despite potential value in having a pre-operative ECG to identify unsuspected cardiac abnormalities or as a comparison after a perioperative event, the likelihood of benefit for patients at low risk of major cardiovascular events is very small. Low perioperative risk is defined as <1% probability of death or myocardial infarction in the 2014 ACC/AHA Guideline on Perioperative Cardiovascular Evaluation and Management of Patients Undergoing Noncardiac Surgery, which also outline evidence-based methods for perioperative risk stratification.

Unnecessary ECGs can lead to needless consults, delays and changes to operative plans, which may counterbalance any potential benefit for the patient. In the absence of scientific studies establishing the value of a pre-operative ECG in a low cardiovascular risk population, the routine ordering of pre-operative ECGs should be discouraged.

How This List Was Created

The American College of Cardiology (ACC) asked its standing clinical councils to recommend between three and five procedures that should not be performed or should be performed more rarely and only in specific circumstances. ACC staff took the councils' recommendations and compared them to the ACC's existing appropriate use criteria (AUC) and guidelines, choosing items for the five things list that had the tightest inappropriate score in the AUCs and were Class III recommendations in the guidelines. The ACC's Advocacy Steering Committee and Clinical Quality Committee each then reviewed the five items before sending it to the ACC Executive Committee for final review and approval. ACC's disclosure and conflict of interest policy can be found at www.cardiosource.org/RWI.

Sources

1 Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. *J Am Coll Cardiol* 2009;53:2201-29.

Taylor AJ, Cerqueira M, Hodgson JM, Mark D, Min J, O'Gara P, Rubin GD. ACCF/SCCT/ACR/AHA/ASE/ASNC/SCAI/SCMR 2010 appropriate use criteria for cardiac computed tomography: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the Society of Cardiovascular Computed Tomography, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the American Society of Nuclear Cardiology, the Society for Cardiovascular Angiography and Interventions, and the Society for Cardiovascular Magnetic Resonance. *J Am Coll Cardiol* 2010;56:1864-94.

Douglas PS, Garcia MJ, Haines DE, Lai WW, Manning WJ, Patel AR, Picard MH, Polk DM, Ragosta M, Ward RP, Weiner RB. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 Appropriate Use Criteria for Echocardiography. A Report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Society of Echocardiography, American Heart Association, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Critical Care Medicine, Society of Cardiovascular Computed Tomography, and Society for Cardiovascular Magnetic Resonance Endorsed by the American College of Chest Physicians. *J Am Coll Cardiol*. 2011 Mar 1;57(9):1126-66.

Hendel RC, Abbott BG, Bateman TM, et al. Role of radionuclide myocardial perfusion imaging for asymptomatic individuals. *J Nucl Cardiol*. 2011;18:3-15.

2 Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. *J Am Coll Cardiol* 2009;53:2201-29.

Taylor AJ, Cerqueira M, Hodgson JM, Mark D, Min J, O'Gara P, Rubin GD. ACCF/SCCT/ACR/AHA/ASE/ASNC/SCAI/SCMR 2010 appropriate use criteria for cardiac computed tomography: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the Society of Cardiovascular Computed Tomography, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the American Society of Nuclear Cardiology, the Society for Cardiovascular Angiography and Interventions, and the Society for Cardiovascular Magnetic Resonance. *J Am Coll Cardiol* 2010;56:1864-94.

Douglas PS, Garcia MJ, Haines DE, Lai WW, Manning WJ, Patel AR, Picard MH, Polk DM, Ragosta M, Ward RP, Weiner RB. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 Appropriate Use Criteria for Echocardiography. A Report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Society of Echocardiography, American Heart Association, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Critical Care Medicine, Society of Cardiovascular Computed Tomography, and Society for Cardiovascular Magnetic Resonance Endorsed by the American College of Chest Physicians. *J Am Coll Cardiol*. 2011 Mar 1;57(9):1126-66.

3 Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. *J Am Coll Cardiol* 2009;53:2201-29.

Taylor AJ, Cerqueira M, Hodgson JM, Mark D, Min J, O'Gara P, Rubin GD. ACCF/SCCT/ACR/AHA/ASE/ASNC/SCAI/SCMR 2010 appropriate use criteria for cardiac computed tomography: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the Society of Cardiovascular Computed Tomography, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the American Society of Nuclear Cardiology, the Society for Cardiovascular Angiography and Interventions, and the Society for Cardiovascular Magnetic Resonance. *J Am Coll Cardiol* 2010;56:1864-94.

Douglas PS, Garcia MJ, Haines DE, Lai WW, Manning WJ, Patel AR, Picard MH, Polk DM, Ragosta M, Ward RP, Weiner RB. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 Appropriate Use Criteria for Echocardiography. A Report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Society of Echocardiography, American Heart Association, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Critical Care Medicine, Society of Cardiovascular Computed Tomography, and Society for Cardiovascular Magnetic Resonance Endorsed by the American College of Chest Physicians. *J Am Coll Cardiol*. 2011 Mar 1;57(9):1126-66.

Fleisher LA, Beckman JA, Brown KA, Calkins H, Chaikof EL, Fleischmann KE, Freeman WK, Froehlich JB, Kasper EK, Kersten JR, Riegel B, Robb JF. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery: a report of the American College of Cardiology/American Heart Association Task force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines on Perioperative Cardiovascular Evaluation for Noncardiac Surgery). *J Am Coll Cardiol* 2007;50:e159-242.

4 Douglas PS, Garcia MJ, Haines DE, Lai WW, Manning WJ, Patel AR, Picard MH, Polk DM, Ragosta M, Ward RP, Weiner RB. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 Appropriate Use Criteria for Echocardiography. A Report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Society of Echocardiography, American Heart Association, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Critical Care Medicine, Society of Cardiovascular Computed Tomography, and Society for Cardiovascular Magnetic Resonance Endorsed by the American College of Chest Physicians. *J Am Coll Cardiol*. 2011 Mar 1;57(9):1126-66.

5 Fleisher LA, Fleischmann KE, Auerback AD, Barnason SA, Beckman JA, Bozkurt B, Davila-Roman VG, Gerhard-Herman M, Holly TA, Kane GC, Marine JE, Nelson T, Spencer CC, Thompson A, Ting HH, Uretsky B, Wievunders D. 2014 ACC/AHA Guideline on Perioperative Cardiovascular Evaluation and Management of Patients Undergoing Noncardiac Surgery: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *Journ Am Coll Cardiol*. 2014 December;64(22):77-137.

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About the ABIM Foundation

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About the American College of Cardiology:

The American College of Cardiology (ACC) is a 40,000-member nonprofit medical society comprised of physicians, surgeons, nurses, physician assistants, pharmacists and practice managers, and bestows credentials upon cardiovascular specialists who meet its stringent qualifications. The College is a leader in the formulation of health policy, standards and guidelines, and cardiovascular research. The ACC provides professional education and operates national registries for the measurement and improvement of quality care.

Learn more at www.cardiosource.org/ACC.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't perform computed tomography (CT) surveillance for evaluation of indeterminate pulmonary nodules at more frequent intervals or for a longer period of time than recommended by established guidelines.

Clinical practice guidelines for pulmonary nodule evaluation (such as those issued by the Fleischner Society or the American College of Chest Physicians) suggest that intensity of surveillance should be guided by the likelihood of malignancy. In patients with no prior history of cancer, solid nodules that have not grown over a 2-year period have an extremely low risk of malignancy (although longer follow-up is suggested for ground-glass nodules). Similarly, intensive surveillance (e.g., repeating CT scans every 3 months for 2 years or more) has not been shown to improve outcomes such as lung cancer mortality. Meanwhile, extended or intensive surveillance exposes patients to increased radiation and prolonged uncertainty.

2

Don't routinely offer pharmacologic treatment with advanced vasoactive agents approved only for the management of pulmonary arterial hypertension to patients with pulmonary hypertension resulting from left heart disease or hypoxemic lung diseases (Groups II or III pulmonary hypertension).

Evidence and clinical practice guidelines have not established benefits of vasoactive agents (e.g., prostanoids, phosphodiesterase inhibitors, endothelin antagonists) for patients with pulmonary hypertension resulting from left heart disease or hypoxemic lung diseases. Moreover, the use of these agents may cause harm in certain situations and incurs substantial cost and resource utilization. Patients should be carefully assessed (including at a minimum right heart catheterization, echocardiography, chest CT, six minute walk test and pulmonary function testing) to confirm that they have symptomatic pulmonary arterial hypertension prior to having approved agents initiated.

3

For patients recently discharged on supplemental home oxygen following hospitalization for an acute illness, don't renew the prescription without assessing the patient for ongoing hypoxemia.

Hypoxemia often resolves after recovery from an acute illness, and continued prescription of supplemental oxygen therapy incurs unnecessary cost and resource use. At the time that supplemental oxygen is initially prescribed, a plan should be established to re-assess the patient no later than 90 days after discharge. Medicare and evidence-based criteria should be followed to determine whether the patient meets criteria for supplemental oxygen.

4

Don't perform chest computed tomography (CT angiography) to evaluate for possible pulmonary embolism in patients with a low clinical probability and negative results of a highly sensitive D-dimer assay.

Clinical practice guidelines for pulmonary embolism indicate that the cost and potential harms of CT angiography (including radiation exposure and the possibility of detecting and treating clinically insignificant pulmonary emboli with anticoagulation) outweigh the benefits for patients with a low pre-test probability of pulmonary embolism. In patients with a low clinical prediction score (e.g., Wells or Geneva score) followed by a negative D-dimer measured with a high sensitivity test (e.g., ELISA), pulmonary embolism is effectively excluded and no further imaging is indicated for pulmonary embolism evaluation.

5

Don't perform CT screening for lung cancer among patients at low risk for lung cancer.

Low dose chest CT screening for lung cancer has the potential to reduce lung cancer death in patients at high risk (i.e., individuals aged 55-74 with at least a 30-pack year history of tobacco use, who are either still smoking or quit within the past 15 years). However, CT screening for lung cancer also has the potential to cause a number of adverse effects (e.g., radiation exposure, high false positive rate, harms related to downstream evaluation of pulmonary nodules, overdiagnosis of indolent tumors). Thus, screening should be reserved for patients at high risk of lung cancer and should not be offered to individuals at low risk of lung cancer.

How This List Was Created

This document was prepared as a joint initiative of the American College of Chest Physicians and the American Thoracic Society. A taskforce with members from both societies was selected, including individuals from diverse backgrounds and clinical areas of expertise. Taskforce members initially proposed 30 items for consideration. The taskforce debated the impact of each based on five criteria (Evidence, Prevalence, Cost, Relevance, Innovation), and agreed to narrow the list to 10 items to explore in greater depth. Following an in-depth evidence review and consultation with external content experts for each item, the taskforce together reviewed and debated the compiled information for all 10 items. Subsequently, taskforce members independently scored each item on a scale of 1–5, rating each item on its overall impact as well as on each of the five criteria. The 5 items with the best mean overall scores were retained in the “penultimate” list. The taskforce then reviewed and edited the wording of items on the penultimate list, and submitted it to both societies’ executive committees. The executive committees sought feedback from additional experts in the field, debated the items, and provided written comments to the taskforce. The taskforce deliberated and incorporated these suggestions where appropriate to create the final list, resolving any conflicts through discussion. Both Societies elected to endorse the final list.

Members of the Task Force were: Renda Soylemez Wiener, MD, MPH (Co-Chair), Scott D. Halpern, MD, PhD (Co-Chair), Daniel R. Ouellette, MD, FCCP (Co-Chair), Edward Diamond, MD, MBA, FCCP, Vincent S. Fan, MD, MPH, Janet R. Maurer, MD, FCCP, Richard A. Mularski, MD, MSHS, MCR, FCCP and Jay I. Peters, MD, FCCP.

Sources

- MacMahon H, Austin JH, Gamsu G, Herold CJ, Jett JR, Naidich DP, Patz EF Jr, Swensen SJ; Fleischner Society. Guidelines for management of small pulmonary nodules detected on CT scans: a statement from the Fleischner Society. *Radiology*. 2005;237(2):395–400.
Gould MK, Donington J, Lynch WR, Mazzone, Midhun DE, Naidich DP, Wiener RS. Evaluation of patients with pulmonary nodules: When is it lung cancer?: ACCP evidence-based clinical practice guidelines (3rd edition). *Chest*. 2013 May;143(5):e93.
Smith-Bindman R, Lipson J, Marcus R, Kim KP, Mahesh M, Gould R, Berrington de González A, Miglioretti DL. Radiation dose associated with common computed tomography examinations and the associated lifetime attributable risk of cancer. *Arch Intern Med*. 2009;169(22):2078–86.
Wiener RS, Gould MK, Woloshin S, Schwartz LM, Clark JA. What do you mean, a spot?: a qualitative analysis of patients’ reactions to discussions with their doctors about pulmonary nodules. *Chest*. 2012 Jul 17. doi: 10.1378/chest.12–1095. [Epub ahead of print].
- McLaughlin VV, Archer SL, Badesch DB, Barst RJ, Farber HW, Lindner JR, Mathier MA, McGoon MD, Park MH, Rosenson RS, Rubins LJ, Tapson VF, Varga J. ACCF/AHA 2009 expert consensus document on pulmonary hypertension: a report of the American College of Cardiology Foundation Task Force on Expert Consensus Documents and the American Heart Association developed in collaboration with the American College of Chest Physicians; American Thoracic Society, Inc.; and the Pulmonary Hypertension Association. *J Am Cardiol*. 2009;53:1573.
Galiè N, Hooper MM, Humbert M, Torbicki A, Vachiery JL, Barbera JA, Beghetti M, Corris P, Gaine S, Gibbs JS, Gomez-Sanchez MA, Jondeau G, Klepetko W, Opitz C, Peacock A, Rubin L, Zellweger M, Simonneau G. Guidelines for the diagnosis and treatment of pulmonary hypertension. *Eur Heart J*. 2009;30:2493–537.
Hooper MM, Barbera JA, Channick RN, Hassoun PM, Lang IM, Manes A, Martinez FJ, Naeije R, Olschewski H, Pepke-Zaba J, Redfield MM, Robbins IM, Souza R, Torbicki A, McGoon M. Diagnosis, assessment, and treatment of non-pulmonary arterial hypertension pulmonary hypertension. *J Am Coll Cardiol*. 2009;54(1 Suppl):S85–96.
- Croxtan T, Baily W, for the NHLBI working group on Long-Term Oxygen Treatment in COPD. Report of a National Heart, Lung, and Blood Institute and Centers for Medicare and Medicaid Services Workshop. Long-term oxygen treatment in chronic obstructive pulmonary disease: recommendations for future research. *Am J Respir Crit Care Med*. 2006;174:373–8.
O’Driscoll B, Howard L, Davison A. BTS guideline for emergency oxygen use in adult patients. *Thorax*. 2008;63 Suppl 6:vi1–68.
MacNee W. Prescription of oxygen: still problems after all these years. *Am J Respir Crit Care Med*. 2005;172:517–22.
- Fesmire FM, Brown MD, Espinosa JA, Shih RD, Silvers SM, Wolf SJ, Decker WW. Critical issues in the evaluation and management of adult patients presenting to the emergency department with suspected pulmonary embolism. *Ann Emerg Med*. 2011;57(6):628–652 e675.
Qaseem A, Snow V, Barry P, Hornbake ER, Rodnick JE, Tobolic T, Ireland B, Segal JB, Bass EB, Weiss KB, Green L, Owens DK; Joint American Academy of Family Physicians/American College of Physicians Panel on Deep Venous Thrombosis/Pulmonary Embolism. Current diagnosis of venous thromboembolism in primary care: a clinical practice guideline from the American Academy of Family Physicians and the American College of Physicians. *Ann Intern Med*. 2007 Mar 20;146(6):454–8.
Torbicki A, Perrier A, Konstantinides S, Agnelli G, Galiè N, Pruszczyk P, Bengel F, Brady AJ, Ferreira D, Janssens U, Klepetko W, Mayer E, Remy-Jardin M, Bassand JP; ESC Committee for Practice Guidelines (CPG). Guidelines on the diagnosis and management of acute pulmonary embolism: the Task Force for the Diagnosis and Management of Acute Pulmonary Embolism of the European Society of Cardiology (ESC). *Eur Heart J*. 2008;29(18):2276–315.
The Christopher Study Investigators. Effectiveness of managing suspected pulmonary embolism using an algorithm combining clinical probability, D-dimer testing, and computed tomography. *JAMA*. 2006;295:172–9.
Roy P-M, Colombet I, Durieux P, Chatellier G, Sors H, Meyer G. Systematic review and meta-analysis of strategies for the diagnosis of suspected pulmonary embolism. *BMJ*. 2005;331:259.
Anderson DR, Kahn SR, Rodger MA, Kovacs MJ, Morris T, Hirsch A, Lang E, Stiell I, Kovacs G, Dreyer J, Dennie C, Cartier Y, Barnes D, Burton E, Pleasance S, Skedgel C, O’Rourke K, Wells PS. Computed tomographic pulmonary angiography vs ventilation-perfusion lung scanning in patients with suspected pulmonary embolism: A randomized controlled trial. *JAMA*. 2007;298(23):2743–53.
Wiener RS, Schwartz LM, Woloshin S. Time trends in pulmonary embolism in the United States: evidence of overdiagnosis. *Arch Intern Med*. 2011;171(9):831–7.
- Aberle DR, Adams AM, Berg CD, Black WC, Clapp JD, Fagerstrom RM, Gareen IF, Gatsonis C, Marcus PM, Sicks JD. Reduced lung-cancer mortality with low-dose computed tomographic screening. *N Engl J Med*. 2011;365(5):395–409.
Bach PB, Mirkin JN, Oliver TK, Azzoli CG, Berry DA, Brawley OW, Byers T, Colditz GA, Gould MK, Jett JR, Sabich AL, Smith-Bindman R, Wood DE, Qaseem A, Dettlerbeck FC. Benefits and harms of CT screening for lung cancer: a systematic review. *JAMA*. 2012;307(22):2418–29.
Veronesi G, Maisonneuve P, Bellomi M, Rampinelli C, Durli I, Bertolotti R, Spaggiari L. Estimating overdiagnosis in low-dose computed tomography screening for lung cancer: a cohort study. *Ann Intern Med*. 2012;157(11):776–84.
Humphrey LL, Deffenbach M, Pappas M, Baumann C, Artis K, Mitchell JP, Zakher B, Fu R, Slatore CG. Screening for lung cancer with low-dose computed tomography: a systematic review to update the U.S. Preventive Services Task Force recommendation. *Ann Intern Med*. 2013 Sep 17;159(6):411–20.

About the ABIM Foundation

The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.

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About the American College of Chest Physicians

The American College of Chest Physicians is the global leader in clinical chest medicine, representing more than 18,700 members who provide patient care in the areas of pulmonary, critical care and sleep medicine in the United States and more than 100 countries worldwide. From cutting-edge medical research in the journal *CHEST*; evidence-based guidelines in antithrombotic therapy, lung cancer and chronic cough; to innovative clinical education delivered through the *CHEST* annual meeting, simulation education program and Board Review courses, the American College of Chest Physicians strives to fulfill its mission – to promote the prevention, diagnosis and treatment of chest diseases through education, communication and research.



For more information, please visit www.chestnet.org.

About The American Thoracic Society

The American Thoracic Society’s mission is to improve health worldwide by advancing research, clinical care and public health in respiratory disease, critical illness and sleep disorders. Founded in 1905 to combat tuberculosis, the ATS is the world’s oldest respiratory society. While the scope of the Society’s activities have expanded greatly, its founding philosophy—that disease is vanquished faster when knowledge is shared—remains a touchstone for its programs and people, including 15,000 members.



For more information, please visit www.thoracic.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1 Avoid computed tomography (CT) scans of the head in emergency department patients with minor head injury who are at low risk based on validated decision rules.

Minor head injury is a common reason for visiting an emergency department. The majority of minor head injuries do not lead to injuries such as skull fractures or bleeding in the brain that need to be diagnosed by a CT scan. As CT scans expose patients to ionizing radiation, increasing patients' lifetime risk of cancer, they should only be performed on patients at risk for significant injuries. Physicians can safely identify patients with minor head injury in whom it is safe to not perform an immediate head CT by performing a thorough history and physical examination following evidence-based guidelines. This approach has been proven safe and effective at reducing the use of CT scans in large clinical trials. In children, clinical observation in the emergency department is recommended for some patients with minor head injury prior to deciding whether to perform a CT scan.

2 Avoid placing indwelling urinary catheters in the emergency department for either urine output monitoring in stable patients who can void, or for patient or staff convenience.

Indwelling urinary catheters are placed in patients in the emergency department to assist when patients cannot urinate, to monitor urine output or for patient comfort. Catheter-associated urinary tract infection (CAUTI) is the most common hospital-acquired infection in the U.S., and can be prevented by reducing the use of indwelling urinary catheters. Emergency physicians and nurses should discuss the need for a urinary catheter with a patient and/or their caregivers, as sometimes such catheters can be avoided. Emergency physicians can reduce the use of indwelling urinary catheters by following the Centers for Disease Control and Prevention's evidence-based guidelines for the use of urinary catheters. Indications for a catheter may include: output monitoring for critically ill patients, relief of urinary obstruction, at the time of surgery and end-of-life care. When possible, alternatives to indwelling urinary catheters should be used.

3 Don't delay engaging available palliative and hospice care services in the emergency department for patients likely to benefit.

Palliative care is medical care that provides comfort and relief of symptoms for patients who have chronic and/or incurable diseases. Hospice care is palliative care for those patients in the final few months of life. Emergency physicians should engage patients who present to the emergency department with chronic or terminal illnesses, and their families, in conversations about palliative care and hospice services. Early referral from the emergency department to hospice and palliative care services can benefit select patients resulting in both improved quality and quantity of life.

4 Avoid antibiotics and wound cultures in emergency department patients with uncomplicated skin and soft tissue abscesses after successful incision and drainage and with adequate medical follow-up.

Skin and soft tissue infections are a frequent reason for visiting an emergency department. Some infections, called abscesses, become walled off and form pus under the skin. Opening and draining an abscess is the appropriate treatment; antibiotics offer no benefit. Even in abscesses caused by Methicillin-resistant *Staphylococcus aureus* (MRSA), appropriately selected antibiotics offer no benefit if the abscess has been adequately drained and the patient has a well-functioning immune system. Additionally, culture of the drainage is not needed as the result will not routinely change treatment.

5 Avoid instituting intravenous (IV) fluids before doing a trial of oral rehydration therapy in uncomplicated emergency department cases of mild to moderate dehydration in children.

Many children who come to the emergency department with dehydration require fluid replacement. To avoid the pain and potential complications of an IV catheter, it is preferable to give these fluids by mouth. Giving a medication for nausea may allow patients with nausea and vomiting to accept fluid replenishment orally. This strategy can eliminate the need for an IV. It is best to give these medications early during the ED visit, rather than later, in order to allow time for them to work optimally.

Five More Things Physicians and Patients Should Question

6

Avoid CT of the head in asymptomatic adult patients in the emergency department with syncope, insignificant trauma and a normal neurological evaluation.

Syncope (passing out or fainting) or near syncope (lightheadedness or almost passing out) is a common reason for visiting an emergency department and most episodes are not serious. Many tests may be ordered to identify the cause of such episodes. However, diagnostic tests for syncope should not be routinely ordered, and the decision to order any tests should be guided by information obtained from the patient's history or physical examination. CT scans of the brain are frequently ordered for this problem to look for bleeding or strokes, but published research has confirmed that abnormalities are rarely found. CT scans are expensive, and may unnecessarily expose patients to radiation. If a head injury is associated with a syncopal episode (fainting spell), then a CT scan of the brain may be indicated. In addition, if there were symptoms of a stroke (i.e., headache, garbled speech, weakness in one arm or leg, trouble walking or confusion) before or after a syncopal episode, a CT scan may be indicated. However, in the absence of head injury or signs of a stroke, a CT scan of the brain should not be routinely ordered.

7

Avoid CT pulmonary angiography in emergency department patients with a low-pretest probability of pulmonary embolism and either a negative Pulmonary Embolism Rule-Out Criteria (PERC) or a negative D-dimer.

Advances in medical technology have increased the ability to diagnose even small blood clots in the lung. Now, the most commonly used test is known as a CT pulmonary angiogram (CTPA). It is readily available in most hospitals and emergency rooms. However, disadvantages of the CTPA include patient exposure to radiation, the use of dye in the veins that can damage kidneys and high cost.

Studies have demonstrated that certain findings in a patient's medical history put them at very low risk for having a blood clot in the lung. In some cases, a blood test called a D-dimer may be additionally used to screen for the possibility of a clot. If patient historical factors and physical examination findings are negative, along with a negative D-dimer (if the physician chooses to order it), evidence shows that the risk of an undiagnosed blood clot is the same as if the patient had a negative CTPA. Such a strategy saves the risk of radiation, kidney injury and the high cost of a CTPA.

8

Avoid lumbar spine imaging in the emergency department for adults with non-traumatic back pain unless the patient has severe or progressive neurologic deficits or is suspected of having a serious underlying condition (such as vertebral infection, cauda equina syndrome, or cancer with bony metastasis).

Low back pain without trauma is a common presenting complaint in the emergency department (ED). Most of the time, such pain is caused by conditions such as a muscle strain or a bulging disc that cannot be identified on an X-ray or CT scan. When a patient has symptoms or physical findings of a serious or progressive neurological condition, or is suspected of having a serious underlying condition such as cancer or a spinal infection, imaging may be appropriate and may include plain X-rays or advanced imaging (e.g., MRI or CT scan). Diagnostic imaging does not accurately identify the cause of most low back pain and does not improve the time to recovery. The vast majority of cases of back pain in the ED are related to muscle strain or inflammation. As a result, routine imaging of the low back should be avoided in order to reduce ionizing radiation exposure and unnecessary cost.

9

Avoid prescribing antibiotics in the emergency department for uncomplicated sinusitis.

Sinusitis is a common reason for patients to visit the emergency department. Most patients with acute sinusitis do not require antibiotic treatment, because approximately 98% of acute sinusitis cases are caused by a viral infection and resolve in 10-14 days without treatment. For some patients with sinusitis, antibiotics might be appropriate, such as those patients taking drugs that reduce the effectiveness of the immune system, those with prolonged, severe symptoms, or those with worsening symptoms. Antibiotics can cause many side effects and have potentially severe complications, and these risks usually outweigh the benefits of their use for sinusitis. In addition, inappropriate antibiotic use for sinusitis can contribute to the development of antibiotic-resistant infections and contributes to avoidable health care costs.

10

Avoid ordering CT of the abdomen and pelvis in young otherwise healthy emergency department (ED) patients (age <50) with known histories of kidney stones, or ureterolithiasis, presenting with symptoms consistent with uncomplicated renal colic.

Kidney stones can cause severe pain (called renal colic) and nausea, which can usually be relieved with medication. Most stones pass spontaneously in the urine in a few days, though kidney stones often do recur. CT scans may be needed to diagnose kidney stones, and rule out other problems that may mimic the pain of kidney stones. Many patients in the ED who are less than 50 years old and who have symptoms of recurrent kidney stones do not need a CT scan unless these symptoms persist or worsen, or if there is a fever or a history of severe obstruction with previous stones. CT scans of patients in the ED with symptoms of recurrent kidney stones usually do not change treatment decisions, and the cost and radiation exposure can often be avoided in these cases. Close follow-up by a primary care physician or specialist is necessary.

How This List Was Created (1–5)

The American College of Emergency Physicians (ACEP) developed five *Choosing Wisely*[®] recommendations through a multi-step process that included input from ACEP members, an expert panel of emergency physicians and the ACEP Board of Directors. In 2012, ACEP appointed a task force to address cost effective emergency care. The Cost Effective Care Task Force conducted a survey that was open to all ACEP members asking for strategies to reduce cost and improve value in emergency medicine. The task force received over 200 individual suggestions, which were grouped into a set of strategies. A technical expert panel, including representatives from all aspects of emergency medicine practice, reviewed and prioritized the recommendations using a modified Delphi technique. The panel prioritized the strategies using multiple rounds of voting based on contribution to cost reduction, benefit to patients and actionability by emergency physicians. A literature review including data on cost was assembled for the highest-rated strategies. Strategies were further refined and a final list of strategies that received majority support of the panelists was created. Five of these were ultimately selected by the Board of Directors to be included in *Choosing Wisely*[®].

How this list was Created (6–10)

The entire ACEP membership (30,000+) was surveyed and given an opportunity to provide input on what in their view would be cost effective and improve the quality of patient care. A Delphi panel of emergency physicians was convened and the list was winnowed using the Delphi process to the top twelve. To be included in the top twelve, there must be research to demonstrate cost effectiveness and improvement of patient care if implemented with reason, caution and explanation to the patient. Also of importance was the consideration that the recommendations would be or are also in concert with some of the other specialties participating in the *Choosing Wisely*[®] campaign.

ACEP's disclosure and conflict of interest policy can be found at www.acep.org.

Sources

- Jagoda AS, Bazarian JJ, Bruns JJ, Jr, Cantrill SV, Gean AD, Howard PK, Ghajar J, Riggio S, Wright DW, Wears RL, Bakshy A, Burgess P, Wald MM, Whitson RR; American College of Emergency Physicians; Centers for Disease Control and Prevention. Clinical policy: neuroimaging and decision-making in adult mild traumatic brain injury in the acute setting. *Ann Emerg Med*. 2008 Dec;52(6):714–48.

Stiell IG, Clement CM, Rowe BH, Schull MJ, Brison R, Cass D, Eisenhauer MA, McKnight RD, Bandiera G, Holroyd B, Lee JS, Dreyer J, Worthington JR, Reardon M, Greenberg G, Lesiuk H, MacPhail I, Wells GA. Comparison of the Canadian CT head rule and the New Orleans criteria in patients with minor head injury. *JAMA*. 2005 Sep 28;294(12):1511–8.

Haydel MJ, Preston CA, Mills TJ, Luber S, Blaudeau E, DeBlieux PM. Indications for computed tomography in patients with minor head injury. *N Engl J Med*. 2000 Jul 13;343(2):100–5.

Smits M, Dippel DWJ, de Haan GG, Dekker HM, Vos PE, Kool DR, Nederkoorn PJ, Hofman PA, Twijnstra A, Tanghe HL, Hunink MG. External validation of the Canadian CT head rule and the New Orleans criteria for CT scanning in patients with minor head injury. *JAMA*. 2005 Sep 28;294(12):1519–25.
- Umscheid CA, Mitchell MD, Doshi JA, Agarwal R, Williams K, Brennan PJ. Estimating the proportion of healthcare-associated infections that are reasonably preventable and the related mortality and costs. *Infect Control Hosp Epidemiol*. 2011 Feb;32:101–14.

Lo E, Nicolle L, Classen D, Arias KM, Podgorny K, Anderson DJ, Burstin H, Calfee DP, Coffin SE, Dubberke ER, Fraser V, Gerding DN, Griffin FA, Gross P, Kaye KS, Klompas M, Marschall J, Mermel LA, Pegues DA, Perl TM, Saint S, Salgado CD, Weinstein RA, Wise R, Yokoe DS. Strategies to prevent catheter-associated urinary tract infections in acute care hospitals. *Infect Control Hosp Epidemiol*. 2008 Oct;29:541–50.

Munasinghe RL, Yazdani H, Siddique M, Hafeez W. Appropriateness of use of indwelling urinary catheters in patients admitted to the medical service. *Infect Control Hosp Epidemiol*. 2001 Oct;22:647–9.

Hazelett SE, Tsai M, Gareri M, Allen K. The association between indwelling urinary catheter use in the elderly and urinary tract infection in acute care. *BMC Geriatr*. 2006 Oct 12;6:15.

Gardam MA, Amihod B, Orenstein P, Consolacion N, Miller MA. Overutilization of indwelling urinary catheters and the development of nosocomial urinary tract infections. *Clin Perform Qual Health Care*. 1998 Jul-Sep;6:99–102.

Gokula RR, Hickner JA, Smith MA. Inappropriate use of urinary catheters in elderly patients at a midwestern community teaching hospital. *Am J Infect Control*. 2004;32:196–9.

Gould CV, Umscheid CA, Agarwal RK, Kuntz G, Pegues DA; Healthcare Infection Control Practices Advisory Committee (HICPAC). Guideline for prevention of catheter-associated urinary tract infections 2009. Atlanta (GA): HICPAC; 2009. 67 p.

Scott RA, Oman KS, Makic MB, Fink RM, Hulett TM, Braaten JS, Severyn F, Wald HL. Reducing indwelling urinary catheter use in the emergency department. A successful quality-improvement initiative. *J Emerg Nurs*. 2013 Mar 7. pii: S0099-1767(12)00344–3. [Epub ahead of print]
- DeVader TE, DeVader SR, Jeanmonod R. Reducing cost at the end of life by initiating transfer to inpatient hospice in the emergency department. *Ann Emerg Med*. 2012;60(4s):S73.

Kenen J. We can't save you: how to tell emergency room patients that they're dying. *Slate* [Internet]. 2010 Aug 4 [cited 2013 Sep 4]. <http://www.slate.com/id/2262769/>.

Quest TE, Marco CA, Derse AR. Hospice and palliative medicine: new subspecialty, new opportunities. *Ann Emerg Med*. 2009;54:94–102.

Smith AK, McCarthy E, Weber E, Censer IS, Boscardin J, Fisher J, Covinsky K. Half of older Americans seen in emergency department in last month of life; most admitted to hospital, and many die there. *Health Aff*. 2012 Jun 31;31:1277–85.
- Baumann BM, Russo CJ, Paviuk D, Cassidy-Smith T, Brown N, Sacchetti A, Capano-Wehrle LM, Mistry RD. Management of pediatric skin abscesses in pediatric, general academic and community emergency departments. *West J Emerg Med*. 2011 May;12(2):159–67.

Duong M, Markwell S, Peter J, Barenkamp S. Randomized, controlled trial of antibiotics in the management of community-acquired skin abscesses in the pediatric patient. *Ann Emerg Med*. 2010 May;55(5):401–7.

Llera JL, Levy RC. Treatment of cutaneous abscess: a double-blind clinical study. *Ann Emerg Med*. 1985;14:15–9.

Niska R, Bhuiya F, Xu J. National Hospital Ambulatory Medical Care Survey: 2007 Emergency Department Summary. National health statistics reports. Hyattsville, [MD]: National Center for Health Statistics. 2010. 31 p. Report no.: 26.
- Szajewska H, Gieruszcak-Bialek D, Dylag M. Meta-analysis: ondansetron for vomiting in acute gastroenteritis in children. *Aliment Pharmacol Ther*. 2007;25:393–400.

Roslund G, Hepps T, McQuillen K. The role of oral ondansetron in children with vomiting as a result of acute gastritis/gastroenteritis who have failed oral rehydration therapy: a randomized controlled trial. *Ann Emerg Med*. 2008;52(1): 22–9.

Hartling L, Bellemare S, Wiebe N, Russell K, Klassen TP, Craig W. Oral versus intravenous rehydration for treating dehydration due to gastroenteritis in children. *Cochrane Database System Rev*. 2006;19(3):CD004390.

6

- Gallagher EJ. Hospitalization for fainting: high stakes, low yield. *Ann Emerg Med.* 1997 Apr;29(4):540-2.
- Pires LA, Ganji JR, Jarandila R, Steele R. Diagnostic patterns and temporal trends in the evaluation of adult patients hospitalized with syncope. *Arch Intern Med.* 2001 Aug 13-27;161:1889-95.
- Giglio P, Bednarczyk EM, Weiss K, Bakshi R. Syncope and head CT scans in the emergency department. *Emerg Radiol.* 2005 Dec;12(1-2):44-6.
- Shukla GJ. Cardiology patient page. Syncope. *Circulation.* 2006 Apr 25;113(16):e715-7.
- Grossman SA, Fischer C, Bar JL, Lipsitz LA, Mottley L, Sands K, Thompson S, Zimetbaum P, Shapiro NI. The yield of head CT in syncope: a pilot study. *Intern Emerg Med.* 2007 Mar;2(1):46-9.
- Mendu ML, McAvay G, Lampert R, Stoehr J, Tinetti ME. Yield of diagnostic tests in evaluating syncopal episodes in older patients. *Arch Intern Med.* 2009 Jul 27;169(14):1299-305.

7

- Quaseem A, Snow V, Barry P, Hornbake ER, Rodnick JE, Tobolic T, Ireland B, Segal J, Bass E, Weiss KB, Green L, Owens DK; Joint American Academy of Family Physicians/American College of Physicians Panel on Deep Venous Thrombosis/Pulmonary Embolism. Current diagnosis of venous thromboembolism in primary care: a clinical practice guideline from the American Academy of Family Physicians and the American College of Physicians. *Ann Fam Med.* 2007 Jan-Feb;5(1):57-62.
- Corwin MT, Donohoo JH, Partridge R. Do emergency physicians use serum D-dimer effectively to determine the need for CT when evaluating patients for pulmonary embolism? A review of 5,344 consecutive patients. *AJR Am J Roentgenol.* 2009 May;192(5):1319-23.
- Torbicki A, Perrier A, Konstantinides S, Agnelli G, Galiè N, Pruszczyk P, Bengel F, Brady AJ, Ferreira D, Janssens U, Klepetko W, Mayer E, Remy-Jardin M, Bassand JP; ESC Committee for Practice Guidelines (CPG). Guidelines on the diagnosis and management of acute pulmonary embolism. *European Heart J.* 2008 Sep;29(18):2276-315.
- Kline JA, Webb WB, Jones AE, Hernandez-Nino J. Impact of a rapid rule-out protocol for pulmonary embolism on the rate of screening, missed cases, and pulmonary vascular imaging in an urban US emergency department. *Ann Emerg Med.* 2004 Nov;44(5):490-502.
- Tiesman NA, Cheung PT, Frazee B. Is the ordering of imaging for suspected venous thromboembolism consistent with D-dimer result? *Ann Emerg Med.* 2009 Sep;54(3):442-6.
- Kline JA, Courtney DM, Kabrhel C, Moore CL, Smithline HA, Plewa MC, Richman PB, O'Neil BJ, Nordenholz K. Prospective multicenter evaluation of the pulmonary embolism rule-out criteria. *J Thromb Haemost.* 2008 May;6(5):772-80.
- Physician Fee Schedule Search. Washington (DC): Centers for Medicare & Medicaid Services; [updated 2-14 Oct 1; cited 2014 Oct 2]. Available from: <http://www.cms.gov/apps/physician-fee-schedule/search/search-results.aspx?Y=2&T=0&HT=0&CT=3&H1=71275&M=4>.
- Fesmire FM, Brown M, Espinosa JA, Shih RD, Silvers SM, Wolf SJ, Decker WW; American College of Emergency Physicians. Critical issues in the evaluation and management of adult patients presenting to the emergency department with suspected pulmonary embolism. *Ann Emerg Med.* 2011 Jun;57(6):628-52.
- Venkatash AK, Kline JA, Courtney M, Camargo CA, Plewa MC, Nordenholz KE, Moore CL, Richman PB, Smithline HA, Beam DM, Kabrhel C. Evaluation of pulmonary embolism in the emergency department and consistency with a national quality measure. *Arch Intern Med.* 2012 Jul 9;172(13):1028-32.

8

- Chou R, Qaseem A, Snow V, Casey D, Cross JT Jr, Shekelle P, Owens DK; Clinical Efficacy Assessment Subcommittee of the American College of Physicians; American College of Physicians; American Pain Society Low Back Pain Guidelines Panel. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. *Ann Intern Med.* 2007 Oct 2;147(7):478-91.
- Adult low back pain, 12th edition. Bloomington (MN): Institute for Clinical Systems Improvement (ICS); 2006 Sep. 37 p.
- van Tulder M, Becker A, Bekkering T, Breen A, del Real MT, Hutchinson A, Koes B, Laerum E, Malmivaara A; COST B13 Working Group on Guidelines for the Management of Acute Low Back Pain in Primary Care. Chapter 3. European guidelines for the management of acute nonspecific low back pain in primary care. 2004. *Eur Spine J.* 2006 Mar;15 Suppl 2:S169-91.
- Australian Acute Musculoskeletal Pain Group. Evidence-based Management of Acute Musculoskeletal Pain. *Acute Low Back Pain.* Chapters 4 & 9, pp 25-62 and 183-188. 2003.
- Bussieres AE, Taylor JA, Peterson C. Diagnostic imaging practice guidelines for musculoskeletal complaints in adults -an evidence-based approach part 3: spinal disorders. *J Manipulative Physiol Ther.* 2008 Jan;31(1):33-88.
- Tracey NG, Martin JB, McKinstry CS, Matthew BM. Guidelines for lumbar spine radiography in acute low back pain: effect of implementation in an accident and emergency department. *Ulster Med J.* 1994 Apr;63(1):12-17.

9

- Sinusitis and antibiotics. *Lancet Infect Dis.* 2012 May;12(5):355.
- Chow AW, Benninger MS, Brook I, Brozek JL, Goldstein EJ, Hicks LA, Pankey GA, Seleznick M, Vulturo G, Wald ER, File TM Jr, Infectious Diseases Society of America. IDSA clinical practice guideline for acute bacterial rhinosinusitis in children and adults. *Clin Infect Dis.* 2012 Apr;54(8):e72-e112.
- Ahovuo-Saloranta A, Rautakorpi UM, Borisenko OV, Liira H, Williams JW Jr, Mäkelä M. Antibiotics for acute maxillary sinusitis in adults. *Cochrane Database Syst Rev.* 2014 Feb 11;2:CD000243.
- Donnelly JP, Baddley JW, Wang HE. Antibiotic utilization for acute respiratory tract infections in U.S. emergency departments. *Antimicrob Agents Chemother.* 2014;58(3):1451-7.
- Tashima L, Piccirillo JF. Are antibiotics indicated for acute sinusitis? *Laryngoscope.* 2014 Sep;124(9):1979-80.
- Wald ER, Applegate KE, Bordley C, Darrow DH, Glode MP, Marcy SM, Nelson CE, Rosenfeld RM, Shaikh N, Smith MJ, Williams PV, Weinberg ST; American Academy of Pediatrics. American Academy of Pediatrics. Clinical practice guideline for the diagnosis and management of acute bacterial sinusitis in children aged 1 to 18 years. *Pediatrics.* 2013 Jul;132(1):e262-80.
- MacKenzie A. Balancing the benefits and risks of empirical antibiotics for sinusitis: A teachable moment. *JAMA Intern Med.* 2014 Aug 1;174(8):1221-2.

10

- Ha M, MacDonald RD. Impact of CT scan in patients with first episode of suspected nephrolithiasis. *J Emerg Med.* 2004 Oct;27(3):225-31.
- Ripollés T, Agramunt M, Errando J, Martínez MJ, Coronel B, Morales M. Suspected ureteral colic: plain film and sonography versus unenhanced helical CT. A prospective study in 66 patients. *Eur Radiol.* 2004 Jan;14(1):129-36.
- Pfister SA, Deckart A, Laschke S, Dellas S, Otto U, Buitrago C, Roth J, Wiesner W, Bongartz G, Gasser TC. Unenhanced helical computed tomography vs intravenous urography in patients with acute flank pain: accuracy and economic impact in a randomized prospective trial. *Eur Radiol.* 2003 Nov;13(11):2513-20.
- Katz SI, Saluja S, Brink JA, Forman HP. Radiation dose associated with unenhanced CT for suspected renal colic: impact of repetitive studies. *AJR Am J Roentgenol.* 2006 Apr;186(4):1120-4.

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About the American College of Emergency Physicians

Founded in 1968, the American College of Emergency Physicians (ACEP) has promoted the highest quality of emergency care and is the leading advocate for emergency physicians, their patients and the public. Headquartered in Dallas, Texas, ACEP has more than 32,000 members and 53 chapters representing each state, as well as Puerto Rico and the District of Columbia. A Government Services Chapter represents emergency physicians employed by military branches and other government agencies. Emergency physicians are recognized and valued for their commitment to high quality patient care, teaching, leadership, research and innovation. Emergency medicine is a valued and essential public service.

To learn more about ACEP, visit www.acep.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

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Five Things Patients and Providers Should Question

1

Don't order a duplicate genetic test for an inherited condition unless there is uncertainty about the validity of the existing test result.

Prior to ordering a genetic test for an inherited condition, the health care provider should ask a patient about prior genetic testing and review the medical record for previously performed genetic tests. Repeating a genetic test should be considered if the existing result is inconsistent with the individual's clinical presentation or if the test methodology has changed and may yield a different result from the original report that could impact patient management.

2

Don't order APOE genetic testing as a predictive test for Alzheimer disease.

APOE is a susceptibility gene for later-onset Alzheimer disease (AD), the most common cause of dementia. The presence of an $\epsilon 4$ allele is neither necessary nor sufficient to cause AD. The relative risk conferred by the $\epsilon 4$ allele is confounded by the presence of other risk alleles, gender, environment and possibly ethnicity. APOE genotyping for AD risk prediction has limited clinical utility and poor predictive value.

3

Don't order MTHFR genetic testing for the risk assessment of hereditary thrombophilia.

The common MTHFR gene variants, 677C>T and 1298A>G, are prevalent in the general population. Recent meta-analyses have disproven an association between the presence of these variants and venous thromboembolism.

4

Don't order HFE genetic testing for a patient without iron overload or a family history of HFE-associated hereditary hemochromatosis.

The majority of hereditary hemochromatosis is due to inheritance of HFE gene mutations. HFE gene mutations are common among individuals of European ancestry; however, only a small proportion of individuals with these mutations develop clinical disease. Other genetic and non-genetic factors contribute to disease expression. HFE genotyping should only be performed among individuals with iron overload (e.g., elevated fasting transferrin saturation >45%) or a known family history of HFE-associated hereditary hemochromatosis.

5

Don't order exome or genome sequencing before obtaining informed consent that includes the possibility of secondary findings.

The informed consent discussion for exome and genome sequencing should include the possibility of secondary findings unrelated to the indication for testing. In addition, before ordering an exome or genome sequencing test, review with the patient the potential benefits (e.g., confirming a suspected genetic diagnosis), potential harms (e.g., psychosocial concerns), limitations of testing (e.g., a mutation may be missed), implications of the test results for family members, and alternatives to exome or genome sequencing.

How This List Was Created

The American College of Medical Genetics and Genomics (ACMG) list relies on input from a number of committees in developing clinical practice guidelines and laboratory technical standards and guidelines. For the *Choosing Wisely*[®] campaign, input from the Laboratory Quality Assurance Committee, Professional Practice and Guidelines Committee and Therapeutics Committee was solicited. A list of 18 items was reviewed by the ACMG Board of Directors and the five items currently thought to most likely improve quality and reduce waste related to genetic testing were selected. The recommended list was approved by the ACMG Board of Directors, March 24, 2015.

For the ACMG's disclosure and conflict of interest policy, please visit www.acmg.net.

Sources

- Krasowski, MD, Chudzik D, Dolezal A, Steussy B, Gailey MP, Koch B, Kilborn SB, Darbro BW, Rysgaard CD, Klesney-Tait JA. Promoting improved utilization of laboratory testing through changes in an electronic medical record: experience at an academic medical center. *BMC Medical Informatics and Decision Making*. 2015;15:11.

Mathias PC, Conta JH, Konnick EQ, Sternen DL, Stasi SM, Cole BL, Astion ML, Dickerson JA. Preventing genetic testing order errors with a laboratory utilization management program. *Am J Clin Pathol*. 2016. 146:221-226.

Miller CE, Krautscheid P, Baldwin EE, Tvrdik T, Openshaw AS, Hart K, Lagrave D. Genetic counselor review of genetic test orders in a reference laboratory reduces unnecessary testing. *Am J Med Genet A*. 2014 May;164A(5):1094-101.

Suarez CJ, Yu L, Downs N, Costa HA, Stevenson DA. Promoting appropriate genetic testing: the impact of a combined test review and consultative service. *Genetics in Medicine*. 2017. doi:10.1038/gim.2016.219.
- Alzheimer's disease genetics fact sheet. Baltimore (MD): National Institute on Aging; 2011 Jun. 8 p. Report No.: 11-6424.

American College of Medical Genetics, American Society of Human Genetics. Statement on the use of apolipoprotein E testing for Alzheimer disease. *American College of Medical Genetics/American Society of Human Genetics Working Group on ApoE and Alzheimer disease*. *JAMA*. 1995 Nov 22-29;274(20):1627-9.

Goldman JS, Hahn SE, Catania JW, LaRusse-Eckert S, Butson MB, Rumbaugh M, Streckner MN, Roberts JS, Burke W, Mayeaux R, Bird T; American College of Medical Genetics and the National Society of Genetic Counselors. Genetic counseling and testing for Alzheimer disease: joint practice guidelines of the American College of Medical Genetics and the National Society of Genetic Counselors. *Genet Med*. 2011 Jun;13(6):597-605.
- Hickey SE, Curry CJ, Toriello HV. ACMG Practice Guideline: lack of evidence for MTHFR polymorphism testing. *Genet Med*. 2013 Feb;15(2):153-6.
- Porto G, Brissot P, Swinkels DW, Zoller H, Kamarainen O, Patton S, Alonso I, Morris M, Keeney S. EMQN best practice guidelines for molecular genetic diagnosis of hereditary hemochromatosis (HH). *European Journal of Human Genetics*. 2016;24:479-495.

Hanson EH, Imperatore G, Burke W. HFE gene and hereditary hemochromatosis: a HuGE review. *Human Genome Epidemiology*. *Am J Epidemiol*. 2001 Aug 1;154(3):193-206.

King C, Barton DE. Best practice guidelines for the molecular genetic diagnosis of Type 1 (HFE-related) hereditary haemochromatosis. *BMC Med Genet*. 2006 Nov 29;7:81.

Bacon BR, Adams PC, Kowdley KV, Powell LW, Tavill AS; American Association for the Study of Liver Diseases. Diagnosis and management of hemochromatosis: 2011 practice guideline by the American Association for the Study of Liver Diseases. *Hepatology*. 2011 Jul;54(1):328-43.

European Association for the Study of the Liver. EASL clinical practice guidelines for HFE hemochromatosis. *J Hepatol*. 2010 Jul;53(1):3-22.
- Robson ME, Bradbury AR, Arun B, Domchek SM, Ford JM, Hampel HL, Lipkin SM, Syngal S, Wollins DS, Lindor NM. American Society of Clinical Oncology policy statement update: genetic and genomic testing for cancer susceptibility. *J Clin Oncol*. 2015 Nov;33:3660-3667.

ACMG Board of Directors. ACMG policy statement: updated recommendations regarding analysis and reporting of secondary findings in clinical genome-scale sequencing. *Genet Med*. 2015 Jan;17(1):68-9.

ACMG Board of Directors. Points to consider for informed consent for genome/exome sequencing. *Genet Med*. 2013 Sep;15(9):748-9.

ACMG Board of Directors. Points to consider in the clinical application of genomic sequencing. *Genet Med*. 2012 Aug;14(8):759-61.

American College of Medical Genetics and Genomics. Incidental findings in clinical genomics: a clarification. *Genet Med*. 2013 Aug;15(8):664-6.

Green RC, Berg JS, Grody WW, Kalia SS, Korf BR, Martin CL, McGuire AL, Nussbaum RL, O'Daniel JM, Ormond KE, Rehm HL, Watson MS, Williams MS, Biesecker LG; American College of Medical Genetics and Genomics. ACMG recommendations for reporting of incidental findings in clinical exome sequencing. *Genet Med*. 2013 Jul;15(7):565-74.

Kalia SS, Adleman K, Bale SJ, Chung WK, Eng C, Evans JP, Herman GE, Hufnagel SB, Klein TE, Korf BR, McKelvey KD, Ormond KE, Richards CS, Vlangos CN, Watson M, Martin CL, Miller DT. Recommendations for reporting of secondary findings in clinical exome and genome sequencing, 2016 update (ACMG SF v2.0): a policy statement of the American College of Medical Genetics and Genomics. *Genetics in Medicine*. 2017. 19(2):249-255.

Scheuner MT, Peredo J, Benkendorf J, Bowditch B, Feldman G, Fleisher L, Mulvihill JJ, Watson M, Herman GE, Evans J. Reporting genomic secondary findings: ACMG members weigh in. *Genetics in Medicine*. 2015. 17(1):27-35.

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About the American College of Medical Genetics and Genomics

The American College of Medical Genetics and Genomics (ACMG) is the only nationally recognized medical organization dedicated to improving health through the practice of medical genetics and genomics. ACMG has more than 1,750 members, nearly 80% of whom are board certified clinical and laboratory geneticists and genetic counselors. The College's mission includes the following major goals: 1) to define and promote excellence in the practice of medical genetics and genomics and to facilitate the integration of new research discoveries into medical practice; 2) to provide medical genetics and genomics education to fellow professionals, other health care providers, and the public; 3) to improve access to medical genetics and genomics services and to promote their integration into all of medicine; and 4) to serve as advocates for providers of medical genetics and genomics services and their patients.



For more information, visit www.acmg.net.

For more information or to see other lists of Things Providers and Patients Should Question, visit www.choosingwisely.org.



Ten Things Physicians and Patients Should Question

1 Don't use homeopathic medications, non-vitamin dietary supplements or herbal supplements as treatments for disease or preventive health measures.

Alternative therapies are often assumed safe and effective just because they are “natural.” There is a lack of stringent quality control of the ingredients present in many herbal and dietary supplements. Reliable evidence that these products are effective is often lacking, but substantial evidence exists that they may produce harm. Indirect health risks also occur when these products delay or replace more effective forms of treatment or when they compromise the efficacy of conventional medicines.

2 Don't administer a chelating agent prior to testing urine for metals, a practice referred to as “provoked” urine testing.

Metals are ubiquitous in the environment and all individuals are exposed to and store some quantity of metals in the body. These do not necessarily result in illness. Scientific studies demonstrate that administration of a chelating agent leads to increased excretion of various metals into the urine, even in healthy individuals without metal-related disease. These “provoked” or “challenge” tests of urine are not reliable means to diagnose metal poisoning and have been associated with harm.

3 Don't order heavy metal screening tests to assess non-specific symptoms in the absence of excessive exposure to metals.

Individuals are constantly exposed to metals in the environment and often have detectable levels without being poisoned. Indiscriminant testing leads to needless concern when a test returns outside of a “normal” range. Diagnosis of any metal poisoning requires an appropriate exposure history and clinical findings consistent with poisoning by that metal. A patient should only undergo specific metal testing if there is concern for a specific poisoning based on history and physical examination findings.

4 Don't recommend chelation except for documented metal intoxication which has been diagnosed using validated tests in appropriate biological samples.

Chelation does not improve objective outcomes in autism, cardiovascular disease or neurodegenerative conditions like Alzheimer's disease. Edetate disodium is not FDA-approved for any condition. Even when used for appropriately diagnosed metal intoxication, chelating drugs may have significant side effects, including dehydration, hypocalcemia, kidney injury, liver enzyme elevations, hypotension, allergic reactions and essential mineral deficiencies. Inappropriate chelation, which may cost hundreds to thousands of dollars, risks these harms, as well as neurodevelopmental toxicity, teratogenicity and death.

5 Don't remove mercury-containing dental amalgams.

Mercury-containing dental amalgams release small amounts of mercury. Randomized clinical trials demonstrate that the mercury present in amalgams does not produce illness. Removal of such amalgams is unnecessary, expensive and subjects the individual to absorption of greater doses of mercury than if left in place.



Ten Things Physicians and Patients Should Question

6

Don't use phenytoin or fosphenytoin to treat seizures caused by drug toxicity or drug withdrawal.

With rare exceptions, phenytoin is ineffective for convulsions caused by drug or medication toxicity. Phenytoin has been demonstrated to be ineffective for the treatment of isoniazid-induced seizures and withdrawal seizures and may potentially be harmful when used to treat seizures induced by theophylline or cyclic antidepressants. First-line treatment of toxin-induced seizures and withdrawal seizures is benzodiazepines, followed by additional medications that act through agonism at the GABA A receptor, such as barbiturates.

7

Don't recommend "detoxification" through colon cleansing or promoting sweating for disease treatment or prevention.

No objective scientific evidence supports a role for colonic irrigation for "detoxification." No US FDA-approved colonic hydrotherapy systems exist for nonmedical purposes like colon cleansing. Colonic cleansing through hydrotherapy, laxatives or cathartics may result in cramping, pain, dehydration, electrolyte imbalances, infections and bowel perforation. Promoting sweating doesn't produce clinically relevant toxin elimination. Methods to promote sweating may cause heat stroke, dehydration, burns, myocardial injury, carbon monoxide poisoning and liver or kidney damage, which might compromise toxin elimination.

8

Don't order tests to evaluate for or diagnose "idiopathic environmental intolerances," "electromagnetic hypersensitivity" or "mold toxicosis."

These diagnoses reflect labels to indicate that patients have adverse non-allergic reactions to normal environmental stimuli. These diagnoses are made on the bases of self-reported symptoms or non-validated testing procedures. Although these conditions have been widely promoted, evidence-based assessments fail to support these diagnoses as disease entities. Labeling a patient with these diagnoses may adversely affect the patient's lifestyle, obscure ascertainment of the etiology of their symptoms and promote unnecessary testing.

9

Don't perform hair or nail testing for "metal poisoning" screening in patients with nonspecific symptoms.

The proper clinical assessment for potential exposure to metals must consider the precise exposure, symptoms, signs, route of exposure and dose. Hair and nail testing are rarely required, frequently unreliable and provide limited utility after metal exposures. A patient should undergo tailored testing for a specific metal exposure based on an appropriate evaluation. Non-specific hair and nail testing for multiple metals subjects patients to potentially harmful diagnostic mislabeling and subsequent detrimental therapy.

10

Don't perform fasciotomy in patients with snake envenomation absent direct measurement of elevated intracompartmental pressures.

Crotalinae snakebites produce findings mimicking compartment syndrome that are rarely indicative of actual compartment syndrome. Myonecrosis results from venom toxicity rather than elevated compartment pressures. Fasciotomy does not prevent, and may worsen, necrosis. In some cases with elevated compartment pressures, treatment with antivenom and without fasciotomy was successful. No available evidence indicates when fasciotomy should be performed in the management of snakebites. If considered, fasciotomy should not be performed without first documenting elevated compartment pressure.

How This List Was Created

The American College of Medical Toxicology's (ACMT's) Board of Directors established a *Choosing Wisely*[®] work group in 2013 to develop a list of items for the *Choosing Wisely*[®] campaign. Members of the work group were chosen to represent various practice settings within the field of medical toxicology, including ambulatory, acute and population-based practice. Work group members included the President of the College, the Chair of the Practice Committee, the Chair of the Positions and Guidelines committee and other academic leaders within the medical toxicology community. All work group members also represented the American Academy of Clinical Toxicology (AACT). The first list was released by the work group in 2013 and in 2014, the work group reconvened to develop a second list of items for the campaign. A second preliminary list was disseminated to all members of ACMT and AACT for review, commentary and potential additions. Additional feedback was solicited from leaders within the field of medical toxicology. The work group reviewed all responses, and narrowed the list to the final five items based on a review of scientific evidence, relevance to the specialty and greatest opportunity to improve care, reduce cost and reduce harm to patients. The final list was approved by the ACMT Board of Directors and the AACT Board of Trustees.

The ACMT and AACT disclosure and conflict of interest policies can be found at www.acmt.net and www.clintox.org respectively.

Sources

- Woodward KN. The potential impact of the use of the homeopathic and herbal medicines on monitoring the safety of prescription products. *Hum Exp Toxicol*. 2005;24:219–33.
Thompson E, Barron S, Spence D. A preliminary audit investigating remedy reactions including adverse events in routine homeopathic practice. *Homeopathy*. 2004;93:203–9.
De Smet PA. Health risks of herbal remedies. *Drug Saf*. 1995;13:81–93.
Farah MH, Edwards R, Lindquist M, Leon C, Shaw D. International monitoring of adverse health effects associated with herbal medicines. *Pharmacoepidemiol Drug Saf*. 2000;9(2):105–12.
Drew AK, Myers SP. Safety issues in herbal medicine: implications for the health professions. *Med J Aust*. 1997;166:538–41.
- Charlton N, Wallace KL. American College of Medical Toxicology position statement on post-chelator challenge urinary metal testing. *American College of Medical Toxicology*; 2009 Jun [cited 2013 Apr 23]. Available from: http://www.acmt.net/cgi/page.cgi/zine_service.html?aid=2999&zine=show.
Risher JF, Amler SN. Mercury exposure: evaluation and intervention the inappropriate use of chelating agents in the diagnosis and treatment of putative mercury poisoning. *Neurotoxicology*. 2005 Aug;26(4):691–9.
- McKay C, Holland M, Nelson L. A call to arms for medical toxicologists: the dose, not the detection, makes the poison. *Internet J Med Toxicol*. 2003;6(1):1.
Schober SE, Sinks TH, Jones RL, Bolger PM, McDowell M, Osterloh J, Garrett ES, Canady RA, Dillon CF, Sun Y, Joseph CB, Mahaffey KR. Blood mercury levels in US children and women of childbearing age, 1999–2000. *JAMA*. 2003;289(13):1667–74.
- Nonstandard uses of chelation therapy. *Med Lett Drugs Ther*. 2010 Sep 20;52(1347):75–6.
Kosnett MJ. Chelation for heavy metals (arsenic, lead, and mercury): protective or perilous? *Clin Pharmacol Ther*. 2010 Sep;88(3):412–5.
Nissen SE. Concerns about reliability in the Trial to Assess Chelation Therapy (TACT). *JAMA*. 2013 Mar 27;309(12):1293–4.
Risher JF, Amler SN. Mercury exposure: evaluation and intervention the inappropriate use of chelating agents in the diagnosis and treatment of putative mercury poisoning. *Neurotoxicology*. 2005 Aug;26(4):691–9.
U.S. Food and Drug Administration. FDA warns marketers of unapproved 'chelation' drugs. *FDA Consumer Health Information*. 2010 October;1.
- Bellinger DC, Trachtenberg F, Barregard L, Tavares M, Cernichiari E, Daniel D, McKinlay S. Neuropsychological and renal effects of dental amalgam in children. A randomized clinical trial. *JAMA*. 2006 Apr 19;295(15):1775–83.
Factor-Litvak P, Hasselgren G, Jacobs D, Begg M, Kline J, Geier J, Mervish N, Schoenholtz S, Graziano J. Mercury derived from dental amalgams and neuropsychologic function. *Environ Health Persp*. 2003 May;111(5):719–23.
- Goldberg MJ, Spector R, Miller G. Phenobarbital improves survival in theophylline-intoxicated rabbits. *J Toxicol Clin Toxicol*. 1986;24(3):203–11.
Blake KV, Massey KL, Hendeles L, Nickerson D, Neims A. Relative efficacy of phenytoin and phenobarbital for the prevention of theophylline-induced seizures in mice. *Ann Emerg Med*. 1988 Oct;17(10):1024–8.
Miller J, Robinson A, Percy AK. Acute isoniazid poisoning in childhood. *Am J Dis Child*. 1980 Mar;134(3):290–2.
Saad SF, el-Masry AM, Scott PM. Influence of certain anticonvulsants on the concentration of gamma-aminobutyric acid in the cerebral hemispheres of mice. *Eur J Pharmacol* 1972 Mar;17(3):386–92.
Okamoto M, Rosenberg HC, Boisse NR. Evaluation of anticonvulsants in barbiturate withdrawal. *J Pharmacol Exp Ther*. 1977 Aug;202(2):479–89.
Chance JF. Emergency department treatment of alcohol withdrawal seizures with phenytoin. *Ann Emerg Med*. 1991 May;20:520–2.
Sharma AN, Hoffman RJ. Toxin-related seizures. *Emerg Med Clin North Am*. 2011 Feb;29(1):125–39.
Hung OL, Shih RD. Antiepileptic drugs: the old and the new. *Emerg Med Clin North Am*. 2011 Feb;29(1):141–50.
- Colon cleansing. *Med Lett Drugs Ther*. 2009 May 18;51(1312):39–40.
Acosta RD, Cash BD. Clinical effects of colonic cleansing for general health promotion: a systematic review. *Am J Gastroenterol*. 2009 Nov;104(11):2830–6.
Kenttämies A, Karkola K. Death in sauna. *J Forensic Sci*. 2008 May;53(3):724–9.
Mishori R, Otubu A, Jones AA. The dangers of colon cleansing. *J Fam Pract*. 2011 Aug;60(8):454–7.
Rodhe A, Eriksson A. Sauna deaths in Sweden, 1992–2003. *Am J Forensic Med Pathol*. 2008 Mar;29(1):27–31.

8

Baliatsas C, VanKamp I, Lebre E, Rubin GJ. Idiopathic environmental intolerance attributed to electromagnetic fields (IEI-EMF): a systematic review of identifying criteria. *BMC Public Health*. 2012 Aug 11;12:643.

Boyd I, Rubin G, Wessely S. Taking refuge from modernity: 21st century hermits. *J R Soc Med*. 2012 Dec;105:523-9.

Hausteiner C, Bornschein S, Zilker T, Henningsen P, Förstl H. Dysfunctional cognitions in idiopathic environmental intolerances (IEI) - an integrative psychiatric perspective. *Toxicol Lett*. 2007 Jun 15;171(1-2):1-9.

Rubin GJ, Hillert L, Nieto-Hernandez R, van Rongen E, Oftedal G. Do people with idiopathic environmental intolerance attributed to electromagnetic fields display physiological effects when exposed to electromagnetic fields? A systematic review of provocation studies. *Bioelectromagnetics*. 2011 Dec;32(8):593-609.

Staudenmayer H, Binkley KE, Leznoff A, Phillips S. Idiopathic environmental intolerance: Part 2: causation analysis applying Bradford Hill's criteria to the psychogenic theory. *Toxicol Rev*. 2003;22:247-61.

Staudenmayer H, Binkley KE, Leznoff A, Phillips S. Idiopathic environmental intolerance: Part 1: a causation analysis applying Bradford Hill's criteria to the toxicogenic theory. *Toxicol Rev*. 2003;22:235-46.

9

Calabrese EJ. Hormesis is central to toxicology, pharmacology and risk assessment. *Hum Exp Toxicol*. 2010 Apr;29(4):249-61.

Frisch M, Schwartz BS. The pitfalls of hair analysis for toxicants in clinical practice: three case reports. *Environ Health Perspect*. 2002 Apr;110(4):433-6.

Seidel S, Kreutzer R, Smith D, McNeel S, Gilliss D. Assessment of commercial laboratories performing hair mineral analysis. *JAMA*. 2001 Jan;285:67-72.

Steindel SJ, Howanitz PJ. The uncertainty of hair analysis for trace metals. *JAMA*. 2001 Jan 3;285(1):83-5.

10

Cumpston KL. Is there a role for fasciotomy in Crotalinae envenomations in North America? *Clin Toxicol (Phila)*. 2011 Jun;49(5):351-65.

Hall EL. Role of surgical intervention in the management of crotaline snake envenomation. *Ann Emerg Med*. 2001 Feb;37:175-80.

Tanen DA, Danish DC, Grice GA, Riffenburgh RH, Clark RF. Fasciotomy worsens the amount of myonecrosis in a porcine model of crotaline envenomation. *Ann Emerg Med*. 2004 Aug;44(2):99-104.

Bucarechi F, De Capitani EM, Hyslop S, Mello SM, Fernandes CB, Bergo F, Nascimento FB. Compartment syndrome after South American rattlesnake (*Crotalus durissus terrificus*) envenomation. *Clin Toxicol (Phila)*. 2014 Jul;52(6):639-41.

Mazer-Amirshahi M, Boutsikaris A, Clancy C. Elevated compartment pressures from copperhead envenomation successfully treated with antivenin. *J Emerg Med*. 2014 Jan;46(1):34-7.

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About the American College of Medical Toxicology and the American Academy of Clinical Toxicology

The American College of Medical Toxicology (ACMT) is an association of physicians with recognized expertise in the diagnosis, management and prevention of human poisoning and other adverse health effects due to medications, occupational and environmental toxins and biological agents. ACMT's mission is to advance quality care of poisoned patients and public health through physicians who specialize in consultative, emergency, environmental, forensic and occupational toxicology. ACMT values the importance of research and evidence based practice in combating human poisoning.

The American Academy of Clinical Toxicology (AACT) is a multidisciplinary organization uniting scientists and clinicians in the advancement of research, education, prevention and treatment of diseases caused by chemicals, drugs and toxins. AACT's mission is to promote the study of health effects of poisons, encourage the development of new therapies and treatment in clinical toxicology, and define the position of clinical toxicologists on toxicology-related issues.

For more information, visit www.acmt.net and www.clintox.org.





Ten Things Physicians and Patients Should Question

1

Don't schedule elective, non-medically indicated inductions of labor or Cesarean deliveries before 39 weeks 0 days gestational age.

Delivery prior to 39 weeks 0 days has been shown to be associated with an increased risk of learning disabilities and a potential increase in morbidity and mortality. There are clear medical indications for delivery prior to 39 weeks 0 days based on maternal and/or fetal conditions. A mature fetal lung test, in the absence of appropriate clinical criteria, is not an indication for delivery.

2

Don't schedule elective, non-medically indicated inductions of labor between 39 weeks 0 days and 41 weeks 0 days unless the cervix is deemed favorable.

Ideally, labor should start on its own initiative whenever possible. Higher Cesarean delivery rates result from inductions of labor when the cervix is unfavorable. Health care practitioners should discuss the risks and benefits with their patients before considering inductions of labor without medical indications.

3

Don't perform routine annual cervical cytology screening (Pap tests) in women 30–65 years of age.

In average risk women, annual cervical cytology screening has been shown to offer no advantage over screening performed at 3-year intervals. However, a well-woman visit should occur annually for patients with their health care practitioner to discuss concerns and problems, and have appropriate screening with consideration of a pelvic examination.

4

Don't treat patients who have mild dysplasia of less than two years in duration.

Mild dysplasia (Cervical Intraepithelial Neoplasia [CIN 1]) is associated with the presence of the human papillomavirus (HPV), which does not require treatment in average risk women. Most women with CIN 1 on biopsy have a transient HPV infection that will usually clear in less than 12 months and, therefore, does not require treatment.

5

Don't screen for ovarian cancer in asymptomatic women at average risk.

In population studies, there is only fair evidence that screening of asymptomatic women with serum CA-125 level and/or transvaginal ultrasound can detect ovarian cancer at an earlier stage than it can be detected in the absence of screening. Because of the low prevalence of ovarian cancer and the invasive nature of the interventions required after a positive screening test, the potential harms of screening outweigh the potential benefits.



Ten Things Physicians and Patients Should Question

6

Avoid using robotic assisted laparoscopic surgery for benign gynecologic disease when it is feasible to use a conventional laparoscopic or vaginal approach.

Robotic-assisted and conventional laparoscopic techniques are comparable with respect to perioperative outcomes, intraoperative complications, length of hospital stay and rate of conversion to open surgery. However, evidence shows that robotic-assisted laparoscopic surgery has similar or longer operating times and higher associated costs.

7

Don't perform prenatal ultrasounds for non-medical purposes, for example, solely to create keepsake videos or photographs.

Prenatal ultrasounds are an integral part of a woman's prenatal care. While obstetric ultrasound has an excellent safety record, the U.S. Food and Drug Administration considers keepsake imaging as an unapproved use of a medical device. The American Institute of Ultrasound in Medicine also discourages the non-medical use of ultrasound for entertainment purposes. Keepsake ultrasounds are not medical tests and should not replace a clinically performed sonogram.

8

Don't routinely transfuse stable, asymptomatic hospitalized patients with a hemoglobin level greater than 7–8 grams.

Multiple factors need to be considered in transfusion decisions, including the patient's clinical status and oxygen delivery ability. Arbitrary hemoglobin or hematocrit thresholds should not be used as the only criterion for transfusions of packed red blood cells.

9

Don't perform pelvic ultrasound in average risk women to screen for ovarian cancer.

Although the mortality rate associated with ovarian cancer is high, the disease occurs infrequently in the general U.S. population, with an age-adjusted incidence of 13 cases per 100,000 women. As a result, the positive predictive value of screening for ovarian cancer is low, and most women with a positive screening test result will have a false-positive result. Annual screening with transvaginal ultrasonography in women does not reduce the number of ovarian cancer deaths.

10

Don't routinely recommend activity restriction or bed rest during pregnancy for any indication.

Bed rest or activity restriction has been commonly recommended for a variety of conditions in pregnancy including multiple gestation, intrauterine growth restriction, preterm labor, premature rupture of membranes, vaginal bleeding and hypertensive disorders in pregnancy. However, information to date does not show an improvement in birth outcome with the use of bed rest or activity restriction, but does show an increase in loss of muscle conditioning and thromboembolic disease.

How This List Was Created

As a national medical specialty society, the American College of Obstetricians and Gynecologists relies on the input of any number of its committees in the development of various documents. In the case of the items submitted for the *Choosing Wisely*[®] campaign, input from the following committees was solicited: the Committees on Patient Safety and Quality Improvement; Obstetric Practice; and Gynecologic Practice. A literature search was conducted related to the initial list of approximately ten items. We then sent this list to the College's Executive Board and asked them to select five of the items based on their potential to improve quality and reduce cost. We explained to them that the items were written to avoid complex or clinical terminology, but not at the risk of reducing the value and credibility of the recommendations made. In the case of the first two items on our list – “Don't schedule elective, non-medically indicated inductions of labor or Cesarean deliveries before 39 weeks 0 days gestational age” and “Don't schedule elective, non-medically indicated inductions of labor between 39 weeks 0 days and 41 weeks 0 days unless the cervix is deemed favorable” – we collaborated with the American Academy of Family Physicians in developing the final language. A list of the second set of “five items” was selected by the Committee on Patient Safety and Quality Improvement before submission to the College's Executive Board for approval. Any comments received from the Executive Board were incorporated into the final list that was approved.

The College's disclosure and conflict of interest policy can be found at www.acog.org.

Sources

- 1 Elimination of non-medically indicated (elective) deliveries before 39 weeks gestational age. Main E, Oshiro B, Chagolla B, Bingham D, Dang-Kilduff L, Kowalewski L (California Maternal Quality Care Collaborative). California: March of Dimes; First edition July 2010. California Department of Public Health; Maternal, Child and Adolescent Health Division; Contract No: 08-85012.
- 2 Guidelines for perinatal care. American Academy of Pediatrics, American College of Obstetricians and Gynecologists. 7th ed. Elk Grove Village (IL): AAP; Washington, DC: ACOG; 2012.
Induction of labor. ACOG Practice Bulletin No. 107. American College of Obstetricians and Gynecologists. *Obstet Gynecol* [Internet]. 2009 Aug;114(2 Part 1):386–97.
- 3 Systematic review: The value of the periodic health evaluation. Boulware LE, Marinopoulos S, Phillips KA, Hwang CW, Maynor K, Merenstein D. *Ann Intern Med* [Internet]. 2007 Feb 20;146(4):289–300.
Screening Guidelines for the prevention and early detection of cervical cancer. Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE, Myers ER; ACS-ASCCP-ASCP Cervical Cancer Guideline Committee, American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology. *CA Cancer J Clin* [Internet]. 2012 May-Jun;62(3):147–72.
Well-woman visit. Committee Opinion No. 534. American College of Obstetricians and Gynecologists. *Obstet Gynecol* [Internet]. 2012 Aug;120:421–4.
Screening for cervical cancer. Practice Bulletin No. 131. American College of Obstetricians and Gynecologists. *Obstet Gynecol*. 2012 Nov;120(5):1222–38.
- 4 2006 consensus guidelines for the management of women with cervical intraepithelial neoplasia or adenocarcinoma in situ. Wright TC, Massad LS, Dunton CJ, Spitzer M, Wilkinson EJ, Solomon D. *Am J Obstet Gynecol*. 2007;197:340–45.
Management of abnormal cervical cytology and histology. Practice Bulletin No. 99. American College of Obstetricians and Gynecologists. *Obstet Gynecol* [Internet]. 2008 Dec;112(6):1419–44.
- 5 Screening for ovarian cancer: Recommendation statement. U.S. Preventive Services Task Force. *Ann Fam Med* [Internet]. 2004 May 1;2(3):260–62.
Screening for ovarian cancer: Evidence update for the U.S. Preventive Services Task Force reaffirmation recommendation statement. Barton MB, Lin K. [Internet]. Rockville (MD); 2012 Apr. Agency for Healthcare Research and Quality; AHRQ Publication No. 12-05165-EF3.
Results from four rounds of ovarian cancer screening in a randomized trial. Partridge E, Kreimer AR, Greenlee RT, Williams C, Xu JL, Church TR, Kessel B, Johnson CC, Weissfeld JL, Isaacs C, Andriole GL, Ogden S, Ragard LR, Buys SS; PLCO Project Team. *Obstet Gynecol* [Internet]. 2009 Apr;113(4):775–82.
The role of the obstetrician–gynecologist in the early detection of epithelial ovarian cancer. Committee Opinion No. 477. American College of Obstetricians and Gynecologists Committee on Gynecologic Practice. *Obstet Gynecol* 2011Mar;117(3):742–6.
- 6 Liu H, Lawrie TA, Lu DH, Song H, Wang L, Shi G. Robot-assisted surgery in gynaecology. *Cochrane Database Syst Rev*. 2014, Dec 10;12: CD011422.
AAGL position statement: Robotic-assisted laparoscopic surgery in benign gynecology. AAGL Advancing Minimally Invasive Gynecology Worldwide. *J Minim Invasive Gynecol*. 2013 Jan-Feb;20(1):2–9.
- 7 ACOG Committee Opinion. Number 297, August 2004. Nonmedical use of obstetric ultrasonography. ACOG Committee on Ethics. *Obstet Gynecol*. 2004 Aug;104(2):423–4.
U.S. Food and Drug Administration. Fetal keepsake videos. Available at: <http://www.fda.gov/medicaldevices/Safety/AlertsandNotices/PatientAlerts/ucm064756.htm>. Retrieved December 9, 2015.
Abramowicz JS, Barnett SB; ISUOG; WFUMB. The safe use of non-medical ultrasound: a summary of the proceedings of the joint safety symposium of ISUOG and WFUMB. *Ultrasound Obstet Gynecol*. 2009 May;33(5):617–20.
American Institute of Ultrasound in Medicine. Prudent use in pregnancy. Laurel (MD): AIUM; 2012. Available at: <http://www.aium.org/officialstatements/33>. Retrieved December 9, 2015.
Chervenak FA, McCullough LB. An ethical critique of boutique fetal imaging: a case for the medicalization of fetal imaging. *Am J Obstet Gynecol*. 2005;192(1):31–3.

8

Carson JL, Grossman BJ, Kleinman S, Tinmouth AT, Marques MB, Fung MK, Holcomb JB, Illoh O, Kaplan LJ, Katz LM, Rao SV, Roback JD, Shander A, Tobian AA, Weinstein R, Swinton McLaughlin LG, Djulbegovic B; Clinical Transfusion Medicine Committee of the AABB. Red blood cell transfusion: a clinical practice guideline from the AABB. *Ann Intern Med.* 2012;157:49–58.

9

Moyer VA. Screening for ovarian cancer: U.S. Preventive Services Task Force reaffirmation recommendation statement. U.S. Preventive Services Task Force. *Ann Intern Med* 2012;157:900–4.

American College of Obstetricians and Gynecologists Committee on Gynecologic Practice. Committee Opinion No. 477: the role of the obstetrician-gynecologist in the early detection of epithelial ovarian cancer. *Obstet Gynecol.* 2011 Mar;117(3):742-6.

U.S. Preventive Services Task Force. Ovarian cancer: screening. Rockville (MD): USPSTF; 2012. Available at: <http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/ovarian-cancer-screening>. Retrieved December 9, 2015.

10

McCall CA, Grimes DA, Lyerly AD. “Therapeutic” bed rest in pregnancy: unethical and unsupported by data. *Obstet Gynecol.* 2013;121:1305–8.

Fox NS, Gelber SE, Kalish RB, Chasen ST. The recommendation for bed rest in the setting of arrested preterm labor and premature rupture of membranes. *Am J Obstet Gynecol.* 2009;200:165.e1–165.e6.

Grobman WA, Gilbert SA, Iams JD, Spong CY, Saade G, Mercer BM, et al. Activity restriction among women with a short cervix. Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) Maternal-Fetal Medicine Units (MFMU) Network. *Obstet Gynecol.* 2013;121:1181–6.

Maloni JA. Lack of evidence for prescription of antepartum bed rest. *Expert Rev Obstet Gynecol.* 2011;6:385–93.

Brennan MC, Moore LE. Pulmonary embolism and amniotic fluid embolism in pregnancy. *Obstet Gynecol Clin North Am.* 2013;40:27–35.

Promislow JH, Hertz-Picciotto I, Schramm M, Watt-Morse M, Anderson JJ. Bed rest and other determinants of bone loss during pregnancy. *Am J Obstet Gynecol.* 2004;191:1077–83.

Merriam AA, Chichester M, Patel N, Hoffman MK. Bed rest and gestational diabetes: more reasons to get out of bed in the morning [abstract]. *Obstet Gynecol.* 2014;123(suppl 1):70S.

Sosa CG, Althabe F, Belizán JM, Bergel E. Bed rest in singleton pregnancies for preventing preterm birth. *Cochrane Database of Systematic Reviews* 2015, Issue 3. Art. No.: CD003581.

Sciscione AC. Maternal activity restriction and the prevention of preterm birth. *Am J Obstet Gynecol.* 2010;202:232.e1–e5.

About the ABIM Foundation

The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.

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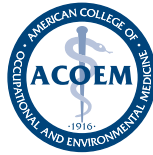


About the American College of Obstetricians and Gynecologists

The American College of Obstetricians and Gynecologists (The College), a 501(c)(3) organization, is the nation's leading group of physicians providing health care for women. As a private, voluntary, nonprofit membership organization of approximately 56,000 members, The College strongly advocates for quality health care for women, maintains the highest standards of clinical practice and continuing education of its members, promotes patient education, and increases awareness among its members and the public of the changing issues facing women's health care. The American Congress of Obstetricians and Gynecologists (ACOG), a 501(c)(6) organization, is its companion organization.

For more information, visit www.acog.org.





Five Things Physicians and Patients Should Question

1

Don't prescribe opioids for treatment of chronic or acute pain for workers who perform safety-sensitive jobs such as operating motor vehicles, forklifts, cranes or other heavy equipment.

The use of both strong and weak opioids has been consistently associated with increased risk of motor vehicle crashes as opioids produce sedation and hinder or impair higher cognitive function. Evidence suggests higher risk with acute opioid use, but risk remains elevated throughout treatment with any opioid and reverses on cessation. Workers who operate motor vehicles/heavy equipment should be precluded from performing these or other safety-sensitive job functions while under treatment with opioids.

2

Don't initially obtain X-rays for injured workers with acute non-specific low back pain.

X-ray is unnecessary for the initial routine management of low back pain unless red flags are present. Even when red flags are suspected, it should not be mandatory to order an X-ray in all cases. There is also no reason, either medically or legally, to obtain low back X-rays as a "baseline" for work-related injuries.

3

Don't order low back X-rays as part of a routine preplacement medical examination.

Preplacement medical examinations are conducted to determine an individual's ability to perform the job's essential functions. Routine low back X-rays are costly, result in unnecessary radiation exposure, do not address the worker's abilities and do not predict future injuries.

4

Don't routinely order X-ray for diagnosis of plantar fasciitis/heel pain in employees who stand or walk at work.

As the diagnosis of plantar fasciitis is in most cases evident from the worker's history and physical examination, X-ray is not recommended for routine evaluations for plantar fasciitis except in cases where a serious underlying medical condition is suspected, e.g., fracture, infection, etc.

5

Don't routinely order sleep studies (polysomnogram) to screen for/diagnose sleep disorders in workers suffering from chronic fatigue/insomnia.

Workers who suffer from fatigue, but do not have other sleep apnea symptoms (e.g., waking with a very sore or dry throat, loud snoring) or risk factors (obesity, neck diameter, fullness of soft tissues in the oropharynx, etc.), may not need a polysomnogram (sleep study). While a polysomnogram is an essential tool in diagnosing many sleep disorders, it is not usually necessary in assessing insomnia. If lack of sufficient sleep or the job schedule is affecting the patient's sleep patterns, then behavioral modification and attempts to modify the sleep schedule and improve sleep hygiene should be attempted first.

How This List Was Created

The American College of Occupational and Environmental Medicine (ACOEM) routinely develops evidence-based clinical practice guidelines to assist physicians in improving or restoring the health of those workers who incur occupationally related illnesses or injuries. ACOEM's Practice Guidelines, developed by expert panels, are the gold standard in effective treatment of occupational injuries and illnesses and are the only evidence-based guidelines that focus on returning employees to work within 90 days of an injury or illness. In addition, the College promotes the high-quality practice of occupational and environmental medicine (OEM) through the publication, via the scientific peer-reviewed *Journal of Occupational and Environmental Medicine*, of position statements and guidance documents relevant to the field. These documents are developed by ACOEM task forces made up of physician member volunteers and are approved by the Board of Directors. After input from ACOEM leaders and approval from the Board of Directors, five topics were selected from the Practice Guidelines and the ACOEM position paper on fatigue risk management in the workplace for this campaign. The position paper and the methodology for the development of the Practice Guidelines are available at www.acoem.org.

ACOEM's disclosure and conflict of interest policy can be found at www.acoem.org.

Sources

- 1 Weiss MS, Bowden K, Branco F, et al. Opioids Guideline [Internet]. In: Hegmann K, ed. ACOEM's Occupational Medicine Practice Guidelines. 3rd ed revised. Westminster, CO: Reed Group Ltd. Forthcoming 2014 March. p. 11.
- 2 Talmage J, Belcourt R, Galper J, et al. Low back disorders. In: Hegmann K, ed. Occupational Medicine Practice Guidelines. 3rd ed. Elk Grove Village, Ill: American College of Occupational and Environmental Medicine; 2011. p. 336, 373, 376–7.
- 3 Talmage J, Belcourt R, Galper J, et al. Low back disorders. In: Hegmann K, ed. Occupational Medicine Practice Guidelines. 3rd ed. Elk Grove Village, Ill: American College of Occupational and Environmental Medicine; 2011. p. 377.
- 4 Haas N, Beecher P, Easley M, et al. Ankle and foot disorders. In: Hegmann K, ed. Occupational Medicine Practice Guidelines. 3rd ed. Elk Grove Village, Ill: American College of Occupational and Environmental Medicine; 2011. p. 1182.
- 5 Lerman SE, Eskin E, Flower DJ, George EC, Gerson B, Hartenbaum N, Hursh SR, Moore-Ede M; American College of Occupational and Environmental Medicine Presidential Task Force on Fatigue Risk Management. Fatigue risk management in the workplace. *J Occup Environ Med*. 2012 Feb;54(2):231–58.

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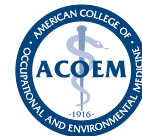
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About the American College of Occupational and Environmental Medicine

The American College of Occupational and Environmental Medicine (ACOEM), representing nearly 4,500 physicians who specialize in



AMERICAN COLLEGE OF
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occupational and environmental medicine, is proud to support the *Choosing Wisely*[®] campaign. Founded in 1916, ACOEM is the nation's largest medical society dedicated to promoting the health of workers through preventive medicine, clinical care, disability management, research and education. ACOEM members are leaders in treating job-related diseases, recognizing and resolving workplace hazards, instituting rehabilitation methods and providing well-managed care. ACOEM sponsors the annual American Occupational Health Conference, the nation's largest conference of its kind, and periodically issues position papers and reports that set practice guidelines for a variety of workplace/environmental settings. ACOEM publishes the monthly *Journal of Occupational and Environmental Medicine* and sponsors the Corporate Health Achievement Award to recognize the finest health programs in North American companies. ACOEM has also established a Code of Ethical Conduct to guide occupational and environmental physicians. Through efforts such as our strategic partnership with the *Choosing Wisely*[®] campaign, ACOEM is pledged to advancing the principles of evidence-based care to deliver quality outcomes for patients.

For more information or questions, please visit www.acoem.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

1

Don't obtain screening exercise electrocardiogram testing in individuals who are asymptomatic and at low risk for coronary heart disease.

In asymptomatic individuals at low risk for coronary heart disease (10-year risk <10%) screening for coronary heart disease with exercise electrocardiography does not improve patient outcomes.

2

Don't obtain imaging studies in patients with non-specific low back pain.

In patients with back pain that cannot be attributed to a specific disease or spinal abnormality following a history and physical examination (e.g., non-specific low back pain), imaging with plain radiography, computed tomography (CT) scan, or magnetic resonance imaging (MRI) does not improve patient outcomes.

3

In the evaluation of simple syncope and a normal neurological examination, don't obtain brain imaging studies (CT or MRI).

In patients with witnessed syncope but with no suggestion of seizure and no report of other neurologic symptoms or signs, the likelihood of a central nervous system (CNS) cause of the event is extremely low and patient outcomes are not improved with brain imaging studies.

4

In patients with low pretest probability of venous thromboembolism (VTE), obtain a high-sensitive D-dimer measurement as the initial diagnostic test; don't obtain imaging studies as the initial diagnostic test.

In patients with low pretest probability of VTE as defined by the Wells prediction rules, a negative high-sensitivity D-dimer measurement effectively excludes VTE and the need for further imaging studies.

5

Don't obtain preoperative chest radiography in the absence of a clinical suspicion for intrathoracic pathology.

In the absence of cardiopulmonary symptoms, preoperative chest radiography rarely provides any meaningful changes in management or improved patient outcomes.

How This List Was Created

The American College of Physicians (ACP) formed a workgroup of eleven experienced internal medicine physicians with specific skills in the assessment of evidence. Members of this workgroup included physicians who were current members of the ACP Clinical Guidelines Committee, the Education and Publication Committee, the Board of Governors and the Board of Regents, as well as three ACP staff physicians. The group collaboratively identified and narrowed down screening or diagnostic tests commonly used in clinical situations where they are unlikely to provide high value or improve patient outcomes. The results were further reviewed and narrowed by clinically active ACP staff physicians before being placed for review into a randomly selected internal medicine research panel. Representing 1 percent of ACP members, the panel selected five scenarios that represented the greatest potential for overuse or misuse of a diagnostic test leading to low value care. Based upon this process, the final top five scenarios were identified. ACP's disclosure and conflict of interest policy can be found at www.acponline.org.

Sources

- 1 2011 USPSTF screening for coronary heart disease with electrocardiography (draft) guideline; 2011 AAFP recommendations for preventive services guideline; 2010 ACCF/AHA assessment of cardiovascular risk in asymptomatic adults guideline.
- 2 2009 NICE low back pain guideline; 2008 ACR Appropriateness Criteria® low back pain guideline; 2007 ACP/APS low back pain guideline; 2007 ACOM low back disorders guideline.
- 3 2010 ACR-ASNR CT of the brain guideline; 2010 NICE transient loss of consciousness guideline; 2000 ECS syncope guideline.
- 4 2011 ACEP pulmonary embolism guideline; 2008 ESC pulmonary embolism guideline; 2007 AAFP/ACP venous thromboembolism guideline; 2010 SIGN venous thromboembolism guideline.
- 5 2008 ACR Appropriateness Criteria® for preoperative chest radiography guideline; ASPC patient safety advisory for pulmonary complications of surgery.

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the American College of Physicians:

The American College of Physicians (ACP) is the largest medical specialty organization and the second-largest physician group in the U.S. ACP's 132,000 members include internal medicine physicians (internists), subspecialists, and medical students. Internists specialize in the prevention, detection, and treatment of illness in adults. ACP's mission is to enhance the quality of health care by fostering excellence and professionalism in medicine. ACP provides information and advocacy for its members in internal medicine and related subspecialties.



For more information or questions, please visit www.acponline.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't take a multi-vitamin, vitamin E or beta carotene to prevent cardiovascular disease or cancer.

Vitamin supplementation is a multi-billion dollar industry (\$28.1 billion in 2010) in the United States, much of which is taken with the intention to prevent cardiovascular disease or cancer. However, there is insufficient evidence to demonstrate benefit from multivitamin supplementation to prevent cardiovascular disease or cancer. Adequate evidence demonstrates that supplementation with vitamin E and beta carotene in healthy populations specifically have no benefit on cardiovascular disease or cancer. Beta carotene is also associated with increased risks of lung cancer in smokers and people who have been exposed to asbestos.

2

Don't routinely perform PSA-based screening for prostate cancer.

More than 1,000 symptom-free men need to be screened for prostate cancer in order to save one additional life. As a result, increased harms and medical costs due to widespread screening of asymptomatic men are believed to outweigh the benefits of routine screening. There is a high likelihood of having a false positive result leading to worry, decreased quality of life and unnecessary biopsies when many of these elevated PSAs are caused by enlarged prostates and infection instead of cancer. This recommendation pertains to the routine screening of most men. In rare circumstances, such as a strong family history of prostate and related cancers, screening may be appropriate.

3

Don't use whole-body scans for early tumor detection in asymptomatic patients.

Whole-body scanning with a variety of techniques (MRI, SPECT, PET, CT) is marketed by some to screen for a wide range of undiagnosed cancers. However, there is no data suggesting that these imaging studies will improve survival or improve the likelihood of finding a tumor (estimated tumor detection is less than 2% in asymptomatic patients screened). Whole-body scanning has a risk of false positive findings that can result in unnecessary testing and procedures with additional risks; including considerable exposure to radiation with PET and CT, a very small increase in the possibility of developing cancer later in life, and accruing additional medical costs as a result of these procedures. Whole-body scanning is not recommended by medical professional societies for individuals without symptoms, nor is it a routinely practiced screening procedure in healthy populations.

4

Don't use expensive medications when an equally effective and lower-cost medication is available.

On average, the cost of a generic drug is 80–85% lower than the name-brand product, although generic drugs are required to have the same active ingredients, strength and similar effectiveness as brand-name drugs. Studies estimate that for every 10% increase in the use of generic cholesterol drugs, Medicare costs could be reduced by \$1 billion annually.

5

Don't perform screening for cervical cancer in low-risk women aged 65 years or older and in women who have had a total hysterectomy for benign disease.

Health care professionals should not perform cervical cancer screening in women who have had a hysterectomy that removed their cervix and do not have a history of high-grade precancerous lesions or cervical cancer. Screening provides no benefits to these patients and may subject them to potential risks from false-positive results; including physical (e.g., vaginal bleeding from biopsies) or psychological (e.g., anxiety).

In addition, cervical cancer screening should not be performed on women over the age of 65 that are at low risk for cervical cancer and have had negative results from prior screenings. Health care professionals should make this decision on a case-by-case basis, but once a patient stops receiving screenings, in general, they should not re-start screenings. Screening for women in this population provides little to no benefit as the incidence and prevalence of cervical disease declines for women starting at age 40–50 years.

How this List was Created

The American College of Preventive Medicine (ACPM) Prevention Practice Committee (PPC), responsible for practice guidelines and statements from the College, created a *Choosing Wisely* task force to lead the development of these recommendations. Task force members consist of select PPC members and additional ACPM members solicited through ACPM's bi-weekly e-newsletter, *Headlines*. Each task force member individually developed 2-3 recommendations and the top ten were selected using an electronic survey by the entire task force. Subsequently, the ten recommendations were prioritized by the task force and rationales with references were produced. These recommendations were presented to the entire PPC for consideration and prioritization of the top five. The top recommendations were selected and rationales revised and presented to the ACPM Board of Regents for final approval.

ACPM's disclosure and COI procedures can be found at www.acpm.org.

Sources

- 1 Nutrition Business Journal. NBJ's supplement business report: an analysis of markets, trends, competition and strategy in the U.S. dietary supplement industry. New York (NY): 2011.

Moyer; U.S Preventive Services Task Force. Vitamin, mineral, and multivitamin supplements for the primary prevention of cardiovascular disease and cancer: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2014 Apr 15;160(8):558-64.
- 2 Lim LS, Sherin K; ACPM Prevention Practice Committee. Screening for prostate cancer in U.S. men ACPM position statement on preventive practice. *Am J Prev Med.* 2008 Feb;34(2):164-70.

Moyer; U.S Preventive Services Task Force. Screening for prostate cancer: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2012 Jul 17;157(2):120-34.

Qaseem A, Barry MJ, Denberg TD, Owens DK, Shekelle P; Clinical Guidelines Committee of the American College of Physicians. Screening for prostate cancer: a guidance statement from the Clinical Guidelines Committee of the American College of Physicians. *Ann Intern Med.* 2013 May 21;158(10):761-9.
- 3 Ladd SC. Whole-body MRI as a screening tool? *Eur J Radiol.* 2009 Jun;70(3):452-62.

Schmidt G, Dinter D, Reiser MF, Schoenberg SO. The uses and limitations of whole-body magnetic resonance imaging. *Dtsch Arztebl Int.* 2010 Jun;107(22):383-9.

Full-Body CT Scans – What You Need to Know, Radiation-Emitting Products. U.S. Department of Health and Human Services [Internet]. Silver Spring (MD): U.S. Food and Drug Administration; 2010 [updated 2010 Apr 6; cited 2014 Dec 5]. Available from: <http://www.fda.gov/Radiation-EmittingProducts/RadiationEmittingProductsandProcedures/MedicalImaging/MedicalX-Rays/ucm115340.htm>
- 4 Hoadley JF, Merrell K, Hargrave E, Summer L. In Medicare Part D plans, low or zero copays and other features to encourage the use of generic statins work, could save billions. *Health Affairs (Millwood).* 2012 Oct;31(10):2266-75.

Mohler, PJ. New drugs: how to decide which ones to prescribe. *Fam Pract Manag.* 2006 Jun;13(6):33-5

Shrank WH, Hoang T, Ettner SL, Glassman PA, Nair K, DeLapp D, Dirstine J, Avorn J, Asch SM. The implications of choice: prescribing generic or preferred pharmaceuticals improves medication adherence for chronic conditions. *Arch Intern Med.* 2006 Feb 13;166(3):332-7.

Facts about generic drugs [Internet]. Silver Spring (MD): U.S. Food and Drug Administration; 2012 [updated 2012 Sep 19; cited 2014 Dec 5]. Available from: <http://www.fda.gov/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/UnderstandingGenericDrugs/ucm167991.htm>.
- 5 Moyer; U.S. Preventive Services Task Force. Screening for cervical cancer: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2012 Jun 19;156(12):880-91, W312.

Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE, Myers ER; ACS-ASCCP-ASCP Cervical Cancer Guideline Committee. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. *CA Cancer J Clin.* 2012 May-Jun;62(3):147-72.

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About the American College of Preventive Medicine

Founded in 1954, the American College of Preventive Medicine (ACPM) is a professional, medical society of more than 2,700 members employed in research, academia, government, clinical settings and other entities worldwide. As the leader for the specialty of preventive medicine and physicians dedicated to prevention, ACPM provides a dynamic forum for the exchange of knowledge, and offers high-quality educational programs for continuing medical education and maintenance of certification information and resources for ongoing professional development and networking opportunities.



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physicians dedicated to prevention

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Ten Things Physicians and Patients Should Question

1

Don't do imaging for uncomplicated headache.

Imaging headache patients absent specific risk factors for structural disease is not likely to change management or improve outcome. Those patients with a significant likelihood of structural disease requiring immediate attention are detected by clinical screens that have been validated in many settings. Many studies and clinical practice guidelines concur. Also, incidental findings lead to additional medical procedures and expense that do not improve patient well-being.

2

Don't image for suspected pulmonary embolism (PE) without moderate or high pre-test probability of PE.

While deep vein thrombosis (DVT) and PE are relatively common clinically, they are rare in the absence of elevated blood d-Dimer levels and certain specific risk factors. Imaging, particularly computed tomography (CT) pulmonary angiography, is a rapid, accurate and widely available test, but has limited value in patients who are very unlikely, based on serum and clinical criteria, to have significant value. Imaging is helpful to confirm or exclude PE only for such patients, not for patients with low pre-test probability of PE.

3

Avoid admission or preoperative chest x-rays for ambulatory patients with unremarkable history and physical exam.

Performing routine admission or preoperative chest x-rays is not recommended for ambulatory patients without specific reasons suggested by the history and/or physical examination findings. Only 2 percent of such images lead to a change in management. Obtaining a chest radiograph is reasonable if acute cardiopulmonary disease is suspected or there is a history of chronic stable cardiopulmonary disease in a patient older than age 70 who has not had chest radiography within six months.

4

Don't do computed tomography (CT) for the evaluation of suspected appendicitis in children until after ultrasound has been considered as an option.

Although CT is accurate in the evaluation of suspected appendicitis in the pediatric population, ultrasound is nearly as good in experienced hands. Since ultrasound will reduce radiation exposure, ultrasound is the preferred initial consideration for imaging examination in children. If the results of the ultrasound exam are equivocal, it may be followed by CT. This approach is cost-effective, reduces potential radiation risks and has excellent accuracy, with reported sensitivity and specificity of 94 percent.

5

Don't recommend follow-up imaging for clinically inconsequential adnexal cysts.

Simple cysts and hemorrhagic cysts in women of reproductive age are almost always physiologic. Small simple cysts in postmenopausal women are common, and clinically inconsequential. Ovarian cancer, while typically cystic, does not arise from these benign-appearing cysts. After a good quality ultrasound in women of reproductive age, don't recommend follow-up for a classic corpus luteum or simple cyst <5 cm in greatest diameter. Use 1 cm as a threshold for simple cysts in postmenopausal women.

Don't recommend ultrasound for incidental thyroid nodules found on CT, MRI or non-thyroid-focused neck ultrasound in low-risk patients unless the nodule meets age-based size criteria or has suspicious features.

Imaging of the neck performed to evaluate non-thyroid-related conditions commonly reveals thyroid nodules. Most are not malignant. Even if malignant, they are likely to have indolent behavior. Fine needle aspiration often fails to definitively characterize a lesion as benign owing to the limitations of cytologic evaluation. Consequently, some patients with incidentally-discovered benign nodules undergo unnecessary serial ultrasound imaging and/or surgery. Accordingly, patients without clinical risk factors* who are found to have asymptomatic, incidental, nonsuspicious thyroid nodules on cross-sectional imaging (CT, MRI or non-thyroid ultrasound of the neck) should be referred for diagnostic thyroid ultrasound only if they meet the following criteria:

- (1) < 35 years of age with normal life expectancy and nodule \geq 1 cm.
- (2) \geq 35 years of age with normal life expectancy and nodule \geq 1.5 cm.

Two published studies reported that the percentage of nodules referred for ultrasound would be reduced by 35–46% using the proposed algorithm.

Suspicious features on CT, MRI or US include signs of local invasion, and the presence of abnormal lymph nodes (enlarged nodes, nodes with cystic change, calcification, or increased enhancement).

- i. Size criteria for enlarged lymph nodes:
 1. \geq 1.5 cm in short axis for jugulodigastric nodes
 2. \geq 1 cm for other nodes
- ii. Lymph nodes in levels IV and VI are especially suspicious for thyroid cancer metastases.

**Clinical risk factors: Patients with history of head, neck or chest radiation, family history of thyroid cancer, or diseases that increase the risk of thyroid cancer should be further evaluated regardless of nodule size.*

Don't use a protocol for abdominal CT that includes unenhanced CT followed by IV contrast-enhanced CT, except for the following indications: renal lesion characterization, hematuria work up, indeterminate adrenal nodule characterization, follow-up after endovascular stent repair, gastrointestinal hemorrhage or characterizing a focal liver mass.

With the goal of modulating patient radiation exposure and costs, IV contrast enhanced multidetector CT (MDCT) protocols should include an unenhanced acquisition only if it will provide additional diagnostic information. In conjunction with IV contrast enhanced abdominal MDCT, the literature supports an unenhanced acquisition for the following indications:

- (1) Renal lesion characterization or hematuria work up
 - a. Compare unenhanced with post-contrast to identify enhancement in a mass
- (2) Adrenal nodule characterization
 - a. IV contrast phases are not necessary if nodule measures <10 Hounsfield units (HU) on unenhanced CT.
 - b. If \geq 10 HU, unenhanced attenuation is used to calculate percentage washout.
- (3) Endovascular stent evaluation
 - a. Unenhanced scan enables distinction of calcification from endoleak when compared to post-contrast images
- (4) Gastrointestinal bleeding
 - a. Unenhanced CT enables definitive distinction of intraluminal hemorrhage from other high-density material (i.e., medication, fecal matter); however, protocols that use only arterial and venous phase acquisitions may be sufficient, as hemorrhage changes configuration between the 2 phases.
 - b. If available, dual energy can be used to create a virtual unenhanced dataset and avoid the unenhanced acquisition.
- (5) Focal liver mass
 - a. Compare unenhanced with post contrast to identify enhancement in a mass

8

Don't routinely use a protocol for abdominal CT that includes a delayed post-contrast phase after the venous phase, except for the following indications: renal lesion characterization, hematuria work up, CT urogram, indeterminate adrenal nodule characterization, hepatocellular carcinoma and cholangiocarcinoma.

With the goal of modulating patient radiation exposure, IV contrast enhanced multidetector CT (MDCT) protocols should include a delayed post contrast acquisition (defined as an acquisition after the portal venous, hepatic or nephrographic phases) only if it will provide additional diagnostic information. The literature supports an additional delayed acquisition for the following indications:

- (1) Renal lesion characterization, hematuria work up or CT urogram
 - a. contrast enhancement pattern of solid renal mass over time provides diagnostic information about pathologic subtype
 - b. delayed phase defines relationship of solid renal mass relationship to collecting system
 - c. delayed phase facilitates identification of transitional cell carcinoma and traumatic injury
- (2) Adrenal nodule characterization
 - a. delayed attenuation used to calculate Absolute Percentage Washout and Relative Percentage Washout
- (3) Hepatocellular carcinoma
 - a. multiple acquisitions facilitate lesion detection and washout characterization
- (4) Cholangiocarcinoma
 - a. enhancement increases over time, justifying use of delayed in patients where distinction between cholangiocarcinoma and HCC is required.

9

Don't make the diagnosis of Pelvic Congestion Syndrome on CT or MRI unless the patients meet clinical and imaging criteria.

Dilated pelvic veins can be an incidental, clinically insignificant finding on CT and MRI, or may reflect pelvic congestion syndrome. In the latter condition, dilated pelvic veins and venous reflux account for a range of symptoms, including chronic pain of more than 6-month duration. Radiologists must be cognizant of established criteria to suggest this diagnosis on CT and MRI. The diagnostic criteria include the following: 4 or more ipsilateral pelvic varicosities, 1 or more pelvic varicosities measuring more than 4 mm, ovarian (gonadal) vein dilatation > 8 mm in diameter.

In patients with dilated pelvic veins that do not meet these criteria, interpretations should not suggest Pelvic Congestion Syndrome. Furthermore, since these criteria were proposed by Coakley et al in 1999, several investigations have confirmed that ovarian vein reflux, ovarian vein dilatation and parauterine vein dilatation can be observed in asymptomatic patients, particularly multiparous women. Interpretations should recommend that clinical symptoms guide decision-making with respect to the need for vascular interventional consultation.

10

Don't routinely recommend follow-up for nonobstructed, asymptomatic, isolated, short-segment jejunojejunal intussusception in adults.

Transient, idiopathic jejunojejunal intussusception in adult patients can be identified on MDCT in the absence of gastrointestinal pathology. In patients without an identifiable lead point mass lesion, imaging characteristics that favor the transient variety include short length (≤ 3.5 cm) and absence of bowel dilation. Self-limited jejunojejunal intussusception can occur in the absence of any bowel disease, or the finding may indicate an infectious or inflammatory process, such as enteritis or Celiac disease. If CT reveals an asymptomatic short-segment, isolated jejunojejunal intussusception (no bowel wall thickening or mesenteric inflammation, no bowel obstruction, no lead point) follow-up imaging should not be routinely recommended. Decisions regarding the need for additional work-up and follow up imaging should be made on clinical grounds.

How This List Was Created (1 – 5)

The American College of Radiology (ACR) initially solicited expert opinion from physician leaders with its Board of Chancellors. A working group was then formed to further identify common clinical scenarios in which imaging may be misused and should be reconsidered. Members of the group included the physician chairs or vice chairs of seven ACR commissions such as Quality and Safety, Appropriateness Criteria and Metrics. An initial list of topics was narrowed down based on the highest potential for improvement, representing a broad range of tests and the availability of strong guidelines. Members then researched specific recommendations and evidentiary statements based on their expertise. Recommendations that were too general or were well covered by other existing measures and initiatives were eliminated to identify the final five things list.

How This List Was Created (6 – 10)

The *Choosing Wisely*[®] initiative was presented to the organization's physician leaders at a Board of Chancellors meeting and a working group selected five initial low-value imaging targets for reduced utilization. The second set of targets was created by the following working group, with the goals of minimizing unnecessary imaging and biopsy generated by discovery of incidental findings, improving patient safety through reduced radiation exposure, and reducing unnecessary consultations based on imaging findings

- Pamela T. Johnson, MD, Chair, Choosing Wisely Recommendations
- Jacqueline A. Bello, MD, FACR, Chair of Commission on Quality and Safety
- Mythreyi B. Chatfield, PhD, Executive Vice President for Quality and Safety
- Jonathan Flug, MD, MBA, Quality Management Committee
- Jenny K. Hoang, MBBS, lead author on ACR White Paper for Managing Incidental Thyroid Nodules
- Alec J. Megibow, MD, MPH, FACR, Committee on Economics – Body Imaging Commission
- Pari V. Pandharipande, MD, MPH, Chair of Committee on Incidental Findings
- Saurabh Rohatgi, MD, Committee on Quality Experience - Commission on Patient and Family Centered Care

Research: For the topics related to incidental findings on imaging exams, the American College of Radiology has created evidence-based white papers to provide guidance to practicing radiologists on making management recommendations. The white paper publications and additional relevant literature serve as the evidence supporting those recommendations. For the remaining recommendations pertaining to body CT protocol design, published literature was reviewed to define acceptable indications for multiphase protocols.

ACR's disclosure and conflict of interest policy can be found at www.acr.org.

Sources

1

Douglas, AC, Wippold II, FJ, Broderick, DF, Aiken, AH, Amin-Hanjani, S, Brown, DC, Corey, AS, Germano, IM, Hadley, JA, Jagadeesan, BD, Jurgens, JS, Kennedy, TA, Mechtler, LL, Patel, ND, Zipfel, GJ, Expert Panel on Neurologic Imaging. ACR Appropriateness Criteria[®] Headache. [Online Publication]. Reston (VA) American College of Radiology (ACR); 2013. Available at: <https://acsearch.acr.org/docs/69482/Narrative/>
Institute for Clinical Systems Improvement (ICSI). Diagnosis and treatment of headache. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2011 Jan. 84 p.
Frisberg BM, Rosenberg JH, Matchar DB, et al. Evidence-Based Guidelines in the Primary Care Setting: Neuroimaging in Patients with Nonacute Headache. American Academy of Neurology. 2000. Available online: <http://www.aan.com/professionals/practice/pdfs/g10088.pdf> (US Headache Consortium).
Stephen D. Silberstein. Practice parameter: Evidence-based guidelines for migraine headache (an evidence-based review): Report of the Quality Standards Subcommittee of the American Academy of Neurology. 2000;55;754 Neurology. (US Headache Consortium).
Edlow JA, Panagos PD, Godwin SA, Thomas TL, Decker WW; American College of Emergency Physicians. Clinical policy: critical issues in the evaluation and management of adult patients presenting to the emergency department with acute headache. *Ann Emerg Med*. 2008 Oct;52(4):407-36.

2

Jacobo Kirsch, J, Brown, RKJ, Henry, TS, Javidan-Nejad, C, Jokerst, C, Julsrud, PR, Kanne, JPKramer, CM, Leipsic, JA, Panchal, KK, Ravenel, JG, Shah, AB, Mohammed, TLH, Woodard, PK, Abbara, S, Expert Panels on Cardiac and Thoracic Imaging. ACR Appropriateness Criteria[®] Acute Chest Pain- Suspected Pulmonary Embolism. [Online Publication]. Reston (VA) American College of Radiology (ACR); 2016. Available at: <https://acsearch.acr.org/docs/69404/Narrative/>
Torbicki A, Perrier A, Konstantinides S, et al. Guidelines on the diagnosis and management of acute pulmonary embolism: the Task Force for the Diagnosis and Management of Acute Pulmonary Embolism of the European Society of Cardiology (ESC). *Eur Heart J*. 2008; 29(18):2276-315.
Neff MJ. ACEP releases clinical policy on evaluation and management of pulmonary embolism. *American Family Physician* 2003; 68 (4): 759–60.
Stein PD, Woodard PK, Weg JG, Wakefield TW, Tapson VF, Sostman HD, Sos TA, Quinn DA, Leeper KV, Hull RD, Hales CA, Gottschalk A, Goodman LR, Fowler SE, Buckley JD. Diagnostic pathways in acute pulmonary embolism: recommendations of the PLOPED II Investigators. *Radiology* 2007; 242 (1): 15–21.

3

McComb, BL, Chung, JH, Crabtree, TD, Heitkamp, DE, Iannettoni, MD, Jokerst, C, Saleh, AG, Shah, RD, Steiner, RM, Mohammed, TLH, Ravenel, JG, Expert Panel on Thoracic Imaging. ACR Appropriateness Criteria[®] Routine Chest Radiography. [Online Publication]. Reston (VA) American College of Radiology (ACR); 2015. Available at: <https://acsearch.acr.org/docs/69451/Narrative/>
Gomez-Gil E, Trilla A, Corbella B, et al. Lack of clinical relevance of routine chest radiography in acute psychiatric admissions. *Gen Hosp Psychiatry* 2002; 24(2): 110-113.
Archer C, Levy AR, McGregor M. Value of routine preoperative chest x-rays: a meta-analysis. *Can J Anaesth* 1993; 40(11): 1022-1027.
Munro J, Booth A, Nicholl J. Routine preoperative testing: a systematic review of the evidence. *Health Technol Assess* 1997; 1(12):i-iv; 1-62.
Grier DJ, Watson LF, Harnell GG, Wilde P. Are routine chest radiographs prior to angiography of any value? *Clin Radiol* 1993; 48(2):131-33.
Gupta SD, Gibbins FJ, Sen I. Routine chest radiography in the elderly. *Age Ageing*. 1985; 14(1):11-14.
American College of Radiology. ACR Appropriateness Criteria: routine chest radiographs in ICU patients http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonThoracicImaging/RoutineChestRadiographDoc7.aspx
Suh, RD, Genshaft, SJ, Kirsch, J, Kanne, JP, Chung, JH, Donnelly, EF, Ginsburg, ME, Heitkamp, DE, Henry, TS, Kazerooni, EA, Ketani, LH, McComb, BL, Ravenel, JG, Saleh, AG, Shah, RD, Steiner, RM, Mohammed, TLH, Expert Panel on Thoracic Imaging. ACR Appropriateness Criteria[®] Intensive Care Unit Patients. [Online Publication]. Reston (VA) American College of Radiology (ACR); 2014. Available at: <https://acsearch.acr.org/docs/69452/Narrative/>

4

- Wan MJ, et al. Acute appendicitis in young children: cost-effectiveness of US versus CT in diagnosis-a Markov decision analytic model. *Radiology* 2009;250:378-86.
- Doria AS, et al. US or CT for diagnosis of appendicitis in children? A meta-analysis. *Radiology* 2006;241:83-94.
- Garcia K, et al. Suspected appendicitis in children: diagnostic importance of normal abdominopelvic CT findings with nonvisualized appendix. *Radiology* 2009;250:531-537.
- Krishnamoorthi R, et al. Effectiveness of a staged US and CT protocol for the diagnosis of pediatric appendicitis: reducing radiation exposure in the age of ALARA. *Radiology* 2011;259:231-239.
- Smith, MP, Katz, DS, Rosen, MP, Lalani, T, Carucci, LR, Cash, BD, Kim, DH, Piorowski, RJ, Small, WC, Spottswood, SE, Tulchinsky, M, Yaghai, V, Yee, J. Expert Panel on Gastrointestinal Imaging. ACR Appropriateness Criteria® Right Lower Quadrant Pain- Suspected Appendicitis. [Online Publication]. Reston (VA) American College of Radiology (ACR); 2013. Available at: <https://acsearch.acr.org/docs/69357/Narrative/>
- Frush DP, Frush KS, Oldham KT. Imaging of acute appendicitis in children: EU versus U.S. or US versus CT? A North American perspective. *Pediatr Radiol*. 2009; 39(5):500-5.

5

- Levine D, Brown DL, Andreotti RF. Management of asymptomatic ovarian and other adnexal cysts imaged at US: Society of Radiologists in Ultrasound Consensus Conference Statement. *Radiology* 2010 256:943-54.
- Harris RD, Javitt MC, Glanc P, Brown DL, Dubinsky T, Harisinghani MG, Khati NJ, Kim YB, Mitchell DG, Pandharipande PV, Pannu HK, Podrasky AE, Royal HD, Shipp TD, Siegel CL, Simpson L, Wall DJ, Wong-You-Cheong JJ, Zelop CM; Expert Panel on Women's Imaging. ACR Appropriateness Criteria® clinically suspected adnexal mass. [Online Publication]. Reston (VA) American College of Radiology (ACR); 2012. Available at: <https://acsearch.acr.org/docs/69466/Narrative/>
- American College of Radiology. ACR Appropriateness Criteria: clinically suspected adnexal masses. http://www.acr.org/SecondaryMainMenuCategories/quality_safety/app_criteria/pdf/ExpertPanelonWomensImaging/SuspectedAdnexalMassesDoc1.aspx.
- American College of Obstetricians and Gynecologists. ACOG Committee Opinion: number 280, December 2002. The role of the generalist obstetrician-gynecologist in the early detection of ovarian cancer. *Obstet Gynecol* 2002;100(6):1413-1416.
- American College of Obstetricians and Gynecologists. ACOG Practice Bulletin. Management of adnexal masses. *Obstet Gynecol* 2007;110(1):201-214.
- Patel, MD, Ascher, SM, Paspulati, RM, Shanhogoue, AK, Siegelman, ES, Stein, MW, Berland, LL. Managing Incidental Findings on Abdominal and Pelvic CT and MRI, Part 1: White Paper of the ACR Incidental Findings Committee II on Adnexal Findings. *Journal of the American College of Radiology*, 2013; 10(9): p675-681
- Timmerman D, Valentin L, Bourne TH, et al. Terms, definitions and measurements to describe the sonographic features of adnexal tumors: a consensus opinion from the International Ovarian Tumor Analysis (IOTA) Group. *Ultrasound Obstet Gynecol* 2000;16(5):500-505.

6

- Vaccarella S, Franceschi S, Bray F, Wild CP, Plummer M, Dal Maso L. Worldwide Thyroid-Cancer Epidemic? The Increasing Impact of Overdiagnosis. *N Engl J Med*. 2016 Aug 18;375(7):614-7. doi: 10.1056/NEJMp1604412. PubMed PMID: 27532827.
- Hoang JK, Langer JE, Middleton WD, Wu CC, Hammers LW, Cronan JJ, Tessler FN, Grant EG, Berland LL. Managing incidental thyroid nodules detected on imaging: white paper of the ACR Incidental Thyroid Findings Committee. *J Am Coll Radiol*. 2015 Feb;12(2):143-50. doi: 10.1016/j.jacr.2014.09.038. Epub 2014 Nov 1. PubMed PMID: 25456025.
- Ahmed S, Horton KM, Jeffrey RB Jr, Sheth S, Fishman EK. Incidental thyroid nodules on chest CT: Review of the literature and management suggestions. *AJR Am J Roentgenol*. 2010 Nov;195(5):1066-71. doi: 10.2214/AJR.10.4506. Review. PubMed PMID: 20966308.
- Wu CW, Dionigi G, Lee KW, Hsiao PJ, Paul Shin MC, Tsai KB, Chiang FY. Calcifications in thyroid nodules identified on preoperative computed tomography: patterns and clinical significance. *Surgery*. 2012 Mar;151(3):464-70. doi: 10.1016/j.surg.2011.07.032. Epub 2011 Sep 10. PubMed PMID: 21911238.
- Tanpittukpongse TP, Grady AT, Sosa JA, Eastwood JD, Choudhury KR, Hoang JK. Incidental thyroid nodules on CT or MRI: Discordance between what we report and what receives workup. *AJR Am J Roentgenol*. 2015 Dec;205(6):1281-1287. doi: 10.2214/AJR.15.14929. PubMed PMID: 26587935.
- Bahl M, Sosa JA, Eastwood JD, Hobbs HA, Nelson RC, Hoang JK. Using the 3-tiered system for categorizing workup of incidental thyroid nodules detected on CT, MRI, or PET/CT: how many cancers would be missed? *Thyroid*. 2014 Dec;24(12):1772-8. doi: 10.1089/thy.2014.0066. PubMed PMID: 25203387.
- Hobbs HA, Bahl M, Nelson RC, Kranz PG, Esclamado RM, Wnuk NM, Hoang JK. Journal Club: incidental thyroid nodules detected at imaging: can diagnostic workup be reduced by use of the Society of Radiologists in Ultrasound recommendations and the three-tiered system? *AJR Am J Roentgenol*. 2014 Jan;202(1):18-24.
- Nguyen XV, Choudhury KR, Eastwood JD, Lyman GH, Esclamado RM, Werner JD, Hoang JK. Incidental thyroid nodules on CT: evaluation of 2 risk-categorization methods for work-up of nodules. *AJNR Am J Neuroradiol*. 2013 Sep;34(9):1812-7. doi: 10.3174/ajnr.A3487. Epub 2013 Apr 4.

7

- Johnson PT, Mahesh M, Fishman EK. Image Wisely and Choosing Wisely: Importance of Adult Body CT Protocol Design for Patient Safety, Exam Quality, and Diagnostic Efficacy. *J Am Coll Radiol*. 2015 Nov;12(11):1185-90. doi: 10.1016/j.jacr.2015.02.021. Epub 2015 Apr 16. Review. PubMed PMID: 25892227.
- Strother MK, Robert EC, Cobb JG, Pruthi S, Feurer ID. Reduction in the number and associated costs of unindicated dual-phase head CT examinations after a quality improvement initiative. *AJR Am J Roentgenol*. 2013 Nov;201(5):1049-56. doi: 10.2214/AJR.12.10393. PubMed PMID: 24147476.
- Guite KM, Hinshaw JL, Ranallo FN, Lindstrom MJ, Lee FT Jr. Ionizing radiation in abdominal CT: unindicated multiphase scans are an important source of medically unnecessary exposure. *J Am Coll Radiol*. 2011 Nov;8(11):756-61. doi: 10.1016/j.jacr.2011.05.011. PubMed PMID: 22051457; PubMed Central PMCID: PMC4131253.
- Fulwadhva UP, Wortman JR, Sodickson AD. Use of dual-energy CT and iodine maps in evaluation of bowel disease. *Radiographics*. 2016 Mar-Apr; 36(2):393-406. doi: 10.1148/rg.2016150151. PubMed PMID: 26963452.
- Artigas JM, Martí M, Soto JA, Esteban H, Pinilla I, Guillén E. Multidetector CT angiography for acute gastrointestinal bleeding: technique and findings. *Radiographics*. 2013 Sep-Oct; 33(5):1453-1470. doi: 10.1148/rg.335125072. Review. PubMed PMID: 24025935.
- Geffroy Y, Rodallec MH, Boulay-Coletta I, Jullès MC, Ridereau-Zins C, Zins M. Multidetector CT angiography in acute gastrointestinal bleeding: why, when, and how. *Radiographics*. 2011 May-Jun; 31(3):E35-46. Review. Erratum in: *Radiographics*. 2011 Sep-Oct;31(5):1496. *Radiographics*. 2011 Nov-Dec;31(7):2114. Fullès, Marie-Christine [corrected to Jullès, Marie-Christine]. PubMed PMID: 21721196.

8

- Chan MG, Cassidy FH, Andre MP, Chu P, Aganovic L. Delayed imaging in routine CT examinations of the abdomen and pelvis: is it worth the additional cost of radiation and time? *AJR Am J Roentgenol*. 2014 Feb;202(2):329-35. doi: 10.2214/AJR.12.10468. PubMed PMID: 24450673.
- Rodolfo E, Devicienti E, Miccò M, Del Ciello A, Di Giovanni SE, Giuliani M, Conte C, Gui B, Valentini AL, Bonomo L. Diagnostic accuracy of MDCT in the evaluation of patients with peritoneal carcinomatosis from ovarian cancer: is delayed enhanced phase really effective? *Eur Rev Med Pharmacol Sci*. 2016 Nov;20(21):4426-4434. PubMed PMID: 27874958.
- Johnson PT, Mahesh M, Fishman EK. Image Wisely and Choosing Wisely: Importance of Adult Body CT Protocol Design for Patient Safety, Exam Quality, and Diagnostic Efficacy. *J Am Coll Radiol*. 2015 Nov;12(11):1185-90. doi: 10.1016/j.jacr.2015.02.021. Epub 2015 Apr 16. Review. PubMed PMID: 25892227.
- Guite KM, Hinshaw JL, Ranallo FN, Lindstrom MJ, Lee FT Jr. Ionizing radiation in abdominal CT: unindicated multiphase scans are an important source of medically unnecessary exposure. *J Am Coll Radiol*. 2011 Nov;8(11):756-61. doi: 10.1016/j.jacr.2011.05.011. PubMed PMID: 22051457; PubMed Central PMCID: PMC4131253.
- Monzawa S, Ichikawa T, Nakajima H, Kitanaka Y, Omata K, Araki T. Dynamic CT for detecting small hepatocellular carcinoma: usefulness of delayed phase imaging. *AJR Am J Roentgenol*. 2007 Jan;188(1):147-53. PubMed PMID: 17179357.
- Iannaccone R, Laghi A, Catalano C, Rossi P, Mangiapane F, Murakami T, Hori M, Piacentini F, Nofroni I, Passariello R. Hepatocellular carcinoma: role of unenhanced and delayed phase multi-detector row helical CT in patients with cirrhosis. *Radiology*. 2005 Feb;234(2):460-7. PubMed PMID: 15671002.
- Lim JH, Choi D, Kim SH, Lee SJ, Lee WJ, Lim HK, Kim S. Detection of hepatocellular carcinoma: value of adding delayed phase imaging to dual-phase helical CT. *AJR Am J Roentgenol*. 2002 Jul;179(1):67-73. PubMed PMID: 12076907.
- Keogan MT, Seabourn JT, Paulson EK, McDermott VG, Delong DM, Nelson RC. Contrast-enhanced CT of intrahepatic and hilar cholangiocarcinoma: delay time for optimal imaging. *AJR Am J Roentgenol* 1997;169:1493-9.
- Loyer EM, Chin H, DuBrow RA, David CL, Eftekhari F, Charnsangavej C. Hepatocellular carcinoma and intrahepatic peripheral cholangiocarcinoma: enhancement patterns with quadruple phase helical CT a comparative study. *Radiology* 1999;212:866-75.

9

Coakley FV, Varghese SL, Hricak H. CT and MRI of pelvic varices in women. *J Comput Assist Tomogr.* 1999 May-Jun;23(3):429-34. PubMed PMID: 10348450.

Rozenblit AM, Ricci ZJ, Tuvia J, Amis ES Jr. Incompetent and dilated ovarian veins: a common CT finding in asymptomatic parous women. *AJR Am J Roentgenol.* 2001 Jan;176(1):119-22. PubMed PMID: 11133549.

Hiromura T, Nishioka T, Nishioka S, Ikeda H, Tomita K. Reflux in the left ovarian vein: analysis of MDCT findings in asymptomatic women. *AJR Am J Roentgenol.* 2004 Nov;183(5):1411-5. PubMed PMID: 15505313.

Khosa F, Krinsky G, Macari M, Yucel EK, Berland LL. Managing incidental findings on abdominal and pelvic CT and MRI, Part 2: white paper of the ACR Incidental Findings Committee II on vascular findings. *J Am Coll Radiol.* 2013 Oct;10(10):789-94. doi: 10.1016/j.jacr.2013.05.021. PubMed PMID: 24091049.

10

Warshauer DM, Lee JK. Adult intussusception detected at CT or MR imaging: clinical-imaging correlation. *Radiology.* 1999 Sep;212(3):853-60. PubMed PMID: 10478257.

Rea JD, Lockhart ME, Yarbrough DE, Leeth RR, Bledsoe SE, Clements RH. Approach to management of intussusception in adults: a new paradigm in the computed tomography era. *Am Surg.* 2007 Nov;73(11):1098-105. PubMed PMID: 18092641.

Olasky J, Moazzez A, Barrera K, Clarke T, Shriki J, Sohn HJ, Katkhouda N, Mason RJ. In the era of routine use of CT scan for acute abdominal pain, should all adults with small bowel intussusception undergo surgery? *Am Surg.* 2009 Oct;75(10):958-61. PubMed PMID: 19886144.

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The mission of the American College of Radiology (ACR) is to serve its 34,000 members in advancing the quality, safety, and science of radiology and radiation oncology. The ACR conducts cutting-edge clinical and socioeconomic research, establishes quality and safety standards and provides continuing education and advocacy for radiologists, radiation oncologists and medical physicists. Since 1923, the ACR has worked to keep medical imaging and radiation oncology safe, effective and accessible for all.



For more information or questions, please visit www.acr.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't test ANA sub-serologies without a positive ANA and clinical suspicion of immune-mediated disease.

Tests for anti-nuclear antibody (ANA) sub-serologies (including antibodies to double-stranded DNA, Smith, RNP, SSA, SSB, Scl-70, centromere) are usually negative if the ANA is negative. Exceptions include anti-Jo1, which can be positive in some forms of myositis, or occasionally, anti-SSA, in the setting of lupus or Sjögren's syndrome. Broad testing of autoantibodies should be avoided; instead the choice of autoantibodies should be guided by the specific disease under consideration.

2

Don't test for Lyme disease as a cause of musculoskeletal symptoms without an exposure history and appropriate exam findings.

The musculoskeletal manifestations of Lyme disease include brief attacks of arthralgia or intermittent or persistent episodes of arthritis in one or a few large joints at a time, especially the knee. Lyme testing in the absence of these features increases the likelihood of false positive results and may lead to unnecessary follow-up and therapy. Diffuse arthralgias, myalgias or fibromyalgia alone are not criteria for musculoskeletal Lyme disease.

3

Don't perform MRI of the peripheral joints to routinely monitor inflammatory arthritis.

Data evaluating MRI for the diagnosis and prognosis of rheumatoid arthritis are currently inadequate to justify widespread use of this technology for these purposes in clinical practice. Although bone edema assessed by MRI on a single occasion may be predictive of progression in certain RA populations, using MRI routinely is not cost-effective compared with the current standard of care, which includes clinical disease activity assessments and plain film radiography.

4

Don't prescribe biologics for rheumatoid arthritis before a trial of methotrexate (or other conventional non-biologic DMARDs).

High quality evidence suggests that methotrexate and other conventional non-biologic disease modifying antirheumatic drugs (DMARD) are effective in many patients with rheumatoid arthritis (RA). Initial therapy for RA should be a conventional non-biologic DMARDs unless these are contraindicated. If a patient has had an inadequate response to methotrexate with or without other non-biologic DMARDs during an initial 3-month trial, then biologic therapy can be considered. Exceptions include patients with high disease activity and poor prognostic features (functional limitations, disease outside the joints, seropositivity or bony damage), where biologic therapy may be appropriate first-line treatment.

5

Don't routinely repeat DXA scans more often than once every two years.

Initial screening for osteoporosis should be performed according to National Osteoporosis Foundation recommendations. The optimal interval for repeating Dual-energy X-ray Absorptiometry (DXA) scans is uncertain, but because changes in bone density over short intervals are often smaller than the measurement error of most DXA scanners, frequent testing (e.g., <2 years) is unnecessary in most patients. Even in high-risk patients receiving drug therapy for osteoporosis, DXA changes do not always correlate with probability of fracture. Therefore, DXAs should only be repeated if the result will influence clinical management or if rapid changes in bone density are expected. Recent evidence also suggests that healthy women age 67 and older with normal bone mass may not need additional DXA testing for up to ten years provided osteoporosis risk factors do not significantly change.

How This List Was Created

The American College of Rheumatology (ACR) established a Top 5 Task Force to oversee the creation of its recommendations. As part of this group's work, a multi-stage process combining consensus methodology and literature reviews was used to arrive at the final recommendations. Items were generated by a group of practicing rheumatologists in diverse clinical settings using the Delphi method. Recommendations with high content agreement and perceived prevalence advanced to a survey of ACR members, who comprise more than 90% of the U.S. rheumatology workforce. Based on member input related to content agreement, impact and item ranking, candidate items advanced to literature review. The Top 5 Task Force discussed the items in light of their relevance to rheumatology, level of evidence to support their inclusion, and the member survey results, and drafted the final rheumatology Top 5 list. The list was reviewed by a sample of patients with rheumatic disease and approved by the ACR Board of Directors. For further details regarding these methods, please see the manuscript published in *Arthritis Care & Research* at www.rheumatology.org/FiveThings.

ACR's disclosure and conflict of interest policy can be found at www.rheumatology.org.

Sources

- Kavanaugh A, Tomar R, Reveille J, Solomon DH, Homburger HA. Guidelines for clinical use of the antinuclear antibody test and tests for specific autoantibodies to nuclear antigens. *American College of Pathologists. Arch Pathol Lab Med* 2000;124(1):71-81.

Solomon DH, Kavanaugh AJ, Schur PH. Evidence-based guidelines for the use of immunologic tests: Antinuclear antibody testing. *Arthritis Rheum* 2002;47(4):434-44.

Tozzoli R, Bizzaro N, Tonutti E, Villalta D, Bassetti D, Manoni F, Piazza A, Pradella M, Rizzotti P. Guidelines for the laboratory use of autoantibody tests in the diagnosis and monitoring of autoimmune rheumatic diseases. *Am J Clin Pathol* 2002;117(2):316-24.
- Lyme Disease Diagnosis and Treatment. [Internet]. Atlanta (GA). Centers for Disease Control and Prevention. [Updated 2011 Nov 15; cited 2012 Sep 6]. Available from: www.cdc.gov/lyme/diagnosistreatment/index.html.

American College of Physicians. Guidelines for laboratory evaluation in the diagnosis of Lyme disease. *Ann Intern Med.* 1997;127(12):1106-8

Hu LT. Lyme disease. *Ann Intern Med* 2012;157(3):ITC2-1.

Wormser GP, Dattwyler RJ, Shapiro ED, Halperin JJ, Steere AC, Klemmner MS, Krause PJ, Bakken JS, Strle F, Stanek G, Bockenstedt L, Fish D, Dumler JS, Nadelman RB. The clinical assessment, treatment, and prevention of Lyme disease, human granulocytic anaplasmosis, and babesiosis: Clinical practice guidelines by the Infectious Diseases Society of America. *Clin Infect Dis* 2006;43(9):1089-134.
- Singh JA, Furst DE, Bharat A, Curtis JR, Kavanaugh AF, Kremer JM, Moreland LM, O'Dell J, Winthrop KL, Beukelman T, Bridges SL, Chatham WW, Paulus HE, Suarez-Almazor M, Bombardier C, Dougados M, Khanna D, King CM, Leong AL, Matteson EL, Schousboe JT, Moynihan E, Kolba KS, Jain A, Volkmann ER, Agrawal H, Bae S, Mudano AS, Patkar NM, Saag KG. 2012 update of the 2008 American College of Rheumatology recommendations for the use of disease-modifying antirheumatic drugs and biologic agents in the treatment of rheumatoid arthritis. *Arthritis Care Res (Hoboken)*;64(5):625-39.

Combe B, Landewe R, Lukas C, Bolosiu HD, Breedveld F, Dougados M, Emery P, Ferraccioli G, Hazes JM, Klareskog L, Machold K, Martin-Mola E, Nielsen H, Silman A, Smolen J, Yazici H. EULAR recommendations for the management of early arthritis: Report of a task force of the European Standing Committee for International Clinical Studies Including Therapeutics (ESCSIT). *Ann Rheum Dis* 2007;66(1):34-45.
- Singh JA, Furst DE, Bharat A, Curtis JR, Kavanaugh AF, Kremer JM, Moreland LM, O'Dell J, Winthrop KL, Beukelman T, Bridges SL, Chatham WW, Paulus HE, Suarez-Almazor M, Bombardier C, Dougados M, Khanna D, King CM, Leong AL, Matteson EL, Schousboe JT, Moynihan E, Kolba KS, Jain A, Volkmann ER, Agrawal H, Bae S, Mudano AS, Patkar NM, Saag KG. 2012 update of the 2008 American College of Rheumatology recommendations for the use of disease-modifying antirheumatic drugs and biologic agents in the treatment of rheumatoid arthritis. *Arthritis Care Res (Hoboken)*;64(5):625-39.

Smolen JS, Landewe R, Breedveld FC, Dougados M, Emery P, Gaujoux-Viala C, Gorter S, Knevel R, Nam J, Schoels M, Aletaha D, Buch M, Gossec L, Huizinga T, Bijlsma JWJ, Burmester G, Combe B, Cutolo M, Gabay C, Gomez-Reino J, Kouloumas M, Kvien TK, Martin-Mola E, McInnes I, Pavelka K, van Riel P, Scholte M, Scott DL, Sokka T, Valesini G, van Vollenhove R, Winthrop KL, Wong J, Zink A, van der Heijde D. EULAR recommendations for the management of rheumatoid arthritis with synthetic and biological disease-modifying antirheumatic drugs. *Ann Rheum Dis*;69(6):964-75.
- Grossman JM, Gordon R, Ranganath VK, Deal C, Caplan L, Chen W, Curtis JR, Furst DE, McMahon M, Patkar NM, Volkmann E, Saag KG. American College of Rheumatology 2010 recommendations for the prevention and treatment of glucocorticoid-induced osteoporosis. *Arthritis Care Res (Hoboken)*;62(11):1515-26.

National Osteoporosis Foundation. Clinician's guide to prevention and treatment of osteoporosis. (2010). Washington (DC); National Osteoporosis Foundation. 36p.

U.S. Preventive Services Task Force. Screening for osteoporosis: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med*;154(5):356-64.

About the ABIM Foundation

The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.



To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the American College of Rheumatology

More than 50 million Americans, including 300,000 children, suffer from arthritis and rheumatic diseases, and rheumatologists are the specialists in the treatment of those diseases. The American College of Rheumatology represents over 8,500 rheumatologists and rheumatology health professionals around the world. The ACR offers its members the support needed to ensure they are able to continue their innovative research and quality patient care.



To find a rheumatologist in your area, or to learn about the ACR, visit www.rheumatology.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.



Five Things Physicians and Patients Should Question

1

Don't order autoantibody panels unless positive antinuclear antibodies (ANA) and evidence of rheumatic disease.

Up to 50% of children develop musculoskeletal pain. There is no evidence that autoantibody panel testing in the absence of history or physical exam evidence of a rheumatologic disease enhances the diagnosis of children with isolated musculoskeletal pain. Autoantibody panels are expensive; evidence has demonstrated cost reduction by limiting autoantibody panel testing. Thus, autoantibody panels should be ordered following confirmed ANA positivity or clinical suspicion that a rheumatologic disease is present in the child.

2

Don't test for Lyme disease as a cause of musculoskeletal symptoms without an exposure history and appropriate exam findings.

The musculoskeletal manifestations of Lyme disease include brief attacks of arthralgia or intermittent or persistent episodes of arthritis in one or a few large joints at a time, especially the knee. Lyme testing in the absence of these features increases the likelihood of false positive results and may lead to unnecessary follow-up and therapy. Diffuse arthralgias, myalgias or fibromyalgia alone are not criteria for musculoskeletal Lyme disease.

3

Don't routinely perform surveillance joint radiographs to monitor juvenile idiopathic arthritis (JIA) disease activity.

There are no available data to suggest that routinely obtaining surveillance joint radiographs to monitor for the development or progression of erosive changes in children with juvenile idiopathic arthritis (JIA) improves outcomes. Radiation exposure and cost are potential risks. In the absence of data to support clear benefit, radiographs should be obtained by the pediatric rheumatologist only when history and physical exam raise clinical concern about joint damage or decline in function.

4

Don't perform methotrexate toxicity labs more often than every 12 weeks on stable doses.

Laboratory abnormalities in JIA patients taking methotrexate are usually mild and rarely prompt significant changes in management. Screening low-risk children every 1–2 months may lead to unnecessary interruptions in treatment. More frequent monitoring may be required in the first six months after methotrexate initiation or dose escalation and in patients with risk factors for toxicity including obesity, diabetes, renal disease, psoriasis, systemic JIA, Down syndrome and use of alcohol or other hepatotoxic or myelosuppressive medications.

5

Don't repeat a confirmed positive ANA in patients with established JIA or systemic lupus erythematosus (SLE).

ANA is important in the diagnosis of SLE and positivity guides more frequent slit lamp examination for detection of uveitis in children with JIA. Beyond this, there is no evidence that ANA is valuable in the ongoing management of SLE or JIA. It is recommended that following diagnosis of SLE or JIA, ANA should not be repeated unless a child with JIA has evolution of symptoms suggestive of an autoimmune connective tissue disease.

How This List Was Created

The American College of Rheumatology (ACR) used a multi-stage process combining consensus methodology and literature reviews to arrive at its Pediatric Rheumatology Top 5 list. Items were generated by a group of practicing pediatric rheumatologists using the Delphi method. Items with high content agreement and perceived prevalence advanced to a survey of ACR members who listed pediatric rheumatology as their specialty. Based on member input related to content agreement, impact and item ranking, candidate items advanced to literature review. The ACR Special Committee on Pediatric Rheumatology discussed the items in light of their relevance to rheumatology, level of evidence to support their inclusion in the final list and the member survey results, and drafted the final pediatric rheumatology Top 5 list. The list was reviewed and approved by the ACR Board of Directors.

ACR's disclosure and conflict of interest policy can be found at www.rheumatology.org.

ACR Special Committee on Pediatric Rheumatology

Polly Ferguson, MD, Chair	University of Iowa Carver College of Medicine, Iowa City, IA
Stacy Ardoin, MD	Ohio State University, Columbus, OH
Mara Becker, MD	Children's Mercy Hospital, Kansas City, MO
Ashley Cooper, MD	University of Texas Southwestern Medical School, Dallas, TX
Leonard Dragone, MD, PhD	National Jewish Hospital, Denver, CO
Anna Huttenlocher, MD	University of Wisconsin Medical School, Madison, WI
Karla Jones, RN, MS, CPNP	Nationwide Children's Hospital, Columbus, OH
Karen Kolba, MD	Pacific Arthritis Center, Santa Maria, CA
Lakshmi Moorthy, MD, MS	Robert Wood Johnson Medical School, New Brunswick, NJ
Peter Nigrovic, MD	Brigham and Women's Hospital, Boston, MA
Kelly Rouster-Stevens, MD	Emory Children's Center, Atlanta, GA
Jennifer Stinson, RN, PhD, CPNP	The Hospital for Sick Children, Toronto, ON, CA

American College of Rheumatology Pediatric Rheumatology Core Membership Group*

*Members of the Core Membership MD Group included: Robert Colbert, MD, PhD, Randy Cron, MD, PhD, Peter Dent, MD, Melissa Elder, MD, PhD, Donald Goldsmith, MD, Roger Hollister, MD, Norman Ilowite, MD, Yukiki Kimura, MD, Marisa Klein-Gitelman, MD, MPH, Erica Lawson, MD, Murray Passo, MD, Ross Petty, MD, PhD, Marilynn Punaro, MD, Eglia Rabinovich, MD, MPH, Andreas Reiff, MD, David Sherry, MD, Lawrence Zemel, MD

Sources

1
Wong KO, Bond K, Homik J, Ellsworth JE, Karkhaneh M, Ha C, Dryden DM. Antinuclear antibody, rheumatoid factor, and cyclic-citrullinated peptide tests for evaluating musculoskeletal complaints in children. *Comparative Effectiveness Review No. 50. AHRZ Publication No. 12-EHC015-EF*. Rockville, MD: Agency for Healthcare Research and Quality. March 2012.

Cabral DA, Petty RE, Fung M, Malleson PN. Persistent antinuclear antibodies in children without identifiable inflammatory rheumatic or autoimmune disease. *Pediatrics*. 1992;89:441-4.

Deane PM, Liard G, Siegel DM, Baum J. The outcome of children referred to a pediatric rheumatology clinic with a positive antinuclear antibody test but without an autoimmune disease. *Pediatrics*. 1995;95:892-5.

McGhee JL, Burks FN, Sheckels JL, Jarvis JN. Identifying children with chronic arthritis based on chief complaints: absence of predictive value for musculoskeletal pain as an indicator of rheumatic disease in children. *Pediatrics*. 2002;110:354-9.

Man A, Shojania K, Phoon C, Pal J, Hudoba de Badyn M, Pi D, Lacaille D. An evaluation of autoimmune antibody testing patterns in a Canadian health region and an evaluation of a laboratory algorithm aimed at reducing unnecessary testing. *Clin Rheumatol*. 2012; doi:10.1007/s10067-012-2141-y.

2
Lyme Disease Diagnosis and Treatment. [Internet]. Atlanta (GA). Centers for Disease Control and Prevention. [Updated 2011 Nov 15; cited 2012 Sep 6]. Available from: www.cdc.gov/lyme/diagnosis/treatment/index.html.

American College of Physicians. Guidelines for laboratory evaluation in the diagnosis of Lyme disease. *Ann Intern Med*. 1997;127(12):1106-8.

Hu LT. Lyme disease. *Ann Intern Med*. 2012;157(3):ITC2-1.

Wormser GP, Dattwyler RJ, Shapiro ED, Halperin JJ, Steere AC, Klempner MS, Krause PJ, Bakken JS, Strle F, Stanek G, Bockenstedt L, Fish D, Dumler JS, Nadelman RB. The clinical assessment, treatment, and prevention of Lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Diseases Society of America. *Clin Infect Dis*. 2006;43(9):1089-134.

3
Beukelman T, Patkar NM, Saag KG, et al. 2011 American College of Rheumatology recommendations for the treatment of juvenile idiopathic arthritis: initiation and safety monitoring of therapeutic agents for the treatment of arthritis and systemic features. *Arthritis Care Res*. 2011;63:465-82.

Magni-Manzoni S, Rossi F, Pistorio A, Temporini F, Viola S, Beluffi G, Martini A, Ravelli A. Prognostic factors for radiographic progression, radiographic damage, and disability in juvenile idiopathic arthritis. *Arthritis Rheum*. 2003;48:3509-17.

Magni-Manzoni S, Malattia C, Lanni S, Ravelli A. Advances and challenges in imaging in juvenile idiopathic arthritis. *Nat Rev Rheumatol*. 2012;8:329-36.

Yazici Y, Sokka T, Pincus T. Radiographic measures to assess patients with rheumatoid arthritis advantages and limitations. *Rheum Dis Clin North Am*. 2009;35:723.

Okkaldes D, Fotakis M. Patient effective dose resulting from radiographic examinations. *Br J Radiol* 1994;67:564-72.

4

Beukelman T, Patkar NM, Saag KG, Tolleson-Rinehart S, Cron RQ, DeWitt EM, Ilowite NT, Kimura Y, Laxer RM, Lovell DJ, Martini A, Rabinovich CE, Ruperto N. 2011 American College of Rheumatology recommendations for the treatment of juvenile idiopathic arthritis: initiation and safety monitoring of therapeutic agents for the treatment of arthritis and systemic features. *Arthritis Care Res.* 2011;63(4):465–82.

Saag K, Teng G, Patkar N, Anuntiyo J, Finney C, Curtis JR, Paulus HE, Mudano A, Pisu M, Elkins-Melton M, Outman R, Allison JJ, Suarez Almazor M, Bridges SL Jr, Chatham WW, Hochberg M, MacLean C, Mikuls T, Moreland LW, O'Dell J, Turkiewicz AM, Furst DE; American College of Rheumatology. American College of Rheumatology 2008 recommendations for the use of nonbiologic and biologic disease-modifying antirheumatic drugs in rheumatoid arthritis. *Arthritis Care Res.* 2008;59(6):762–84.

Lahdenne P, Rapola J, Ylijoki H, Haapasaari J. Hepatotoxicity in patients with juvenile idiopathic arthritis receiving longterm methotrexate therapy. *J Rheumatol.* 2002;29:2242–5.

Kocharla L, Taylor J, Weiler T, Ting TV, Luggen M, Brunner HI. Monitoring methotrexate toxicity in juvenile idiopathic arthritis. *J Rheumatol.* 2009;36:2813–8.

Ortiz-Alvarez O, Morishita K, Avery G, Green J, Petty RE, Tucker LB, Malleson PN, Cabral DA. Guidelines for blood test monitoring of methotrexate toxicity in juvenile idiopathic arthritis. *J Rheumatol.* 2004;31:2501–6.

5

Petty RE, Cassidy JT, Sullivan DB. Clinical correlates of antinuclear antibodies in juvenile rheumatoid arthritis. *J Pediatr* 1973;83:386–9.

Cassidy J, Kilvin J, Lindsley C, Nocton J. Ophthalmologic examinations in children with juvenile rheumatoid arthritis. *Pediatrics.* 2006;117:1843–5.

Ravelli A, Varnier GC, Oliveira S, Castell E, Arguedas O, Magnani A, Pistorio A, Ruperto N, Magni-Manzoni S, Galasso R, Lattanzi B, Dalprà S, Battagliese A, Verazza S, Allegra M, Martini A. Antinuclear antibody-positive patients should be grouped as a separate category in the classification of juvenile idiopathic arthritis. *Arthritis Rheum.* 2011;63:267–75.

Ferraz MB, Goldenberg J, Hilario M, Bastos WA, Oliveira SK, Azevedo EC, di Napoli D. Evaluation of the 1982 ARA lupus criteria data set in pediatric patients. Committees of Pediatric Rheumatology of the Brazilian Society of Pediatrics and the Brazilian Society of Rheumatology. *Clin Exp Rheumatol.* 1994;12:83–7.

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Five Things Physicians and Patients Should Question

1

Don't perform axillary lymph node dissection for clinical stages I and II breast cancer with clinically negative lymph nodes without attempting sentinel node biopsy.

Sentinel node biopsy is proven effective at staging the axilla for positive lymph nodes and is proven to have fewer short and long term side effects, and in particular is associated with a markedly lower risk of lymphedema (permanent arm swelling).

When the sentinel lymph node(s) are negative for cancer, no axillary dissection should be performed.

When one or two sentinel nodes are involved with cancer that is not extensive in the node, the patient received breast conserving surgery and is planning to receive whole breast radiation and stage appropriate systemic therapy, axillary node dissection should not be performed.

2

Avoid the routine use of "whole-body" diagnostic computed tomography (CT) scanning in patients with minor or single system trauma.

Aggressive use of "whole-body" CT scanning improves early diagnosis of injury and may even positively impact survival in polytrauma patients. However, the significance of radiation exposure as well as costs associated with these studies must be considered, especially in patients with low energy mechanisms of injury and absent physical examination findings consistent with major trauma.

3

Avoid colorectal cancer screening tests on asymptomatic patients with a life expectancy of less than 10 years and no family or personal history of colorectal neoplasia.

Screening for colorectal cancer has been shown to reduce the mortality associated with this common disease; colonoscopy provides the opportunity to detect and remove adenomatous polyps, the precursor lesion to many cancers, thereby reducing the incidence of the disease later in life.

However, screening and surveillance modalities are inappropriate when the risks exceed the benefit.

The risk of colonoscopy increases with increasing age and comorbidities.

The risk/benefit ratio of colorectal cancer screening or surveillance for any patient should be individualized based on the results of previous screening examinations, family history, predicted risk of the intervention, life expectancy and patient preference.

4

Avoid admission or preoperative chest X rays for ambulatory patients with unremarkable history and physical exam.

Performing routine admission or preoperative chest X rays is not recommended for ambulatory patients without specific reasons suggested by the history and/or physical examination findings. Only 2 percent of such images lead to a change in management. Obtaining a chest radiograph is reasonable if acute cardiopulmonary disease is suspected or there is a history of chronic stable cardiopulmonary diseases in patients older than age 70 who have not had chest radiography within six months.

5

Don't do computed tomography (CT) for the evaluation of suspected appendicitis in children until after ultrasound has been considered as an option.

Although CT is accurate in the evaluation of suspected appendicitis in the pediatric population, ultrasound is the preferred initial consideration for imaging examination in children. If the results of the ultrasound exam are equivocal, it may be followed by CT. This approach is cost-effective, reduces potential radiation risks and has excellent accuracy, with reported sensitivity and specificity of 94 percent in experienced hands. Recognizing that expertise may vary, strategies including improving diagnostic expertise in community based ultrasound and the development of evidence-based clinical decision rules are realistic goals in improving diagnosis without the use of CT scan.

How This List Was Created

The American College of Surgeons (ACS) solicited recommendations for the ABIM Foundation's *Choosing Wisely*[®] campaign from the Commission on Cancer, Committee on Trauma and the Advisory Councils for Colon and Rectal Surgery, General Surgery and Pediatric Surgery. The committees were provided with a description of the campaign's initiative, a link to the *Choosing Wisely* website and published recommendations from organizations already participating in the campaign were referenced and reviewed during discussions. All of the recommendations collected from the ACS committees were reviewed, and five items were identified. The ACS' disclosure and conflict of interest policy can be found at www.facs.org.

Participating ACS Committees:

Advisory Council for Colon and Rectal Surgery
Chair: Thomas E. Read, MD, FACS, Burlington, MA

Advisory Council for General Surgery
Chair: E. Christopher Ellison, MD, FACS, Columbus, OH

Advisory Council for Pediatric Surgery
Chair: Mary E. Fallat, MD, FACS, Louisville, KY
Immediate Past Chair: Thomas F. Tracy Jr., MD, FACS, Providence, RI

Commission on Cancer
Chair: Daniel P. McKellar, MD, FACS, Greenville, OH

Committee on Trauma
Chair: Michael F. Rotondo, MD, FACS, Greenville, NC

Sources

- Krag DN, Anderson SJ, Julian TB, Brown AM, Harlow SP, Costantino JP, Ashikaga T, Weaver DL, Mamounas EP, Jalovec LM, Frazier TG, Noyes RD, Robidoux A, Scarth HM, Wolmark N. Sentinel lymph-node resection compared with conventional axillary-lymph-node-dissection in clinically node-negative patients with breast cancer: overall survival findings from the NSABP B-32 randomised phase 4 trial. *Lancet Oncol*. 2010 Oct;11(10):927-33.

Giuliano AE, Hunt KK, Ballman KV, Beitsch PD, Whitworth PW, Blumencranz PW, Leitch AM, Saha S, McCall LM, Morrow M. Axillary dissection vs. no axillary dissection in women with invasive breast cancer and sentinel node metastasis: a randomized clinical trial. *JAMA*. 2011 Feb 9;305(6):569-5.

Ashikaga T, Krag DN, Land SR, Julian TB, Anderson SJ, Brown AM, Skelly JM, Harlow SP, Weaver DL, Mamounas EP, Costantino JP, Wolmark N; National Surgical Adjuvant Breast, Bowel Project. Morbidity results for the NSABP B-32 trial comparing sentinel lymph node dissection versus axillary dissection. *J Surg Oncol*. 2010 Aug 1;102(2):111-8.

Giuliano AE, Hawes D, Ballman KV, Whitworth PW, Blumencranz PW, Reintgen DS, Morrow M, Leitch AM, Hunt KK, McCall LM, Abati A, Cote R. Association of occult metastases in sentinel lymph nodes and bone marrow with survival among women with early-stage invasive breast cancer. *JAMA*. 2011 Jun 27;306(4):385-93.

Weaver DL, Ashikaga T, Krag DN, Skelly JM, Anderson SJ, Harlow SP, Julian TB, Mamounas EP, Wolmark N. Effect of occult metastases on survival in node-negative breast cancer. *N Engl J Med*. 2011 Feb 3;364(5):412-21.
- Huber-Wagner S, Lefering R, Qvick LM, Körner M, Kay MV, Pfeifer KJ, Reiser M, Mutschler W, Kanz KG; Working Group on Polytrauma of the German Trauma Society. Effect of whole-body CT during trauma resuscitation on survival: a retrospective, multicentre study. *Lancet*. 2009 Apr 25;373(9673):1455-61.

Stengel D, Ottersbach C, Matthes G, Weigeldt M, Grundei S, Rademacher G, Tittel A, Mutze S, Ekkernkamp A, Frank M, Schmucker U, Seifert J. Accuracy of single-pass whole-body computed tomography for detection of injuries in patients with blunt major trauma. *CMAJ*. 2012 May 15;184(8):869-76.

Ahmadinia K, Smucker JB, Nash CL, Vallier HA. Radiation exposure has increased in trauma patients over time. *J Trauma*. 2012 Feb;72(2):410-5.

Winslow JE, Hinshaw JW, Hughes MJ, Williams RC, Bozeman WP. Quantitative assessment of diagnostic radiation doses in adult blunt trauma patients. *Ann Emerg Med*. 2008 Aug;52(2):93-7.
- Lieberman DA, Rex DK, Winawer SJ, Giardiello FM, Johnson DA, Levin TR; United States Multi-Society Task Force on Colorectal Cancer. Guidelines for colonoscopy surveillance after screening and polypectomy: a consensus update by the U.S. Multi-Society Task Force on Colorectal Cancer. *Gastroenterology*. 2012;143(3):844-57.

Warren JL, Klabunde CN, Mariotto AB, Meekins A, Topor M, Brown ML, Ransohoff DF. Adverse events after outpatient colonoscopy in the Medicare population. *Ann Intern Med*. 2009;150(12):849-57.

U.S. Preventative Services Task Force. Screening for colorectal cancer: U.S. Preventive Services Task Force Recommendation Statement. *Ann Intern Med*. 2008;149(9):627-37.

Qaseem A, Denberg TD, Hopkins RH, Humphrey LL, Levine J, Sweet DE, Shekelle P; Clinical Guidelines Committee of the American College of Physicians. Screening for colorectal cancer; a guidance statement from the American College of Physicians. *Ann Intern Med*. 2012;156(5):378-86.

4

Mohammed TL, Kirsch J, Amorosa JK, Brown K, Chung JH, Dyer DS, Ginsburg ME, Heitkamp DE, Kanne JP, Kazerooni EA, Ketai LH, Ravenel JG, Saleh AG, Shah RD, Expert Panel on Thoracic Imaging. ACR Appropriateness Criteria® routine admission and preoperative chest radiography [Internet]. Reston (VA): American College of Radiology (ACR). 2011. 6 p.

Gomez-Gil E, Trilla A, Corbella B, Fernández-Egea E, Luburich P, de Pablo J, Ferrer Raldúa J, Valdés M. Lack of clinical relevance of routine chest radiography in acute psychiatric admissions. *Gen Hosp Psychiatry*. 2002;24(2):110-3.

Archer C, Levy AR, McGregor M. Value of routine preoperative chest x-rays: a meta-analysis. *Can J Anaesth*. 1993;40(11):1022-7.

Munro J, Booth A, Nicholl J. Routine preoperative testing: a systematic review of the evidence. *Health Technol Assess*. 1997;1(12):i-iv:1-62.

Grier DJ, Watson LF, Harnell GG, Wilde P. Are routine chest radiographs prior to angiography of any value? *Clin Radiol*. 1993;48(2):131-3.

Gupta SD, Gibbins FJ, Sen I. Routine chest radiography in the elderly. *Age Ageing*. 1985;14(1):11-4.

Amorosa JK, Bramwit MP, Mohammed TL, Reddy GP, Brown K, Dyer DS, Ginsburg ME, Heitkamp DE, Jeudy J, Kirsch J, MacMahon H, Ravenel JG, Saleh AG, Shah RD, Expert Panel on Thoracic Imaging. ACR Appropriateness Criteria® routine chest radiographs in ICU patients. [Internet]. Reston (VA): American College of Radiology (ACR); 2011. 6 p.

5

Wan MJ, Krahn M, Ungar WJ, Caku E, Sung L, Medina LS, Doria AS. Acute appendicitis in young children: cost-effectiveness of US versus CT in diagnosis—a Markov decision analytic model. *Radiology*. 2009;250:378-86.

Doria AS, Moineddin R, Kellenberger CJ, Epelman M, Beyene J, Schuh S, Babyn PS, Dick PT. US or CT for diagnosis of appendicitis in children? A meta-analysis. *Radiology*. 2006;241:83-94.

Garcia K, Hernanz-Schulman M, Bennett DL, Morrow SE, Yu C, Kan JH. Suspected appendicitis in children: diagnostic importance of normal abdominopelvic CT findings with nonvisualized appendix. *Radiology*. 2009;250:531-7.

Krishnamoorthi R, Ramarajan N, Wang NE, Newman B, Rubesova E, Mueller CM, Barth RA. Effectiveness of a staged US and CT protocol for the diagnosis of pediatric appendicitis: reducing radiation exposure in the age of ALARA. *Radiology*. 2011;259:231-9.

Rosen MP, Ding A, Blake MA, Baker ME, Cash BD, Fidler JL, Grant TH, Greene FL, Jones B, Katz DS, Lalani T, Miller FH, Small WC, Spottswood S, Sudakoff GS, Tulchinsky M, Warshauer DM, Yee J, Coley BD, Expert Panel on Gastrointestinal Imaging. ACR Appropriateness Criteria® right lower quadrant pain – suspected appendicitis. [Internet]. Reston (VA): American College of Radiology (ACR); 2010. 7 p.

Frush DP, Frush KS, Oldham KT. Imaging of acute appendicitis in children: EU versus US or US versus CT? A North American perspective. *Pediatr Radiol*. 2009;39(5):500-5.

Saito JM, Yan Y, Evashwick TW, Warner BW, Tarr PI. Use and accuracy of diagnostic imaging by hospital type in pediatric appendicitis. *Pediatrics*. 2013;131(1):e37-44.

Kharbanda AB, Stevenson MD, Macias CG, Sinclair K, Dudley NC, Bennett J, Bajaj L, Mittal MK, Huang C, Bachur RG, Dayan PS, and for the Pediatric Emergency Medicine Collaborative Research Committee of the American Academy of Pediatrics. Interrater reliability of clinical findings in children with possible appendicitis. *Pediatrics*. 2012;129(4):695-700.

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About the American College of Surgeons

The American College of Surgeons is a scientific and educational organization of surgeons that was founded in 1913 to raise the standards of surgical practice and to improve the quality of care for surgical patients. The College is dedicated to the ethical and competent practice of surgery. Its achievements have significantly influenced the course of scientific surgery in America and have established it as an important advocate for all surgical patients. The College has more than 79,000 members and is the largest organization of surgeons in the world.

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For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Dentists and Patients Should Question

1

Don't recommend non-fluoride toothpaste for infants and children.

The benefit of fluoride-containing toothpaste arises from its topical effect on dental enamel by interrupting enamel demineralization caused by bacterial acids and enhancing remineralization of the enamel surface. Anti-caries (anti-cavities) benefit begins with eruption of the first primary tooth. Brushing with non-fluoridated toothpaste provides no anti-caries benefit. Use of recommended amounts of fluoride toothpaste minimize risks of fluorosis, a whitish discoloration of enamel.

2

Avoid restorative treatment as a first line of treatment in incipient (non-cavitated) occlusal caries without first considering sealant use.

High quality evidence shows sealants are safe and effective in arresting caries progression in initial stage (incipient) non-cavitated, occlusal caries. Sealants offer a tooth-preserving treatment when compared to restorations, which may require removal of some healthy tooth structure, thereby weakening the tooth and increasing the risk that the tooth will eventually require more extensive treatment. Applying sealants as soon as initial stage caries is detected can improve outcomes by minimizing the later need for more extensive restorative care.

3

Avoid protective stabilization, sedation or general anesthesia in pediatric patients without consideration of all options with the legal guardian.

Some children do not respond to communicative behavior guidance techniques and require treatment of dental disease. Advanced behavior guidance techniques of sedation, protective stabilization, and general anesthesia offer risks and benefits often beyond the health knowledge of parents and other caretakers. Informed consent best practice requires a thorough, understandable explanation of these techniques and alternatives including deferral of treatment with its inherent risks.

4

Avoid routinely using irreversible surgical procedures such as braces, occlusal equilibration and restorations as the first treatment of choice in the management of temporomandibular joint disorders.

There is a lack of evidence that temporomandibular joint disorders (TMD) (defined as musculo-skeletal disorders, not the lesion of traumatic occlusion) are always progressive, and evidence exists that in many instances, patients with TMD have spontaneous remissions without treatment. Therefore, management is generally conservative and includes reversible strategies such as patient education, medications, physical therapy and/or the use of occlusal appliances that do not alter the shape or position of the teeth or the alignment of the jaws.

5

Don't replace restorations just because they are old.

Dental restorations (fillings) fail due to excessive wear, fracture of material or tooth, loss of retention, or recurrent decay. The larger the size of the restoration and/or the greater the number of surfaces filled increases the likelihood of failure. Restorative materials have different survival rates and fail for different reasons, but age should not be used as a failure criteria.

Support for the ADA's development of Choosing Wisely recommendations was provided by a grant from the Robert Wood Johnson Foundation.

How This List Was Created

The American Dental Association (ADA) is a professional organization that supports the practice of evidence-based dentistry and routinely develops clinical guidelines for various clinical topics, including the use of dental sealants to prevent tooth decay and fluoride toothpaste for young children.

To create this list, the ADA's Council on Access, Prevention and Interprofessional Relations established a Steering Committee consisting of ADA members representing evidence based experts in general dentistry and various disciplines within dentistry, including research, cariology, oral surgery, periodontology, public health, geriatrics and pediatric dentistry. Steering Committee liaisons included representatives from the ADA Council on Dental Practice, Council on Dental Benefit Programs, Council on Communications and Council on Scientific Affairs and representatives from dental specialty organizations.

The Steering Committee reviewed critical issues in dentistry to identify potential recommendation topics and developed, through an evidence-based process, a list of recommendation statements with supporting scientific evidence. Via an intense consensus process, the Steering Committee prepared a list of recommendation statements which were sent to the Council on Access, Prevention and Interprofessional Relations for review. The Council voted to recommend the final five recommendation statements on this list to the ADA Board of Trustees for its approval. The five recommendation statements were approved for distribution by member vote by the ADA Board.

ADA's disclosure and conflict of interest policy can be found at www.ADA.org.

Sources

- American Academy of Pediatric Dentistry. Guideline on Fluoride Therapy. *Pediatr Dent* 2014;36(6): 171-74.

American Dental Association Council on Scientific Affairs. Fluoride toothpaste use for young children. *J Am Dent Assoc.* 2014 Feb;145(2):190-1.

Wright JT, Hanson N, Ristic H, Whall CW, Estrich CG, Zentz RR. Fluoride toothpaste efficacy and safety in children younger than 6 years: a systematic review. *J Am Dent Assoc.* 2014 Feb;145(2):182-9.
- Ahovuo-Saloranta A, Hiiri A, Nordblad A, Mäkelä M, Worthington H. Pit and fissure sealants for preventing dental decay in the permanent teeth of children and adolescents. *Cochrane Database Syst Rev.* 2008 Oct 8;(4):CD001830.

Beauchamp J, Caufield PW, Crall JJ, Donly K, Feigal R, Gooch B, Ismail A, Kohn W, Siegal M, Simonsen R; American Dental Association Council on Scientific Affairs. Evidence-based clinical recommendations for the use of pit-and-fissure sealants: a report of the American Dental Association Council on Scientific Affairs. *J Am Dent Assoc.* 2008 Mar;139(3):257-68.

Borges BC, de Souza Borges J, de Araujo LS, Machado CT, Dos Santos AJ, de Assunção Pinheiro IV. Update on nonsurgical, ultraconservative approaches to treat effectively non-cavitated caries lesions in permanent teeth. *Eur J Dent.* 2011 Apr;5(2):229–36.

Frencken JE, Peters MC, Manton DJ, Leal SC, Gordan VV, Eden E. Minimal intervention dentistry for managing dental caries – a review: report of a FDI task group. *Int Dent J.* 2012 Oct;62(5):223–43.

Hesse D, Bonifácio CC, Mendes FM, Braga MM, Imparato JC, Raggio DP. Sealing versus partial caries removal in primary molars: a randomized clinical trial. *BMC Oral Health.* 2014 May 28;14:58.

de Assunção IV, da Costa Gde F, Borges BC. Systematic review of noninvasive treatments to arrest dentin non-cavitated caries lesions. *World J Clin Cases.* 2014 May 16;2(5):137-41.

Oral Health Services Guideline Initiative. Pit and fissure sealants: evidence-based guidance on the use of sealants for the prevention and management of pit and fissure caries. Cork (IR): Cork Oral Health Services Research Centre; 2010. 49 p.
- American Academy of Pediatrics; American Academy of Pediatric Dentistry, Coté CJ, Wilson S; Work Group on Sedation. Guidelines for monitoring and management of pediatric patients during and after sedation for diagnostic and therapeutic procedures: an update. *Pediatrics.* 2006 Dec;118(6):2587-602.

Academy of Pediatric Dentistry Council on Clinical Affairs, American. Guideline on protective stabilization for pediatric dental patients. *Pediatr Dent.* 2013 Sep-Oct;35(5):E169-73.

Council on Clinical Affairs, American Academy of Pediatric Dentistry. Guideline on behavior guidance for the pediatric dental patient. *Pediatr Dent* 2014;36 (6):179-191.

Council on Clinical Affairs, American Academy of Pediatric Dentistry. Policy on a patient's bill of rights and responsibilities. *Pediatr Dent* 2014;36(6): 113-14.

American Academy of Pediatric Dentistry. Guideline on protective stabilization for pediatric dental patients. *Pediatr Dent.* 2013 Sep-Oct;35(5):E169-73.

American Academy of Pediatrics and American Academy of Pediatric Dentistry. Guideline for Monitoring and Management of Pediatric Patients During and After Sedation for Diagnostic and Therapeutic Procedures *Pediatr Dent.* 2008-2009;30(7 Suppl):143-59.

4

Aggarwal VR, Lovell K, Peters S, Javidi H, Joughin A, Goldthorpe J. Psychosocial interventions for the management of chronic orofacial pain. *Cochrane Database Syst Rev.* 2011 Nov 9;(11):CD008456.

Al-Ani MZ, Davies SJ, Gray RJM, Sloan P, Glennly A-M. Stabilisation splint therapy for temporomandibular pain dysfunction syndrome. *Cochrane Database Syst Rev.* 2004;(1):CD002778.

Treatment for Temporomandibular Joint Dysfunction: guidelines. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health (CA); 2010 May 17. 6 p.

De Boever JA, Nilner M, Orthlieb JD, Steenks MH; Educational Committee of the European Academy of Craniomandibular Disorders. Recommendations by the EACD for examination, diagnosis, and management of patients with temporomandibular disorders and orofacial pain by the general dental practitioner. *J Orofac Pain.* 2008 Summer;22(3):268-78.

de Souza RF, Lovato da Silva CH, Nasser M, Fedorowicz Z, Al-Muharraqi MA. Interventions for the management of temporomandibular joint osteoarthritis. *Cochrane Database Syst Rev.* 2012 Apr 18;4:CD007261.

Guidelines: diagnosis & management of temporomandibular disorders & related musculoskeletal disorders. Toronto (ON): Royal College of Dental Surgeons of Ontario (CA); 2009. 11 p.

Ernst E, White AR. Acupuncture as a treatment for temporomandibular joint dysfunction: a systematic review of randomized trials. *Arch Otolaryngol Head Neck Surg.* 1999 Mar;125(3):269-72.

Forsell H, Kalso EJ. Application of principles of evidence-based medicine to occlusal treatment for temporomandibular disorders: are there lessons to be learned? *J Orofac Pain.* 2004 Winter;18(1):9-22; discussion 23-32.

de Souza RF, Lovato da Silva CH, Nasser M, Fedorowicz Z, Al-Muharraqi MA. Interventions for the management of temporomandibular joint osteoarthritis. *Cochrane Database Syst Rev.* 2012 Apr 18;4:CD007261.

Koh H, Robinson PG. Occlusal adjustment for treating and preventing temporomandibular joint disorders. *Cochrane Database Syst Rev.* 2003;(1):CD003812.

Luther F, Layton S, McDonald F. Orthodontics for treating temporomandibular joint (TMJ) disorders. *Cochrane Database Syst Rev.* 2010 Jul 7;(7):CD006541.

de Leeuw R, Klasser GD. Orofacial pain: guidelines for assessment, diagnosis, and management. 5th Ed. Hanover Park: Quintessence Books; 2013. 312 p.

5

Rasines Alcaraz MG, Veitz-Keenan A, Sahrman P, Schmidlin PR, Davis D, Iheozor-Ejirofor Z. Direct composite resin fillings versus amalgam fillings for permanent or adult posterior teeth. *Cochrane Database of Syst Rev.* 2014, Issue 3. Art No: CD005620. DOI: 10.1002/14651858.CD005620.pub2.

Fedorowicz Z, Carter B, de Souza RF, Chaves CA, Nasser M, Sequeira-Byron P. Single crowns versus conventional fillings for the restoration of root filled teeth. *Cochrane Database Syst Rev.* 2012 May 16;5:CD009109.

Sharif MO, Merry A, Catleugh M, Tickle M, Brunton P, Dunne SM, Aggarwal VR, Chong LY. Replacement versus repair of defective restorations in adults: resin composite. *Cochrane Database Syst Rev.* 2014 Feb 8;2:CD005970.

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About the American Dental Association

The not-for-profit ADA is the nation's largest dental association, representing more than 158,000 dentist members. The premier source of oral health information, the ADA has advocated for the public's health and promoted the art and science of dentistry since 1859. The ADA's state-of-the-art research facilities develop and test dental products and materials that have advanced the practice of dentistry and made the patient experience more positive. The ADA Seal of Acceptance long has been a valuable and respected guide to consumer dental care products. The monthly *The Journal of the American Dental Association (JADA)* is the ADA's flagship publication and the best-read scientific journal in dentistry.

For more information about the ADA, visit ADA.org. For more information on oral health, including prevention, care and treatment of dental disease, visit the ADA's consumer website MouthHealthy.org.

ADA American Dental Association®

America's leading advocate for oral health



Five Things Physicians and Patients Should Question

1

For pharmacological treatment of patients with gastroesophageal reflux disease (GERD), long-term acid suppression therapy (proton pump inhibitors or histamine2 receptor antagonists) should be titrated to the lowest effective dose needed to achieve therapeutic goals.

The main identifiable risk associated with reducing or discontinuing acid suppression therapy is an increased symptom burden. It follows that the decision regarding the need for (and dosage of) maintenance therapy is driven by the impact of those residual symptoms on the patient's quality of life rather than as a disease control measure.

2

Do not repeat colorectal cancer screening (by any method) in average risk individuals for 10 years after a high-quality colonoscopy that does not detect neoplasia.

A screening colonoscopy every 10 years is the recommended interval for adults without increased risk for colorectal cancer, beginning no later than age 50. Published studies indicate the risk of cancer is low for 10 years after a high-quality colonoscopy fails to detect neoplasia in this population. Therefore, following a high-quality colonoscopy that does not detect neoplasia, the next interval for any colorectal screening should be 10 years following that normal colonoscopy.

3

Do not repeat surveillance colonoscopy for at least five years for average-risk patients who have one or two small (<1cm) adenomatous polyps, without high-grade dysplasia or villous histology, completely removed via a high-quality colonoscopy.

The timing of a follow-up surveillance colonoscopy should be determined based on the results of a previous high-quality colonoscopy. Evidence-based (published) guidelines provide recommendations that patients with one or two small tubular adenomas with low grade dysplasia have surveillance colonoscopy five to 10 years after initial polypectomy. "The precise timing within this interval should be based on other clinical factors (such as prior colonoscopy findings, family history, and the preferences of the patient and judgment of the physician)."

4

For a patient who is diagnosed with Barrett's esophagus, who has undergone a second endoscopy that confirms the absence of dysplasia on biopsy, a follow-up surveillance examination should not be performed in less than three years as per published guidelines.

In patients with Barrett's esophagus without dysplasia (cellular changes) the risk of cancer is very low. In these patients, it is appropriate and safe to exam the esophagus and check for dysplasia no more often than every three years because if these cellular changes occur, they do so very slowly.

5

For a patient with functional abdominal pain syndrome (as per ROME IV criteria) computed tomography (CT) scans should not be repeated unless there is a major change in clinical findings or symptoms.

There is a small, but measurable increase in one's cancer risk from x-ray exposure. An abdominal CT scan is one of the higher radiation exposure x-rays — equivalent to three years of natural background radiation. Due to this risk and the high costs of this procedure, CT scans should be performed only when they are likely to provide useful information that changes patient management.

How This List Was Created

The American Gastroenterological Association (AGA) convened a work group that included members from the Clinical Practice and Quality Management Committee (CPQMC), chair of the Practice Management and Economics Committee (PMEC), the chief medical officer for the AGA Digestive Health Outcomes Registry® and members of the AGA Institute Governing Board. Ideas for the “five things” were solicited from the workgroup for review by the CPQMC, which developed additional topics, resulting in six draft items. The workgroup continued to pare down and refine the list, before submitting a final draft to both the CPQMC and the PMEC for approval. After final refinements were made to simplify language and avoid complex clinical terminology, the final list was submitted to and approved by the AGA Institute Governing Board. AGA’s disclosure and conflict of interest policy can be found at www.gastro.org.

Sources

- 1 American Gastroenterological Association Medical Position Statement on the Management of Gastroesophageal Reflux Disease. *Gastroenterology*, 2008.
- 2 Winawer S et. al. and US Multisociety Task Force on Colorectal Cancer. Colorectal Cancer Screening and Surveillance, Clinical Guidelines and Rationale—Update Based on New Evidence. *Gastroenterology*, 2003.
Rex et. al. Quality indicators for colonoscopy. *Gastrointestinal Endoscopy*, 2006.
- 3 Levin B et. al. Screening and Surveillance for the Early Detection of Colorectal Cancer and Adenomatous Polyps, 2008: A Joint Guideline From the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology. *Gastroenterology*, 2008.
Rex et. al. Quality indicators for colonoscopy. *Gastrointestinal Endoscopy*, 2006.
Lieberman DA, Rex DK, Winawer SJ, Giardiello FM, Johnson DA, Levin TR; United States Multi-Society Task Force on Colorectal Cancer. Guidelines for colonoscopy surveillance after screening and polypectomy: a consensus update by the US Multi-Society Task Force on Colorectal Cancer. *Gastroenterology*. 2012 Sep;143(3):844-57.
- 4 American Gastroenterological Association Medical Position Statement on the Management of Barrett’s Esophagus Gastroenterology.
Wang KK, Sampliner RE and The Practice Parameters Committee of the American College of Gastroenterology. Updated Guidelines 2008 for the Diagnosis, Surveillance and Therapy of Barrett’s Esophagus, *Journal of Gastroenterology*, 2008.
American Gastroenterological Association, Spechler SJ, Sharma P, Souza RF, Inadomi JM, Shaheen NJ. American Gastroenterological Association medical position statement on the management of Barrett’s esophagus. *Gastroenterology*. 2011 Mar;140(3):1084-91.
- 5 Drossman DA, Hasler WL. Rome IV-Functional GI Disorders: Disorders of Gut-Brain Interaction. *Gastroenterology*. 2016 May;150(6):1257-61.
Clouse, RE et al. Functional Abdominal Pain Syndrome. *Gastroenterology*, 2006.
U.S. Food and Drug Administration. Reducing Radiation from Medical X-rays This article appears on FDA’s Consumer Updates page, which features the latest on all FDA-regulated products. Date Posted: February 19, 2009. Accessed at <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm095505.htm>.
Image Wisely and US Food and Drug Administration. My Medical Imaging History. Access at http://www.radiologyinfo.org/en/safety/ImageWisely/7678_Medical%20Imaging%20History.pdf.

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About the American Gastroenterological Association:

The American Gastroenterological Association (AGA) is the trusted voice of the GI community. Founded in 1897, AGA has grown to include 16,000 members from around the globe who are involved in all aspects of the science, practice and advancement of gastroenterology. The AGA Institute administers the practice, research and educational programs of the organization. Become an AGA fan on Facebook. Join our LinkedIn group. Follow us on Twitter @AmerGastroAssn.



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For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Ten Things Clinicians and Patients Should Question

1

Don't recommend percutaneous feeding tubes in patients with advanced dementia; instead offer oral assisted feeding.

Careful hand feeding for patients with severe dementia is at least as good as tube feeding for the outcomes of death, aspiration pneumonia, functional status and patient comfort. Food is the preferred nutrient. Tube feeding is associated with agitation, increased use of physical and chemical restraints and worsening pressure ulcers.

2

Don't use antipsychotics as the first choice to treat behavioral and psychological symptoms of dementia.

People with dementia often exhibit aggression, resistance to care and other challenging or disruptive behaviors. In such instances, antipsychotic medicines are often prescribed, but they provide limited and inconsistent benefits, while posing risks, including over sedation, cognitive worsening and increased likelihood of falls, strokes and mortality. Use of these drugs in patients with dementia should be limited to cases where non-pharmacologic measures have failed and patients pose an imminent threat to themselves or others. Identifying and addressing causes of behavior change can make drug treatment unnecessary.

3

Avoid using medications other than metformin to achieve hemoglobin A1c <7.5% in most older adults; moderate control is generally better.

There is no evidence that using medications to achieve tight glycemic control in most older adults with type 2 diabetes is beneficial. Among non-older adults, except for long-term reductions in myocardial infarction and mortality with metformin, using medications to achieve glycated hemoglobin levels less than 7% is associated with harms, including higher mortality rates. Tight control has been consistently shown to produce higher rates of hypoglycemia in older adults. Given the long time frame to achieve theorized microvascular benefits of tight control, glycemic targets should reflect patient goals, health status and life expectancy. Reasonable glycemic targets would be 7.0 – 7.5% in healthy older adults with long life expectancy, 7.5 – 8.0% in those with moderate comorbidity and a life expectancy < 10 years, and 8.0 – 9.0% in those with multiple morbidities and shorter life expectancy.

4

Don't use benzodiazepines or other sedative-hypnotics in older adults as first choice for insomnia, agitation or delirium.

Large-scale studies consistently show that the risk of motor vehicle accidents, falls and hip fractures leading to hospitalization and death can more than double in older adults taking benzodiazepines and other sedative-hypnotics. Older patients, their caregivers and their providers should recognize these potential harms when considering treatment strategies for insomnia, agitation or delirium. Use of benzodiazepines should be reserved for alcohol withdrawal symptoms/delirium tremens or severe generalized anxiety disorder unresponsive to other therapies.

5

Don't use antimicrobials to treat bacteriuria in older adults unless specific urinary tract symptoms are present.

Cohort studies have found no adverse outcomes for older men or women associated with asymptomatic bacteriuria. Antimicrobial treatment studies for asymptomatic bacteriuria in older adults demonstrate no benefits and show increased adverse antimicrobial effects. Consensus criteria has been developed to characterize the specific clinical symptoms that, when associated with bacteriuria, define urinary tract infection. Screening for and treatment of asymptomatic bacteriuria is recommended before urologic procedures for which mucosal bleeding is anticipated.

Ten Things Clinicians and Patients Should Question

6

Don't prescribe cholinesterase inhibitors for dementia without periodic assessment for perceived cognitive benefits and adverse gastrointestinal effects.

Although some randomized control trials suggest that cholinesterase inhibitors may improve cognitive testing results, it is unclear whether these changes are clinically meaningful. It is uncertain whether these medicines delay institutionalization, improve quality of life or lessen caregiver burden. No studies have investigated benefits beyond a year nor clarified the risks and benefits of long-term therapy. Clinicians, patients and their caregivers should discuss treatment goals of practical value that can be easily assessed and the nature and likelihood of adverse effects before beginning a trial of Cholinesterase inhibitors. If the desired effects (including stabilization of cognition) are not perceived within 12 weeks or so, the inhibitors should be discontinued.

7

Don't recommend screening for breast, colorectal, prostate or lung cancer without considering life expectancy and the risks of testing, overdiagnosis and overtreatment.

Cancer screening is associated with short-term risks, including complications from testing, overdiagnosis and treatment of tumors that would not have led to symptoms. For prostate cancer, 1,055 older men would need to be screened and 37 would need to be treated to avoid one death in 11 years. For breast and colorectal cancer, 1,000 older adults would need to be screened to prevent one death in 10 years. For lung cancer, much of the evidence for benefit from low dose CT screening for smokers is from healthier, younger patients under age 65. Further, although screening 1,000 persons would avoid four lung cancer deaths in six years, 273 persons would have an abnormal result requiring 36 to get an invasive procedure with eight persons suffering complications.

8

Avoid using prescription appetite stimulants or high-calorie supplements for treatment of anorexia or cachexia in older adults; instead, optimize social supports, discontinue medications that may interfere with eating, provide appealing food and feeding assistance, and clarify patient goals and expectations.

Unintentional weight loss is a common problem for medically ill or frail elderly. Although high-calorie supplements increase weight in older people, there is no evidence that they affect other important clinical outcomes, such as quality of life, mood, functional status or survival. Use of megestrol acetate results in minimal improvements in appetite and weight gain, no improvement in quality of life or survival, and increased risk of thrombotic events, fluid retention and death. In patients who take megestrol acetate, one in 12 will have an increase in weight and one in 23 will have an adverse event leading to death. The 2012 AGS Beers criteria lists megestrol acetate and cyproheptadine as medications to avoid in older adults. Systematic reviews of cannabinoids, dietary polyunsaturated fatty acids (DHA and EPA), thalidomide and anabolic steroids have not identified adequate evidence for the efficacy and safety of these agents for weight gain. Mirtazapine is likely to cause weight gain or increased appetite when used to treat depression, but there is little evidence to support its use to promote appetite and weight gain in the absence of depression.

9

Don't prescribe a medication without conducting a drug regimen review.

Older patients disproportionately use more prescription and non-prescription drugs than other populations, increasing the risk for side effects and inappropriate prescribing. Polypharmacy may lead to diminished adherence, adverse drug reactions and increased risk of cognitive impairment, falls and functional decline. Medication review identifies high-risk medications, drug interactions and those continued beyond their indication. Additionally, medication review elucidates unnecessary medications and underuse of medications, and may reduce medication burden. Annual review of medications is an indicator for quality prescribing in vulnerable elderly.

10

Don't use physical restraints to manage behavioral symptoms of hospitalized older adults with delirium.

Persons with delirium may display behaviors that risk injury or interference with treatment. There is little evidence to support the effectiveness of physical restraints in these situations. Physical restraints can lead to serious injury or death and may worsen agitation and delirium. Effective alternatives include strategies to prevent and treat delirium, identification and management of conditions causing patient discomfort, environmental modifications to promote orientation and effective sleep-wake cycles, frequent family contact and supportive interaction with staff. Nursing educational initiatives and innovative models of practice have been shown to be effective in implementing a restraint-free approach to patients with delirium. This approach includes continuous observation; trying re-orientation once, and if not effective, not continuing; observing behavior to obtain clues about patients' needs; discontinuing and/or hiding unnecessary medical monitoring devices or IVs; and avoiding short-term memory questions to limit patient agitation. Pharmacological interventions are occasionally utilized after evaluation by a medical provider at the bedside, if a patient presents harm to him or herself or others. If physical restraints are used, they should only be used as a last resort, in the least-restrictive manner, and for the shortest possible time.

How This List Was Created (1–5)

The American Geriatrics Society (AGS) established a work group chaired by the Vice Chair of Clinical Practice and Models of Care Committee (CPMC). Work group members were drawn from that committee, as well as the Ethics, Ethnogeriatrics and Quality and Performance Measurement (QPMC) committees. AGS members were invited to submit feedback and recommendations as to what they thought should be included in the list via an electronic survey. The workgroup first narrowed the list down to the top 10 potential tests or procedures. The workgroup then reviewed the evidence and sought expert advice to further refine the list to five recommendations, which were then reviewed and approved by the AGS Executive Committee and the Chairs/Vice Chairs of CPMC, Ethics and QPMC.

How This List Was Created (6–10)

The American Geriatrics Society (AGS) used the same work group from its first list to develop its second list. The group was chaired by the Chair of Clinical Practice and Models of Care Committee (CPMC). Work group members were drawn from that committee, as well as the Ethics, Ethnogeriatrics and Quality and Performance Measurement (QPMC) committees. AGS members were invited to submit feedback and recommendations as to what they thought should be included in a *Choosing Wisely*® list via an electronic survey. The workgroup then narrowed the list down and reviewed the evidence, seeking expert advice to further refine the list to five recommendations, which were then reviewed and approved by the AGS Executive Committee and the Chairs/Vice Chairs of CPMC, Ethics and QPMC.

On April 23, 2015, AGS revised items 2,3,6,7,8 and 10. [Read more about these changes and rationale.](#)

AGS' disclosure and conflict of interest policy can be found at www.americangeriatrics.org.

Sources

- Finucane TE, Christmas C, Travis K. Tube feeding in patients with advanced dementia: A review of the evidence. *JAMA*. 1999;282(14):1365-1370.

Gabriel SE, Normand ST. Getting the methods right – The foundation of patient-centered outcomes research. *N Engl J Med* [Internet]. 2012 Aug 30;367(9):787-90.

Teno JM, Feng Z, Mitchell SL, Kuo S, Intrator O, Mor V. Do financial incentives of introducing case mix reimbursement increase feeding tube use in nursing home residents? *J Am Geriatr Soc*. [Internet]. 2008 May;56(5):887–890.

Teno JM, Mitchell SL, Kuo SK, Gozalo PL, Rhodes RL, Lima JC, Mor V. Decision-making and outcomes of feeding tube insertion: A five-state study. *J Am Geriatr Soc*. [Internet]. 2011 May;59(5):881–886.

Palecek EJ, Teno JM, Casarett DJ, Hanson LC, Rhodes RL, Mitchell SL. Comfort feeding only: A proposal to bring clarity to decision-making regarding difficulty with eating for persons with advanced dementia. *J Am Geriatr Soc*. [Internet]. 2010 Mar;58(3):580–584.

Hanson LC, Carey TS, Caprio AJ, Lee TJ, Ersek M, Garrett J, Jackman A, Gilliam R, Wessell K, Mitchell SL. Improving decision-making for feeding options in advanced dementia: A randomized, controlled trial. *J Am Geriatr Soc*. [Internet]. 2011 Nov;59(11):2009–2016.
- The American Geriatrics Society 2012 Beers Criteria Update Expert Panel. American Geriatrics Society Updated Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc*. 2012 Apr;60(4):616-31.

National Institute for Health and Clinical Excellence and Social Care Institute for Excellence NICE-SCIE. National Collaborating Centre for Mental Health. Clinical guidelines #42: Dementia: Supporting people with dementia and their careers in health and social care [Internet]. London. 2006 Nov: Amended 2011 Mar [cited 2012 Oct 16]. Available from: www.nice.org.uk/CG042

Maher A, Maglione M, Bagley S, Suttrop M, Hu JH, Ewing B, Wang Z, Timmer M, Sultzer D, Shekelle PG. Efficacy and comparative effectiveness of atypical antipsychotic medications for off-label uses in adults: A systematic review and meta-analysis. *JAMA* [Internet]. 2011 Sep 28;306(12):1359-69.

Schneider LS, Tariot PN, Dagerman KS, Davis SM, Hsiao JK, Ismail MS, Lebowitz BD, Lyketsos CG, Ryan JM, Stroup TS, Sultzer DL, Weintraub D, Lieberman JA; CATIE-AD Study Group. Effectiveness of atypical antipsychotic drugs in patients with Alzheimer's disease. *N Engl J Med* [Internet]. 2006 Oct 12;355(15):1525-38.

Gitlin LN, Kales HC, Lyketsos, CG. Nonpharmacologic management of behavioral symptoms in dementia. *JAMA*. 2012 Nov 21;308(19):2020-9
- The Action to Control Cardiovascular Risk in Diabetes Study Group. Effects of intensive glucose lowering in Type 2 Diabetes. *N Eng J Med* [Internet]. 2008 Jun 12;258(24):2545–2559.

The Action to Control Cardiovascular Risk in Diabetes Study Group. Long-term effects of intensive glucose lowering on cardiovascular outcomes. *N Eng J Med* [Internet]. 2011 Mar 3;364(9):818–828.

Duckworth W, Abraira C, Moritz T, Reda D, Emanuele N, Reaven P, Zeive FJ, Marks J, David SN, Hayward R, Warren SR, Goldman S, McCarren M, Vitek ME, Henderson WG, Huang GD. Glucose control and vascular complications in veterans with type 2 diabetes. *N Eng J Med* [Internet]. 2009. 360(2):129–139.

ADVANCE Collaborative Group. Intensive blood glucose control and vascular outcomes in patients with type 2 diabetes. *N Eng J Med* [Internet]. 2008 Jun 12;358:2560-72.

UK Prospective Diabetes Study (UKPDS) Group. Effect of intensive blood-glucose control with metformin on complications in overweight patients with type 2 diabetes (UKPDS 34). *Lancet* [Internet]. 1998;352:854-65.

Montori VM, Fernández-Balsells M. Glycemic control in type 2 diabetes: Time for an evidence-based about-face? *Ann Intern Med* [Internet]. 2009 Jun 2;150(11):803-8. Erratum in: *Ann Intern Med*. 2009 Jul 21;151(2):144. PMID: 19380837

Finucane TE. "Tight Control" in geriatrics: The emperor wears a thong. *J Am Geriatr Soc* [Internet]. 2012 Aug 6;60:1571–1575.

Kirkman MS, Briscoe VJ, Clark N, Florez H, Haas LB, Halter JB, Huang ES, Korytkowski MT, Nunshi MN, Odegaard PS, Pratley RE, Swift CS. Diabetes in older adults: A consensus report. *J Am Geriatr Soc*. 2012 Oct;60(12):2342-2356.

Hemmingsen B, Lund SS, Gluud C, Vaag A, Almdal TP, Hemmingsen C, Wetterslev J. Targeting intensive glycaemic control versus targeting conventional glycaemic control for type 2 diabetes mellitus. *Cochrane Database Syst Rev*. 2013 Nov 11;11:CD008143.
- Finkle WD, Der JS, Greenland S, Adams JL, Ridgeway G, Blaschke T, Wang Z, Dell RM, VanRiper KB. Risk of fractures requiring hospitalization after an initial prescription of zolpidem, alprazolam, lorazepam or diazepam in older adults. *J Am Geriatr Soc*. [Internet]. 2011 Oct;59(10):1883–1890.

The American Geriatrics Society 2012 Beers Criteria Update Expert Panel. American Geriatrics Society Updated Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc*. 2012 Apr;60(4):616-31.

Kripke DF, Langer RD, Kline LE. Hypnotics' association with mortality or cancer: a matched cohort study. *BMJ Open*. 2012 Feb 27;2(1):e000850.

Glass J, Lantöti KL, Herrmann N, Sproule BA, Busto UE. Sedative hypnotics in older people with insomnia: meta-analysis of risks and benefits. *BMJ*. 2005 Nov 19;331(7526):1169.

Sivertsen B, Omvik S, Pallesen S, Bjorvatn B, Havik OE, Kvale G, Nielsen GH, Nordhus IH. Cognitive behavioral therapy vs zopiclone for treatment of chronic primary insomnia in older adults: a randomized controlled trial. *JAMA*. 2006 Jun 28;295(24):2851-8.
- Nordenstam GR, Brandberg CA, Odén AS, Svanborg Edén CM, Svanborg A. Bacteriuria and mortality in an elderly population. *N Engl J Med*. 1986 May 1;314(18):1152–1156.

Nicolle LE, Mayhew WJ, Bryan L. Prospective randomized comparison of therapy and no therapy for asymptomatic bacteriuria in institutionalized elderly women. *Am J Med*. 1987 Jul;83(1):27–33.

Juthani-Mehta M. Asymptomatic bacteriuria and urinary tract infection in older adults. *Clin Geriatr Med* [Internet]. 2007 Aug;23(3):585–594.

Nicolle LE, Bradley S, Colgan R, Rice JC, Schaeffer A, Hooton TM; Infectious Diseases Society of America; American Society of Nephrology; American Geriatric Society. Infectious Diseases Society of America Guidelines for the diagnosis and treatment of asymptomatic bacteriuria in adults. *Clin Infect Dis*. [Internet]. 2005 Mar 1;40(5):643-65.

6

Courtney C, Farrell D, Gray R, Hills R, Lynch L, Sellwood E, Edwards S, Hardyman W, Raftery J, Crome P, Lendon C, Shaw H, Bentham P; AD2000 Collaborative Group. Long-term donepezil treatment in 565 patients with Alzheimer's disease (AD2000): randomized double-blind trial. *Lancet*. 2004 Jun 26;363(9427):2105–15.

American Geriatrics Society 2012 Beers Criteria Update Expert Panel. American Geriatrics Society updated Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc*. 2012 Apr;60(4):616–31.

Kaduszkiewicz H, Zimmermann T, Beck-Bornholdt HP, van den Bussche H. Cholinesterase inhibitors for patients with Alzheimer's disease: systematic review of randomized clinical trials. *BMJ*. 2005 Aug 6;331(7512):321–7.

Birks J. Cholinesterase inhibitors for Alzheimer's disease. *Cochrane Database Syst Rev*. 2006 Jan 25;(1):CD005593.

Lin JS, O'Connor E, Rossom RC, Perdue LA, Eckstrom E. Screening for cognitive impairment in older adults: a systematic review for the U.S. Preventive Services Task Force. *Ann Intern Med*. 2013 Nov 5;159(9):601–12.

7

Schröder FH, Hugosson J, Roobol MJ, Tammela TL, Ciatto S, Nelen V, Kwiatkowski M, Lujan M, Lilja H, Zappa M, Denis LJ, Recker F, Páez A, Määttänen L, Bangma CH, Aus G, Carlsson S, Villers A, Rebillard X, van der Kwast T, Kujala PM, Blijenberg BG, Stenman UH, Huber A, Taari K, Hakama M, Moss SM, de Koning HJ, Auvinen A; ERSPC Investigators. Prostate-cancer mortality at 11 years of follow-up. *N Engl J Med*. 2012 Mar 15;366(11):981–90.

Moyer VA; U.S. Preventive Services Task Force. Screening for prostate cancer: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med*. 2012 July 17;157(2):120–34.

Walter LC, Covinsky KE. Cancer screening in elderly patients: a framework for individualized decision making. *JAMA*. 2001 Jun 6;285(21):2750–6.

Lee SJ, Boscardin WJ, Stijacic-Cenzer I, Conell-Price J, O'Brien S, Walter LC. Time lag to benefit after screening for breast and colorectal cancer: meta-analysis of survival data from the United States, Sweden, United Kingdom, and Denmark. *BMJ*. 2012 Jan 8;346:e8441.

National Lung Screening Trial Research Team, Aberle DR, Adams AM, Berg CD, Black WC, Clapp JD, Fagerstrom RM, Gareen IF, Gatsonis C, Marcus PM, Sicks JD. Reduced lung-cancer mortality with low-dose computed tomographic screening. *N Engl J Med*. 2011 Aug 4;365(5):395–409.

Woolf SH, Harris RP, Campos-Outcalt D. Low-dose lung computed tomography screening for lung cancer: how strong is the evidence? *JAMA Intern Med*. 2014;174(12):2019–22.

8

Hanson LC, Ersek M, Gilliam R, Carey TS. Oral feeding options for people with dementia: a systematic review. *J Am Geriatr Soc*. 2011;59:463–72.

Milne AC, Potter J, Vivanti A, Avenell A. Protein and energy supplementation in elderly people at risk from malnutrition. *Cochrane Database Syst Rev*. 2009Apr 15;2:CD003288. DOI: 10.1002/14651858.CD003288.pub3.

Ruiz Garcia V, López-Briz E, Carbonell Sanchis R, Gonzalez Perales JL, Bort-Marti S. Megestrol acetate for treatment of anorexia-cachexia syndrome. *Cochrane Database Syst Rev*. 2013 Mar 28;3:CD004310.

American Geriatrics Society 2012 Beers Criteria Update Expert Panel. American Geriatrics Society updated Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc*. 2012 Apr;60(4):616–31.

Mazotta P, Jeney CM. Anorexia-cachexia syndrome: a systematic review of the role of dietary polyunsaturated fatty acids in the management of symptoms, survival, and quality of life. *J Pain Symptom Manage*. 2009;37:1069–77.

Dewey A, Baughan C, Dean TP, Higgins B, Johnson I. Eicosapentaenoic acid (EPA, an omega-3 fatty acid from fish oils) for the treatment of cancer cachexia. *Cochrane Database Syst Rev*. 2007 Jan 24;1:CD004597.

Reid J, Mills M, Cantwell M, Cardwell CR, Murray LJ, Donnelly M. Thalidomide for managing cancer cachexia. *Cochrane Database of Systematic Reviews* 2012 Apr 18;4:CD008664.

Yavuzsen T, Davis MP, Walsh D, LeGrand S, Lagman R. Systematic review of the treatment of cancer-associated anorexia and weight loss. *J Clin Oncol*. 2005;23:8500–11.

Watanabe N, Omori IM, Nakagawa A, Cipriani A, Barbui C, Churchill R, Furukawa TA. Mirtazapine versus other antidepressive agents for depression. *Cochrane Database Syst Rev*. 2011 Dec 7;12:CD006528.

Fox CB, Treadway AK, Blaszczyk, Sleeper RB. Megestrol acetate and mirtazapine for the treatment of unplanned weight loss in the elderly. *Pharmacotherapy*. 2009;29(4):383–97.

9

National Committee for Quality Assurance. Improving quality and patient experience - the state of health care quality 2013. Washington (DC): National Committee for Quality Assurance; 2013 Oct. 206 p.

Shrank WH, Polinski JM, Avorn J. Quality indicators for medication use in vulnerable elders. *J Am Geriatr Soc*. 2007;55 (suppl 2):S373–82.

Hajjar ER, Cafiero AC, Hanlon JT. Polypharmacy in elderly patients. *Am J Geriatr Pharm*. 2007 Dec;5(4):345–51.

Steinman MA, Hanlon JT. Managing medications in clinically complex elders: "There's got to be a happy medium". *JAMA*. 2010 Oct 13;304(14):1592–1601.

Drenth-van Maanen AC, van Marum RJ, Knol W, van der Linden CM, Jansen PA. Prescribing optimization method for improving prescribing in elderly patients receiving polypharmacy. *Drugs Aging*. 2009;26(8):687–701.

10

Bray K, Hill K, Robson W, Leaver G, Walker N, O'Leary M, Delaney T, Walsh D, Gager M, Waterhouse C; British Association of Critical Care Nurses. British Association of Critical Care Nurses position statement on the use of restraint in adult critical care units. *Nurs Crit Care*. 2004 Sep-Oct;9(5):199–212.

Center for Medicare & Medicaid Services. Electronic Code of Federal Regulations. Condition of participation: patient's rights. 42 C.F.R. § 482.13.

Cotter VT, Evans LK. Avoiding restraints in hospitalized older adults with dementia. Best practices in nursing care to older adults with dementia. 2012;D1.

Inouye SK. Delirium in older persons. *N Engl J Med*. 2006;354:1157–65.

Minnick AF, Mion LC, Johnson ME, Catrambone C, Leipzig R. Prevalence and variation of physical restraint use in acute care settings in the U.S. *J Nurs Scholarsh*. 2007;39(1):30–7.

Maccioli GA, Dorman T, Brown BR, Mazuski JE, McLean BA, Kusaj JM, Rosenbaum SH, Frankel LR, Devlin JW, Govert JA, Smith B, Peruzzi WT; American College of Critical Care Medicine, Society of Critical Care Medicine. Clinical practice guidelines for the maintenance of patient physical safety in the intensive care unit: use of restraining therapies – American College of Critical Care Medicine Task Force 2001-2002. *Crit Care Med*. 2003;31(11): 2665–767.

Mott S, Poole J, Kenrick M. Physical and chemical restraints in acute care: their potential impact on rehabilitation of older people. *Int J Nurs Pract*. 2005 Jun;11(3):95–101.

Flaherty JH, Little MO. Matching the environment to patients with delirium: lessons learned from the delirium room, a restraint-free environment for older hospitalized adults with delirium. *J Am Geriatr Soc*. 2011 Nov;59Suppl 2:S295–300.

McPherson JA, Wagner CE, Boehm LM, Hall JD, Johnson DC, Miller LR, Burns KM, Thompson JL, Shintani AK, Ely EW, Pandharipande PP. Delirium in the cardiovascular ICU: exploring modifiable risk factors. *Crit Care Med*. 2013 Feb; 41(2): 405-13.

About the ABIM Foundation

The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.



To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the American Geriatrics Society

The American Geriatrics Society (AGS) works to improve the health, independence and quality of life of all older people. Our geriatrics health professional members work together to provide interdisciplinary, patient- and family-centered team care to older adults. The society also works to bring the knowledge and expertise of geriatrics health professionals to the public via www.healthinaging.org.



To learn more about the AGS, please visit www.americangeriatrics.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't perform neuroimaging studies in patients with stable headaches that meet criteria for migraine.

Numerous evidence-based guidelines agree that the risk of intracranial disease is not elevated in migraine. However, not all severe headaches are migraine. To avoid missing patients with more serious headaches, a migraine diagnosis should be made after a careful clinical history and an examination that documents the absence of any neurologic findings such as papilledema. Diagnostic criteria for migraine are contained in the International Classification of Headache Disorders.

2

Don't perform computed tomography (CT) imaging for headache when magnetic resonance imaging (MRI) is available, except in emergency settings.

When neuroimaging for headache is indicated, MRI is preferred over CT, except in emergency settings when hemorrhage, acute stroke or head trauma are suspected. MRI is more sensitive than CT for the detection of neoplasm, vascular disease, posterior fossa and cervicomedullary lesions and high and low intracranial pressure disorders. CT of the head is associated with substantial radiation exposure which may elevate the risk of later cancers, while there are no known biologic risks from MRI.

3

Don't recommend surgical deactivation of migraine trigger points outside of a clinical trial.

The value of this form of "migraine surgery" is still a research question. Observational studies and a small controlled trial suggest possible benefit. However, large multicenter, randomized controlled trials with long-term follow-up are needed to provide accurate estimates of the effectiveness and harms of surgery. Long-term side effects are unknown but potentially a concern.

4

Don't prescribe opioid or butalbital-containing medications as first-line treatment for recurrent headache disorders.

These medications impair alertness and may produce dependence or addiction syndromes, an undesirable risk for the young, otherwise healthy people most likely to have recurrent headaches. They increase the risk that episodic headache disorders such as migraine will become chronic, and may produce heightened sensitivity to pain. Use may be appropriate when other treatments fail or are contraindicated. Such patients should be monitored for the development of chronic headache.

5

Don't recommend prolonged or frequent use of over-the-counter (OTC) pain medications for headache.

OTC medications are appropriate treatment for occasional headaches if they work reliably without intolerable side effects. Frequent use (especially of caffeine-containing medications) can lead to an increase in headaches, known as medication overuse headache (MOH). To avoid this, OTC medication should be limited to no more than two days per week. In addition to MOH, prolonged overuse of acetaminophen can cause liver damage, while overuse of nonsteroidal anti-inflammatory drugs can lead to gastrointestinal bleeding.

How This List Was Created

The American Headache Society (AHS) Board of Directors approved the creation of a task force to lead work on the *Choosing Wisely*[®] campaign. The task force consisted of: Elizabeth Loder, MD, MPH, (AHS President), Stephen Silberstein, MD, (Chair of the AHS Guidelines and Position Paper Committee), Randolph Evans, MD, Benjamin Frishberg, MD, Scott Litin, MD, Donald Dworek, MD, Josif Stakic, MD, and Jessica Ailani, MD.

The list was developed in consultation with AHS members, who received an electronic survey informing them of the project and asking them to recommend items to be considered for the list. The task force reviewed a list of 11 candidate topics that had been developed from the over 100 suggestions received from AHS members.

The task force met twice by conference call to review the suggestions and choose items for further development, and then communicated electronically during the development and approval process. Final items were selected based on commonly encountered situations in headache medicine associated with poor patient outcomes, low-value care or misuse or overuse of resources. The five recommendations were then approved by the AHS Executive Committee and Board of Directors.

The AHS disclosure and conflict of interest policy can be found at: www.americanheadachesociety.org/professional_resources/disclosure_policy.

Sources

- 1 Frishberg BM. The utility of neuroimaging in the evaluation of headache in patients with normal neurologic examination. *Neurology*. 1994 Jul;44(7):1191–7.
Silberstein SD. Practice parameter: evidence-based guidelines for migraine headache (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 2000 Sep 26;55(6):754–62.
Neuroimaging for the evaluation of chronic headaches: an Evidence-based analysis. *Ont Health Technol Assess Ser*. 2010;10(26):1–57.
Headache Classification Subcommittee of the International Headache Society. International classification of headache disorders. *Cephalalgia*. 2004 Sep 1;4(1):1–151.
- 2 Neuroimaging for the evaluation of chronic headaches: an evidence-based analysis. *Ont Health Technol Assess Ser*. 2010;10(26):1–57.
Evans R. Diagnostic testing for migraine and other primary headaches. *Neurol Clin*. 2009 May;27(2):393–414.
Semelka RC, Armao DM, Elias J Jr, Huda W. Imaging strategies to reduce the risk of radiation in CT studies, including selective substitution with MRI. *J Magn Reson Imaging*. 2007;25(5):900–09.
Brenner DJ, Hall EJ. Computed tomography—an increasing source of radiation exposure. *N Engl J Med*. 2007;357(22):2277–84.
- 3 Guyuron B, Kriegler JS, Davis J, Amini SB. Comprehensive surgical treatment of migraine headaches. *Plast Reconstr Surg*. 2005;115:1–9.
Guyuron B, Reed D, Kriegler JS, Davis J, Pashmini N, Amini S. A placebo-controlled surgical trial of the treatment of migraine headaches. *Plast Reconstr Surg*. 2009;124:461–8.
Guyuron B, Kriegler JS, Davis J, Amini SB. Five-year outcome of surgical treatment of migraine headaches. *Plast Reconstr Surg*. 2011;127:603–8.
American Headache Society urges caution in using any surgical intervention in migraine treatment. Position statement of the American Headache Society [Internet]. Mount Royal (NJ): American Headache Society; 2012 April 13 [cited 11 January 2013]. Available from: www.americanheadachesociety.org/american_headache_society_urges_caution_in_using_any_surgical_intervention_in_migraine_treatment.
- 4 Bigal ME, Lipton RB. Excessive opioid use and the development of chronic migraine. *Pain*. 2009 Apr;142(3):179–82.
Bigal ME, Serrano D, Buse D, Scher AI, Stewart WF, Lipton RB. Migraine medications and evolution from episodic to chronic migraine: a longitudinal population-based study. *Headache*. 2008;48:1157–68.
Scher AI, Stewart WF, Ricci JA, Lipton RB. Factors associated with the onset and remission of chronic daily headache in a population-based study. *Pain*. 2003;106(1-2):81–9.
Katsarava Z, Schneeweiss S, Kurth T, Kroener U, Fritsche G, Eikermann A, Diener HC, Limmroth V. Incidence and predictors for chronicity of headache in patients with episodic migraine. *Neurology*. 2004 Mar;62(5):788–90.
- 5 Bigal ME, Serrano D, Buse D, Scher A, Stewart WF, Lipton RB. Acute migraine medications and evolution from episodic to chronic migraine: a longitudinal population-based study. *Headache*. 2008 Sep;48(8):1157–68.
Bigal ME, Lipton RB. Excessive acute migraine medication use and migraine progression. *Neurology*. 2008 Nov 25;71(22):1821–8.
Zwart JA, Dyb G, Hagen K, Svebak S, Holmen J. Analgesic use: a predictor of chronic pain and medication overuse headache – the Head-HUNT Study. *Neurology*. 2003;61:160–4.
Silberstein SD. Practice parameter: evidence-based guidelines for migraine headache (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 2000;55:754–62.

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About the American Headache Society

The American Headache Society (AHS) is the professional organization for headache medicine physicians and other health care providers who are committed to improving the lives of people with headache and face pain. Migraine alone is the seventh highest specific cause of disability globally and the leading cause worldwide of neurological disability, according to the World Health Organization 2010 Burden of Disease Study. The AHS provides a forum for the exchange of ideas and information about causes and treatments of headache and related painful disorders. It also provides education and training to physicians, health professionals and the public about headache and encourages scientific research worldwide about the causes and treatment of headache and related problems.

For more information, visit www.americanheadachesociety.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Avoid ordering a brain CT or brain MRI to evaluate an acute concussion unless there are progressive neurological symptoms, focal neurological findings on exam or there is concern for a skull fracture.

Concussion is a clinical diagnosis. Concussion is not associated with clinically relevant abnormalities on standard neuroimaging with CT or MRI. These studies should be ordered if more severe brain injury is suspected. CT is best utilized for skull fracture and intracranial bleeding, whereas MRI may be ordered for prolonged symptoms, worsening symptoms or other suspected structural pathology.

2

Avoid ordering an abdominal ultrasound examination routinely in athletes with infectious mononucleosis.

Splenic enlargement is common in patients with infectious mononucleosis. The spleen is at increased risk for splenic rupture in the first 3–4 weeks of infection. This has led many clinicians to utilize ultrasound to determine if splenic enlargement is present. However, because individual splenic diameters vary greatly, comparing splenic size to population norms is not a valid method to assess splenic enlargement.

3

Don't prescribe oral contraceptive pills as initial treatment for patients with amenorrhea or menstrual dysfunction due to the female athlete triad (defined as low energy availability with or without disordered eating, menstrual dysfunction and low bone mineral density).

The cause of female athlete triad is an imbalance between energy intake and energy expenditure that leads to menstrual dysfunction (abnormal or loss of periods) and low bone mineral density. Historically, some physicians have used oral contraceptive pills (OCPs) to regulate the menstrual cycle in this disorder. However, the underlying cause for the menstrual dysfunction is energy imbalance. Treatment includes increasing caloric intake and/or decreasing energy expenditure (exercise) to restore normal menses, which can take up to 12 months or longer. Additionally, OCPs do not increase bone density in females affected by the triad. By restoring menses, OCPs can mask energy imbalance and delay appropriate treatment. We recommend a multi-disciplinary approach to treatment that includes a physician, dietitian, mental health professional (when appropriate) and support from coaches, family members and friends.

4

Avoid ordering a knee MRI for a patient with anterior knee pain without mechanical symptoms or effusion unless the patient has not improved following completion of an appropriate functional rehabilitation program.

The most common cause of anterior knee pain is patellofemoral pain syndrome. Magnetic resonance imaging (MRI) is rarely helpful in managing this syndrome. Treatment should focus on a guided exercise program to correct lumbopelvic and lower limb strength and flexibility imbalances. If pain persists, if there is recurrent swelling or if mechanical symptoms such as locking and painful clicking are present, and radiographs are non-diagnostic, an MRI may be useful.

5

Avoid recommending knee arthroscopy as initial management for patients with degenerative meniscal tears and no mechanical symptoms.

Degenerative meniscal tears may respond to non-operative treatments such as exercise to improve muscle strength, endurance and flexibility. Other treatment options include mild analgesics, anti-inflammatory medication, activity modification or corticosteroid injection. If mechanical symptoms such as locking, painful clicking or recurrent swelling are present, or if pain relief is not obtained after a trial of non-operative treatment, arthroscopy may be warranted. If significant osteoarthritis is also present, other surgical options should be considered.

How This List Was Created

The American Medical Society for Sports Medicine (AMSSM) has identified this list of clinical recommendations for the *Choosing Wisely*[®] campaign. The goal was to identify common topics in the practice of sports medicine that, supported by a review of the literature, would lead to significant health benefits and a reduction of common procedures that can be unnecessary or cause harm. For each item, evidence was reviewed from peer-reviewed literature and several sports medicine consensus statements. The list was initially generated and drafted by AMSSM's Quality Measures Subcommittee. It was then edited and approved by AMSSM's Practice and Policy Committee and the Board of Directors.

The American Medical Society for Sports Medicine's disclosure and conflict of interest policy can be found at www.amssm.org.

Sources

1. Harmon KG, Drezner JA, Gammons M, Guskiewicz KM, Halstead M, Herring SA, Kutcher JS, Pana A, Putukian M, Roberts WO. American Medical Society for Sports Medicine position statement: concussion in sport. *Br J Sports Med*. 2013 Jan;47(1):15–26.
McCrory P, Meeuwisse WH, Aubry M, Cantu B, Dvořák J, Echemendia RJ, Engebretsen L, Johnston K, Kutcher JS, Raftery M, Sills A, Benson BW, Davis GA, Ellenbogen RG, Guskiewicz K, Herring SA, Iverson GL, Jordan BD, Kissick J, McCrea M, McIntosh AS, Maddocks D, Makdissi M, Purcell L, Putukian M, Schneider K, Tator CH, Turner M. Consensus statement on concussion in sport: the 4th International Conference on Concussion in Sport, Zurich, November 2012. *Br J Sports Med*. 2013 Apr;47(5): 250–8.
McCrory P, Meeuwisse W, Johnston K, Dvorak J, Aubry M, Molloy M, Cantu R. Consensus statement on concussion in sport—the third international conference on concussion in sport held in Zurich, November 2008. *Phys Sportsmed*. 2009 Jun;37(2):141–59.
2. Putukian M, O'Connor FG, Stricker P, McGrew C, Hosey RG, Gordon SM, Kinderknecht J, Kriss V, Landry G. Mononucleosis and athletic participation: an evidence-based subject review. *Clin J Sport Med*. 2008 Jul;18(4):309–15.
Spielmann AL, DeLong DM, Kliewer MA. Sonographic evaluation of spleen size in tall healthy athletes. *Am J Roentgenol*. 2005 Jan;184(1):45–9.
Hosey RG, Mattacola CG, Kriss V, Armsey T, Quarles JD, Jagger J. Ultrasound assessment of spleen size in collegiate athletes. *Br J Sports Med*. 2006 Mar;40(3):251–4.
3. De Souza MJ, Nattiv A, Joy E, Misra M, Williams NI, Mallinson RJ, Gibbs JC, Olmsted M, Goolsby M, Matheson G; Expert Panel. 2014 Female Athlete Triad Coalition Consensus Statement on Treatment and Return to Play of the Female Athlete Triad. *Br J Sports Med*. 2014 Feb;48(4):289.
Javed A, Tebben PJ, Fischer PR, Lteif AN. Female athlete triad and its components: toward improved screening and management. *Mayo Clin Proc*. 2013 Sep;88(9): 996–1009.
Nazem TG, Ackerman KE. The female athlete triad. *Sports Health*. 2012 Jul;4(4):302–11.
4. Dixit S, DiFiori JP, Burton M, Mines B. Management of patellofemoral pain syndrome. *Am Fam Physician*. 2007 Jan 15;75(2):194–202.
Atanda A Jr, Ruiz D, Dodson CC, Frederick RW. Approach to the active patient with chronic anterior knee pain. *Phys Sportsmed*. 2012 Feb;40(1):41–50.
Pappas E, Wong-Tom WM. Prospective predictors of patellofemoral pain syndrome: a systematic review with meta-analysis. *Sports Health*. 2012 Mar;4(2):115–20.
Rixe JA, Glick JE, Brady J, Olympia RP. A review of the management of patellofemoral pain syndrome. *Phys Sportsmed*. 2013 Sep;41(3):19–28.
Roush MB, Sevier TL, Wilson JK, Jenkinson DM, Helfst RH, Gehlsen GM, Basey AL. Anterior knee pain: a clinical comparison of rehabilitation methods. *Clin J Sport Med*. 2000 Jan;10(1): 22–8.
5. Yim JH, Seon JK, Song EK, Choi JI, Kim MC, Lee KB, Seo HY. A comparative study of meniscectomy and nonoperative treatment for degenerative horizontal tears of the medial meniscus. *Am J Sports Med*. 2013 Jul;41(7):1565–70.
Herrlin S, Hållander M, Wange P, Weidenhielm L, Werner S. Arthroscopic or conservative treatment of degenerative medial meniscal tears: a prospective randomized trial. *Knee Surg Sports Traumatol Arthrosc*. 2007 Apr;15(4):393–401.
Herrlin S, Wange PO, Lapidus G, Hållander M, Werner S, Weidenhielm L. Is arthroscopic surgery beneficial in treating non-traumatic, degenerative medial meniscal tears? A five year follow-up. *Knee Surg Sports Traumatol Arthrosc*. 2013 Feb;21(2):358–64.

About the ABIM Foundation

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About the American Medical Society for Sports Medicine

The American Medical Society for Sports Medicine (AMSSM) is proud to be a partner in the *Choosing Wisely*[®] campaign. Founded in 1991, AMSSM is a multi-disciplinary organization of 2,500 sports medicine physicians dedicated to education, research, advocacy and the care of athletes of all ages. The majority of AMSSM members are primary care physicians with fellowship training and added qualification in sports medicine who then combine their practice of sports medicine with their primary specialty. AMSSM includes members who specialize solely in non-surgical sports medicine and serve as team physicians at the youth level, NCAA, NFL, MLB, NBA, WNBA, MLS and NHL, as well as with the U.S. Olympic team. By nature of their training and experience, sports medicine physicians are ideally suited to provide comprehensive medical care for athletes, sports teams or active individuals who are simply looking to maintain a healthy lifestyle. This partnership with the *Choosing Wisely*[®] campaign aligns with AMSSM's dedication to providing the highest standard of comprehensive care of the athlete, while reducing unnecessary health care costs.

For more information or questions, please visit www.amssm.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Patients and Providers Should Question

1

Don't provide intervention activities that are non-purposeful (e.g., cones, pegs, shoulder arc, arm bike).

Purposeful activities—tasks that are part of daily routines and hold meaning, relevance, and perceived utility such as personal care, home management, school, and work—are a core premise of occupational therapy. Research shows that using purposeful activity (occupation) in interventions is an intrinsic motivator for patients. Such activities can increase attention, endurance, motor performance, pain tolerance, and engagement, resulting in better patient outcomes. Purposeful activities build on a person's ability and lead to achievement of personal and functional goals. Conversely, non-purposeful activities do not stimulate interest or motivation, resulting in reduced patient participation and suboptimal outcomes.

2

Don't provide sensory-based interventions to individual children or youth without documented assessment results of difficulties processing or integrating sensory information.

Many children and youth are affected by challenges in processing and integrating sensations that negatively affect their ability to participate in meaningful and valued occupations. Processing and integrating sensations are complex and result in individualized patterns of dysfunction that must be addressed in personalized ways. Interventions that do not target the documented patterns of dysfunction can produce ineffective or negative results. Therefore, it is imperative to assess and document specific sensory difficulties before providing sensory-based interventions such as Ayres Sensory Integration®, weighted vests, listening programs, or sensory diets.

3

Don't use physical agent modalities (PAMs) without providing purposeful and occupation-based intervention activities.

The exclusive use of PAMs (e.g., superficial thermal agents, deep thermal agents, electrotherapeutic agents, mechanical devices) as a therapeutic intervention without direct application to occupational performance is not considered occupational therapy. PAMs provided with a functional component can lead to more positive health outcomes. PAMs should be integrated into a broader occupational therapy program and intervention plan in preparation for or concurrently with purposeful activities or interventions that ultimately enhance engagement in occupation.

4

Don't use pulleys for individuals with a hemiplegic shoulder.

Use of an overhead pulley for individuals with a hemiplegic shoulder resulting from a stroke or other clinical condition is considered too aggressive and should be avoided, as it presents the highest risk of the patient developing shoulder pain. Gentler and controlled range of motion exercises and activities are preferred.

5

Don't provide cognitive-based interventions (e.g., paper-and-pencil tasks, table-top tasks, cognitive training software) without direct application to occupational performance.

To improve occupational performance, cognitive-based interventions should be embedded in an occupation relevant to the patient. Examples of cognitive-based interventions include awareness approaches, strategy training, task training, environmental modifications, and assistive technology. The use of cognitive-based interventions not based on occupational performance will result in suboptimal patient outcomes.

How This List Was Created

The American Occupational Therapy Association (AOTA) conducted a three-phase project to develop the final Choosing Wisely recommendations of services that occupational therapy practitioners should not provide. The phases of the project included Phase I—building member awareness and support, Phase II—soliciting member input, and Phase III—dissemination of the final items. Phase I was accomplished through presentations to AOTA member and volunteer groups, a Town Hall session at AOTA Annual Conference, an online webinar and related materials, and coverage in AOTA publications. Phase I was completed with an online member survey that resulted in 328 responses. Following the elimination of duplicate responses and items outside the scope of occupational therapy practice, the list was narrowed down to 62 items. Additional input was received from AOTA Special Interest Section volunteer leaders to rank the items based on established criteria. An extensive literature search was conducted on the highest ranked strategies. Phase II involved an online member survey presenting 12 items for evaluation with a goal of picking the top 5. This survey resulted in 4,860 responses that were analyzed, resulting in the final 5 items. These items were reviewed by the AOTA Board of Directors. Phase III included the development of a communication and dissemination plan.

AOTA's disclosure and conflict of interest policy can be found at www.aota.org.

Sources

- American Occupational Therapy Association. (2014). Occupational therapy practice framework: Domain and process (3rd ed.). *American Journal of Occupational Therapy*, 68(Suppl. 1), S1–S48. <https://doi.org/10.5014/ajot.2014.682006>

Hinojosa, J., & Blount, M. (Eds.). (2017). *The texture of life: Occupations and related activities*. Bethesda, MD: AOTA Press.

Hsieh, C. L., Nelson, D. L., Smith, D. A., & Peterson, C. Q. (1996). A comparison of performance in added-purpose occupations and rote exercise for dynamic standing balance in persons with hemiplegia. *American Journal of Occupational Therapy*, 50, 10–16. <https://doi.org/10.5014/ajot.50.1.10>

Lin, K., Wu, C., Tickle-Degnen, L., & Coster, W. (1997). Enhancing occupational performance through occupationally embedded exercise: A meta-analytic review. *Occupational Therapy Journal of Research*, 17(1), 25–47. <https://doi.org/10.1177/153944929701700102>

Steinbeck, T. (1986). Purposeful activity and performance. *American Journal of Occupational Therapy*, 40, 529–534. <https://doi.org/10.5014/ajot.40.8.529>
- Bodison, S. C., & Parham, L. D. (2018). Specific sensory techniques and sensory environmental modifications for children and youth with sensory integration difficulties: A systematic review. *American Journal of Occupational Therapy*, 72, 7201190040. <https://doi.org/10.5014/ajot.2018.029413>

Council for Exceptional Children. (2014). *Council for Exceptional Children standards for evidence-based practices in special education*. Retrieved from <http://www.cec.sped.org/~media/Files/Standards/Evidence%20based%20Practices%20and%20Practice/EBP%20FINAL.pdf>

Council for Exceptional Children. (2015). CEC's standards for classifying the evidence base of practices in special education. *Remedial and Special Education*, 36, 220–234.

Pfeiffer, B., May-Benson, T. A., & Bodison, S. C. (2018). Guest Editorial—State of the science of sensory integration research with children and youth. *American Journal of Occupational Therapy*, 72, 7201170010. <https://doi.org/10.5014/ajot.2018.721003>

Schaaf, R. C., Dumont, R. L., Arbesman, M., & May-Benson, T. A. (2018). Efficacy of occupational therapy using Ayres Sensory Integration®: A systematic review. *American Journal of Occupational Therapy*, 72, 7201190010. <https://doi.org/10.5014/ajot.2018.028431>

Schaaf, R., & Mailloux, Z. (2015). *Clinician's guide for implementing Ayres Sensory Integration®: Promoting participation for children with autism*. Bethesda, MD: AOTA Press.

Watling, R., Kuhaneck, H., Parham, D., & Schaaf, R. (2018). *Occupational therapy practice guidelines for children and youth with challenges in sensory processing and sensory integration*. Bethesda, MD: AOTA Press.
- American Occupational Therapy Association. (2012). Physical agent modalities: A position paper. *American Journal of Occupational Therapy*, 66(6_Suppl.), S78–S80. <https://doi.org/10.5014/ajot.2012.66S78>

Bracciano, A. G. (2008). *Physical agent modalities: Theory and application for the occupational therapist* (2nd ed.). Thorofare, NJ: Slack.

Kim S. H., Park J. H., Jung M. Y., & Yoo, E. Y. (2016). Effects of task-oriented training as an added treatment to electromyogram-triggered neuromuscular stimulation on upper extremity function in chronic stroke patients. *Occupational Therapy International*, 23, 165–174. <https://doi.org/10.1002/oti.1421>

Nakano, J., Yamabayashi, C., Scott, A., & Reid, W. D. (2012). The effect of heat applied with stretch to increase range of motion: A systematic review. *Physical Therapy in Sport*, 13, 180–188. <https://doi.org/10.1016/j.ptsp.2011.11.003>
- Cotoi, A., Viana, R., Wilson, R., Chae, J., Miller, T., Foley, N., & Teasell, R. (2016). Painful hemiplegic shoulder. In R. Teasell, N. Hussein, N. Foley, & A. Cotoi (Eds.), *Evidence-based review of stroke rehabilitation* (17th ed., pp. 1–56). Ontario: Canadian Partnership for Stroke Rehabilitation.

Kumar, R., Metter, E. J., Mehta, A. J., & Chew, T. (1990). Shoulder pain in hemiplegia: The role of exercise. *Archives of Physical Medicine and Rehabilitation*, 69, 205–208.
- American Occupational Therapy Association. (2013). Cognition, cognitive rehabilitation, and occupational performance. *American Journal of Occupational Therapy*, 67(6 Suppl.), S9–S31. <http://doi.org/10.5014/ajot.2013.67S9>

Cicerone, K. D., Langenbahn, D. M., Braden, C., Malec, J. F., Kalmar, K., Fraas, M., . . . Ashman, T. (2011). Evidence-based cognitive rehabilitation: Updated review of the literature from 2003 through 2008. *Archives of Physical Medicine and Rehabilitation*, 92(4), 519–530. <http://doi.org/10.1016/j.apmr.2010.11.015>

Gillen, G., Nilsen, D. M., Attridge, J., Banakos, E., Morgan, M., Winterbottom, L., & York, W. (2015). Effectiveness of interventions to improve occupational performance of people with cognitive impairments after stroke: An evidence-based review. *American Journal of Occupational Therapy*, 69(1), 6901180040. <http://doi.org/10.5014/ajot.2015.012138>

Smallfield, S., & Heckenlaible, C. (2017). Effectiveness of occupational therapy interventions to enhance occupational performance for adults with Alzheimer's disease and related major neurocognitive disorders: A systematic review. *American Journal of Occupational Therapy*, 71(5), 7105180010. <http://doi.org/10.5014/ajot.2017.024752>

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About the American Occupational Therapy Association

The American Occupational Therapy Association (AOTA) is the national professional association established in 1917 to represent the interests and concerns of 213,000 occupational therapy practitioners and students of occupational therapy and to improve the quality of occupational therapy services. AOTA's major programs and activities are directed toward assuring the quality of occupational therapy services, improving consumer access to health care services, and promoting the professional development of members. AOTA educates the public and advances the profession by providing resources, setting standards, and serving as an advocate to improve health care.



For more information about AOTA, visit www.aota.org.

For more information or to see other lists of Things Providers and Patients Should Question, visit www.choosingwisely.org.



Five Things Physicians and Patients Should Question

1

Don't perform surgery for a bunion or hammertoes without symptoms.

Foot surgery for cosmetic reasons is not supported by medical research. Symptoms such as pain and limitations of activity are the most common reasons to pursue bunion or hammertoe surgery. Patients having surgery for bunions and hammertoes are at risk for a wide range of complications such as nerve damage, infection, bone healing problems and toe stiffness.

2

Don't use shoe inserts for symmetric flat feet or high arches in patients without symptoms.

Symmetric flat feet or high arches are common conditions, and generally they are asymptomatic. The development of the arch is not related to external supports, and no evidence exists that any support is needed in asymptomatic patients.

3

Don't perform surgery for plantar fasciitis before trying six months of non-operative care.

With six months of consistent, non-operative treatment, plantar fasciitis will resolve up to 97% of the time. Surgery has a much lower rate of success and has the added possibility of post-operative complications.

4

Avoid X-ray evaluation of the foot and ankle without standing (weightbearing) in the absence of injury.

The functional position of the foot and ankle is one of weightbearing. When compared to non-weightbearing X-rays, deformities of the forefoot, midfoot and hindfoot have been shown to increase on weightbearing X-rays. In addition, narrowing of the ankle joint space on standing X-rays is associated with symptoms of arthritis. Therefore, weightbearing X-rays, when possible, give the most accurate assessment of the functional bony anatomy of the foot and ankle.

5

Don't use alcohol injections for Morton's neuromas.

Alcohol can permanently damage the nerve, but without effective pain relief. At five year follow-up, alcohol injection for Morton's neuroma has both a high recurrence rate and a high rate of complications, including bruising, scar formation, dysesthesia, severe pain and infection.

How This List Was Created

In order to formulate this list, the American Orthopaedic Foot & Ankle Society Evidence-Based Medicine Committee reviewed the society [position statements](#) on foot and ankle care and solicited expert opinion from specialty leaders including the AOFAS Board of Directors to prepare an initial list of topics for the *Choosing Wisely* website. The Board of Directors of the AOFAS reviewed the initial list and approved five statements for further development. The Evidence-Based Medicine Committee members reviewed the scientific literature on each statement and presented draft statements with supporting evidence to the committee for discussion. Committee members also reviewed the *Choosing Wisely* campaign website to ensure that there was no duplication in proposed content and for proper formatting. The committee evaluated each statement and edited the statement wording and supporting references. Once consensus was reached, the 2014 list was finalized by committee members. The finalized list was then reviewed and approved by the AOFAS Board of Directors. The AOFAS disclosure and conflict of interest policies may be found at www.aofas.org/education/Pages/Education.aspx.

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Sources

Bunions [internet] Rosemont (IL): American Orthopaedic & Ankle Society. Available from: <http://www.aofas.org/footcaremd/conditions/ailments-of-the-big-toe/Pages/Bunions.aspx>
Adult foot health [internet] Rosemont (IL): American Orthopaedic & Ankle Society. Available from: <http://www.aofas.org/footcaremd/overview/Pages/Adult-Foot-Health.aspx>
Lehman DE. Salvage of complications of hallux valgus surgery. *Foot Ankle Clin.* 2003;8(1):15–35.
Pfeffer GB. Cosmetic foot surgery: a step in the wrong direction. *Am J Orthop.* 2011;40(4):174.
Sammarco GJ, Idusuyi OB. Complications after surgery of the hallux. *Clin Orthop Relat Res.* 2001;(391):59–71
Scranton PE, Jr., McDermott JE. Prognostic factors in bunion surgery. *Foot Ankle Int.* 1995;16(11):698–704.
Wapner KL: Conservative treatment of the foot. In Coughlin MJ; Mann RA; Saltzman CL, eds. *Surgery of the Foot and Ankle.* Vol I. 8th ed. Philadelphia, PA, Mosby Elsevier, 2007, 147–148.

Dare DM, Dodwell ER. Pediatric flatfoot: cause, epidemiology, assessment, and treatment. *Curr Opin Pediatr.* 2014;26(1):93–100.
Evans AM, Rome K. A Cochrane review of the evidence for non-surgical interventions for flexible pediatric flat feet. *Eur J Phys Rehabil Med.* 2011;47(1):69–89.
Kitaoka HB, Luo ZP, Kura H, An KN. Effect of foot orthoses on 3-dimensional kinematics of flatfoot: a cadaveric study. *Arch Phys Med Rehabil.* 2002;83(6):876–9.
Rome K, Ashford RL, Evans A. Non-surgical interventions for paediatric pes planus. *Cochrane Database of Systematic Reviews* 2010, Issue 7. Art. No.: CD006311. DOI: 10.1002/14651858.CD006311.pub2.
Staheli LT, Chew DE, Corbett M. The longitudinal arch. A survey of eight hundred and eighty-two feet in normal children and adults. *J Bone Joint Surg Am.* 1987;69(3):426–8.
Sullivan JA. Pediatric flatfoot: evaluation and management. *J Am Acad Orthop Surg.* 1999;7(1):44–53.

Davies MS, Weiss GA, Saxby TS. Plantar fasciitis: how successful is surgical intervention? *Foot Ankle Int.* 1999;20(12):803–7.
Wolgin M, Cook C, Graham C, Mauldin D. Conservative treatment of plantar heel pain: long-term follow-up. *Foot Ankle Int.* 1994;15(3):97–102.

Keim HA, Ritchie GW. Weight-bearing roentgenograms in the evaluation of foot deformities. *Clin Orthop Relat Res.* 1970;70:133–6.
Kitaoka HB, Lundberg A, Luo ZP, An KN. Kinematics of the normal arch of the foot and ankle under physiologic loading. *Foot Ankle Int.* 1995;16(8):492–9.
McDaniel G, Renner JB, Sloane R, Kraus VB. Association of knee and ankle osteoarthritis with physical performance. *Osteoarthritis and cartilage / OARS, Osteoarthritis Research Society.* 2011;19(6):634–8.
Tanaka Y, Takakura Y, Takaoka T. Radiographic analysis of hallux valgus in women on weightbearing and nonweightbearing. *Clin Orthop Relat Res.* 1997;(336):186–4.

Gurdezi S, White T, Ramesh P. Alcohol injection for Morton's neuroma: a five-year follow-up. *Foot Ankle Int.* 2013;34(8):1064–7.
Rengachary SS, Watanabe IS, Singer P, Bopp WJ. Effect of glycerol on peripheral nerve: an experimental study. *Neurosurgery.* 1983;13(6):681–8.

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About the the American Orthopaedic Foot & Ankle Society

The American Orthopaedic Foot & Ankle Society (AOFAS) promotes quality, ethical and cost-effective patient care through education, research and training of orthopaedic surgeons and other health care providers. It creates public awareness for the prevention and treatment of foot and ankle disorders, provides leadership in the treatment and understanding of these conditions. The AOFAS serves as a resource for government, industry and the national and international health care community. The 2,000+ AOFAS members are orthopaedic foot and ankle surgeons (MD and DO) who specialize in the diagnosis, care and treatment of patients with disorders of the musculoskeletal system of the foot and ankle. AOFAS is proud to partner with the *Choosing Wisely*® campaign, as it complements the AOFAS public education, evidence-based medicine and patient outcomes initiatives to improve the quality of patient care.

To learn more about AOFAS, visit www.aofas.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physical Therapists and Patients Should Question

1

Don't use (superficial or deep) heat to obtain clinically important long term outcomes in musculoskeletal conditions.

There is limited evidence for use of superficial or deep heat to obtain clinically important long term outcomes for musculoskeletal conditions. While there is some evidence of short-term pain relief for heat, the addition of heat should be supported by evidence and used to facilitate an active treatment program. A carefully designed active treatment plan has a greater impact on pain, mobility, function and quality of life. There is emerging evidence that passive treatment strategies can harm patients by exacerbating fears and anxiety about being physically active when in pain, which can prolong recovery, increase costs and increase the risk of exposure to invasive and costly interventions such as injections or surgery.

2

Don't prescribe under-dosed strength training programs for older adults. Instead, match the frequency, intensity and duration of exercise to the individual's abilities and goals.

Improved strength in older adults is associated with improved health, quality of life and functional capacity, and with a reduced risk of falls. Older adults are often prescribed low dose exercise and physical activity that are physiologically inadequate to increase gains in muscle strength. Failure to establish accurate baseline levels of strength limits the adequacy of the strength training dosage and progression, and thus limits the benefits of the training. A carefully developed and individualized strength training program may have significant health benefits for older adults.

3

Don't recommend bed rest following diagnosis of acute deep vein thrombosis (DVT) after the initiation of anti-coagulation therapy, unless significant medical concerns are present.

Given the clinical benefits and lack of evidence indicating harmful effects of ambulation and activity both are recommended following achievement of anticoagulation goals unless there are overriding medical indications. Patients can be harmed by prolonged bed rest that is not medically necessary.

4

Don't use continuous passive motion machines for the postoperative management of patients following uncomplicated total knee replacement.

Continuous passive motion (CPM) treatment does not lead to clinically important effects on short- or long-term knee extension, long-term knee flexion, long-term function, pain and quality of life in patients undergoing total knee arthroplasty (TKA). With rehabilitation protocols now supporting early mobilization, the use of CPM following uncomplicated total knee arthroplasty should be questioned unless medical and/or surgical complication exist that limit or contraindicate rehabilitation protocols that foster early mobilization. The cost, inconvenience and risk of prolonged bed rest with CPM should be weighed carefully against its limited benefit. As members of interprofessional teams involved in post-operative rehabilitation of patient following total knee replacement, physical therapists have a responsibility to advocate for effective alternatives to CPM for most patients.

5

Don't use whirlpools for wound management.

Whirlpools are a non-selective form of mechanical debridement. Utilizing whirlpools to treat wounds predisposes the patient to risks of bacterial cross-contamination, damage to fragile tissue from high turbine forces and complications in extremity edema when arms and legs are treated in a dependent position in warm water. Other more selective forms of hydrotherapy should be utilized, such as directed wound irrigation or a pulsed lavage with suction.

How This List Was Created

The American Physical Therapy Association (APTA) invited all 88,000 members to suggest items for the *Choosing Wisely*® list. Communication of this request was distributed to members via website posting, e-mail blast and social media. APTA convened an expert workgroup of physical therapists representing a broad range of clinical expertise, practice settings and patient populations. A modified Delphi technique was used to rank and prioritize the recommendations based upon the *Choosing Wisely* criteria. An extensive literature search was conducted on the highest rated strategies. The expert panel reviewed the literature and provided a ranking of recommendations based upon the established criteria. The final list of five strategies was selected through a survey open to all APTA members who were asked to select five items from a list of nine, all of which met the established criteria. The final list was presented to the APTA Board of Directors for final approval.

APTA's disclosure and conflict of interest policy can be found at www.apta.org.

Sources

- Ulus Y, Tander B, Akyol Y. Therapeutic ultrasound versus sham ultrasound for the management of patients with knee osteoarthritis: a randomized double-blind controlled clinical study. *Int J Rheum Dis*. 2012 Apr;15(2):197–206.
Jewell DV, Riddle DL, Thacker LR. Interventions associated with an increased or decreased likelihood of pain reduction and improved function in patients with adhesive capsulitis: a retrospective cohort study. *Phys Ther*. 2009 May;89(5):419–29.
Robertson VJ, Baker KG. A review of therapeutic ultrasound: effectiveness studies. *Phys Ther*. 2001 Jul;81(7):1339–50.
Graham N, Gross A, Goldsmith C, Michlovitz S. Heat and cold for neck pain: A systematic review. *Physiother Can*. 2009;61:73–73.
French SD, Cameron M, Walker BF, Reggars JW, Esterman AJ. Superficial heat or cold for low back pain. *Cochrane Database Syst Rev*. 2006 Jan 25;(1):CD004750.
Gebremariam L, Hay EM, van der Sande R, Rinkel WD, Koes BW, Huisstede BM. Subacromial impingement syndrome—effectiveness of physiotherapy and manual therapy. *Br J Sports Med*. 2014 Aug;48(16):1202–8
Davis AM, MacKay C. Osteoarthritis year in review: outcome of rehabilitation. *Osteoarthritis Cartilage*. 2013 Oct;21(10):1414–24.
Green S, Buchbinder R, Hetrick S. Physiotherapy interventions for shoulder pain. *Cochrane Database Syst Rev*. 2003;(2) CD004258.
- Silva NL, Oliveira RB, Fleck SJ, Leon AC, Farinatti P. Influence of strength training variables on strength gains in adults over 55 years old: A meta-analysis of dose-response relationships. *J Sci Med Sport*. 2014;17(3):337–44.
Raymond MJ, Bramley-Tzeretos RE, Jeffs KJ, Winter A, Holland AE. Systematic review of high-intensity progressive resistance strength training of the lower limb compared with other intensities of strength training in older adults. *Arch Phys Med Rehabil*. 2013;94(8):1458–72.
Valenzuela T. Efficacy of progressive resistance training interventions in older adults in nursing homes: a systematic review. *J Am Med Dir Assoc*. 2012;13(5):418–28.
Mayer F, Scharhag-Rosenberger F, Carlssohn A, Cassel M, Muller S, Scharhag J. The intensity and effects of strength training in the elderly. *Dtsch Arztebl Int*. 2011;108(21):359–64.
Nicola F, Catherine S. Dose-response relationship of resistance training in older adults: a meta-analysis. *Br J Sports Med*. 2011;45(3):233–4.
- Aissaoui N, Martins E, Mouly S, Weber S, Meune C. A meta-analysis of bed rest versus early ambulation in the management of pulmonary embolism, deep vein thrombosis, or both. *Int J Cardiol*. 2009;137(1):37–41.
Anderson CM, Overend TJ, Godwin J, Sealy C, Sunderji A. Ambulation after deep vein thrombosis: a systematic review. *Physiother Can*. 2009;61(3):133–40.
Gay V, Hamilton R, Heiskell S, Sparks AM. Influence of bedrest or ambulation in the clinical treatment of acute deep vein thrombosis on patient outcomes: a review and synthesis of the literature. *Medsurg Nurs*. 2009;18(5):293–99.
Kahn SR, Shrier I, Kearon C. Physical activity in patients with deep venous thrombosis: a systematic review. *Thromb Res*. 2008;122(6):763–73.
- Brosseau L, Milne S, Wells G, Tugwell P, Robinson V, Casimiro L, Pelland L, Noel MJ, Davis J, Drouin H. Efficacy of continuous passive motion following total knee arthroplasty: a metaanalysis. *J Rheumatol*. 2004;31(11):2251–64.
Grella RJ. Continuous passive motion following total knee arthroplasty: a useful adjunct to early mobilisation? *Phys Ther Rev*. 2008;13(4):269–79.
Harvey LA, Brosseau L, Herbert RD. Continuous passive motion following total knee arthroplasty in people with arthritis. *Cochrane Database Syst Rev*. 2014;2:CD004260.
van Dijk H, Elvers J, Oostendorp R. Effect of continuous passive motion after total knee arthroplasty: a systematic review. *Physiother Singapore*. 2007;10(4):9–19.
Viswanathan P, Kidd M. Effect of continuous passive motion following total knee arthroplasty on knee range of motion and function: a systematic review. *NZ J Physiother*. 2010;38(1):14–22.
- Institute for Clinical Systems Improvement (ICS). Pressure ulcer prevention and treatment protocol. Health care protocol. Bloomington (MN): Institute for Clinical Systems Improvement (ICS); 2012 Jan. 88 p.
Association for the Advancement of Wound Care (AAWC) venous ulcer guideline. Malvern (PA): Association for the Advancement of Wound Care (AAWC); 2010 Dec. 7 p.
Water use in hydrotherapy tanks [Internet]. Atlanta (GA): Centers for Disease Control and Prevention. 2009 Aug 10 [cited 2014 Apr 23]. Available from: <http://www.cdc.gov/healthywater/other/medical/hydrotherapy.html>.
Berrouane YF, McNutt LA, Buschelman BJ. Outbreak of severe pseudomonas aeruginosa infections caused by a contaminated drain in a whirlpool bathtub. *Clin Infect Dis*. 2000;31(6):1331–7.
McCulloch J, Boyd VB. The effects of whirlpool and the dependent position on lower extremity volume. *J Orthop Sports Phys Ther*. 1992;16(4):169–73.

About the ABIM Foundation

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About the American Physical Therapy Association

The American Physical Therapy Association (APTA) represents more than 88,000 physical therapists, physical therapist assistants and students of physical therapy nationwide. Physical therapists apply research and proven treatment to help people reduce pain and restore movement after injury, illness or surgery; prevent injury; and achieve fitness, health and wellness. No matter what area of the body, physical therapists have an established history of helping individuals improve their quality of life. APTA seeks to improve the health and quality of life of individuals in society by advancing physical therapist practice, education and research, and by increasing the awareness and understanding of physical therapy's role in the nation's health care system.

For more information about APTA, visit www.apta.org.



Five Things Physicians and Patients Should Question

1

Avoid routine use of pharmacologic DVT prophylaxis in elective foot and ankle surgery.

The decision of whether to implement pharmacologic prophylaxis should take into account the risk of deep venous thromboembolism (DVT) in the absence of prophylaxis, and the potential adverse effects associated with the use of pharmacologic prophylaxis. Routine use may in fact be harmful, particularly in patients at lowest risk for DVT. The final decision regarding use of pharmacologic prophylaxis should be agreed upon by the physician and patient after a discussion of the potential benefits and harms as they relate to the individual.

2

Don't culture or treat clinically uninfected lower extremity wounds with systemic antibiotics.

Uninfected wounds are contaminated with surface flora and will yield false positive culture results. Furthermore, wounds that are not clinically infected do not require antibiotics and the unnecessary prescription of antibiotics may have harmful side effects and lead to further antibiotic resistance.

3

Avoid ordering MRI in patients with suspected acute Achilles tendon ruptures.

MRI is expensive and can lead to treatment delays. History and physical exam findings can establish the diagnosis of acute Achilles tendon ruptures in nearly all instances. Physicians should reserve MRI for atypical presentations and subacute or neglected ruptures when preoperative planning is needed. When physicians prefer to use the rupture gap (i.e., apposition of tendon ends) as criteria for management (surgery versus conservative treatment), dynamic ultrasound can be easily substituted.

4

Don't use synthetic or donated grafts on diabetic foot wounds without first allowing for an adequate trial of standard wound care.

Most diabetic foot wounds will heal when proper wound care is performed. The standard of care includes treating any infection present, ensuring there is adequate circulation for healing, taking pressure off the wound (offloading) and regular debridement. Synthetic or donated grafts are expensive and are ineffective without first performing the standard of care. If a wound being treated with standard care has not healed by at least 50 percent in four weeks, synthetic or donated grafts may then be necessary.

5

Don't routinely use MRI to diagnose bone infection (osteomyelitis) in the foot.

When the diagnosis of osteomyelitis can be reliably established by clinical means and/or serial plain film radiographs, MRI is generally unnecessary. Furthermore, MRI is particularly poor at differentiating osteomyelitis from benign postoperative marrow edema and from marrow edema due to Charcot arthropathy. Use of MRI in these instances can lead to a false positive interpretation and potentially harmful overtreatment.

How This List Was Created

The American Podiatric Medical Association's (APMA) Clinical Practice Advisory Committee, consisting of APMA members, board members, young members and liaisons with special interests in a variety of subspecialty areas within podiatric practice, formulated the recommendations for the ABIM Foundation's Choosing Wisely Campaign. The Committee worked with podiatric colleagues to create an initial list of recommendations, which was reviewed and narrowed down to eight recommendations. The list of eight recommendations was further developed and distributed to the Committee for ranking in numerical order. Committee members were asked to rank the recommendations based on their relevance, timeliness, strength of supporting evidence and appropriateness for inclusion in the Choosing Wisely Campaign. The rankings and deliberation enabled the Committee to come to the final five recommendations, which were again reviewed to ensure appropriate evidence was used to support each recommendation. The final recommendations were approved by the Board of Trustees of the APMA before submission to the ABIM Foundation.

APMA's disclosure and conflict of interest policy can be found at www.apma.org.

Sources

- 1 Fleischer AE, Abicht BP, Baker JR, Boffeli TJ, Jupiter DC, Schade VL. American College of Foot and Ankle Surgeons' Clinical Consensus Statement: Risk, prevention, and diagnosis of venous thromboembolism disease in foot and ankle surgery and injuries requiring immobilization. *J Foot Ankle Surg.* 2015;54:497-507.

Calder JD, Freeman R, Domeij-Arverud E, van Dijk CN, Ackermann PW. Meta-analysis and suggested guidelines for prevention of venous thromboembolism (VTE) in foot and ankle surgery. *Knee Surg Sports Traumatol Arthrosc.* 2016;24(4):1409-20.
- 2 Lipsky BA, et al. 2012 Infectious Diseases Society of America Clinical Practice Guideline for the Diagnosis and Treatment of Diabetic Foot Infections. *CID.* 2012;54:132.
- 3 Singh D. Acute Achilles tendon rupture. *BMJ.* 2015;351:h4722.

Garras DN, Raiken SM, Bhat SB, Taweel N, Karanjia H. MRI is unnecessary for diagnosing acute Achilles tendon ruptures: clinical diagnostic criteria. *Clin Orthop Relat Res.* 2012;470:2268-73.

Wallace RG, Heyes GJ, Michael AL. The non-operative functional management of patients with a rupture of the tendo Achillis leads to low rates of re-rupture. *J Bone Joint Surg Br.* 2011;93:1362-66.
- 4 Snyder RJ, et al. The management of diabetic foot ulcers through optimal off-loading: Building consensus guidelines and practical recommendations to improve outcomes. *JAPMA.* 2014;104:555.

Snyder RJ, et al. Consensus recommendation on advancing the standard of care for treating neuropathic foot ulcers in patients with diabetes. *Ostomy Wound Manage.* 2010;56:S1-24.

Sheehan PS, et al. Percent change in wound area of diabetic foot ulcers over a 4-week period is a robust predictor of complete healing in a 12-week prospective trial. *Plast Reconstr Surg.* 2006;117:239S-244S.
- 5 Lipsky BA, et al. 2012 Infectious Diseases Society of America Clinical Practice Guideline for the Diagnosis and Treatment of Diabetic Foot Infections. *CID.* 2012;54:132.

Rogers LC, et al. The Charcot foot in diabetes. *Diabetes Care.* 2011;34:2123.

Ledermann HP, et al. Pitfalls and limitations of magnetic resonance imaging in chronic posttraumatic osteomyelitis. *Eur Radiol.* 2000;10:1815-23

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About the American Podiatric Medical Association

Founded in 1912, the American Podiatric Medical Association (APMA), headquartered in Bethesda, MD, is the largest and most influential organization supporting podiatrists. As a 501(c)6 organization, APMA represents its nearly 13,000 members as the voice to legislators, regulators, and other decision makers. In addition, APMA is a primary source for education, leadership development, and collaboration for today's podiatrist. Together with its 53 component organizations, APMA is leading the charge in advocating for the role of podiatrists and the health of their patients.

To learn more about APMA, visit www.apma.org.



For more information or to see other lists of Things Providers and Patients Should Question, visit www.choosingwisely.org.



Five Things Physicians and Patients Should Question

1

Don't prescribe antipsychotic medications to patients for any indication without appropriate initial evaluation and appropriate ongoing monitoring.

Metabolic, neuromuscular and cardiovascular side effects are common in patients receiving antipsychotic medications for any indication, so thorough initial evaluation to ensure that their use is clinically warranted, and ongoing monitoring to ensure that side effects are identified, are essential. "Appropriate initial evaluation" includes the following: (a) thorough assessment of possible underlying causes of target symptoms including general medical, psychiatric, environmental or psychosocial problems; (b) consideration of general medical conditions; and (c) assessment of family history of general medical conditions, especially of metabolic and cardiovascular disorders. "Appropriate ongoing monitoring" includes re-evaluation and documentation of dose, efficacy and adverse effects; and targeted assessment, including assessment of movement disorder or neurological symptoms; weight, waist circumference and/or BMI; blood pressure; heart rate; blood glucose level; and lipid profile at periodic intervals.

2

Don't routinely prescribe two or more antipsychotic medications concurrently.

Research shows that use of two or more antipsychotic medications occurs in 4 to 35% of outpatients and 30 to 50% of inpatients. However, evidence for the efficacy and safety of using multiple antipsychotic medications is limited, and risk for drug interactions, noncompliance and medication errors is increased. Generally, the use of two or more antipsychotic medications concurrently should be avoided except in cases of three failed trials of monotherapy, which included one failed trial of Clozapine where possible, or where a second antipsychotic medication is added with a plan to cross-taper to monotherapy.

3

Don't routinely use antipsychotics as first choice to treat behavioral and psychological symptoms of dementia.

Behavioral and psychological symptoms of dementia are defined as the non-cognitive symptoms and behaviors, including agitation or aggression, anxiety, irritability, depression, apathy and psychosis. Evidence shows that risks (e.g., cerebrovascular effects, mortality, parkinsonism or extrapyramidal signs, sedation, confusion and other cognitive disturbances, and increased body weight) tend to outweigh the potential benefits of antipsychotic medications in this population. Clinicians should generally limit the use of antipsychotic medications to cases where non-pharmacologic measures have failed and the patients' symptoms may create a threat to themselves or others. This item is also included in the American Geriatric Society's list of recommendations for "Choosing Wisely."

4

Don't routinely prescribe antipsychotic medications as a first-line intervention for insomnia in adults.

There is inadequate evidence for the efficacy of antipsychotic medications to treat insomnia (primary or due to another psychiatric or medical condition), with the few studies that do exist showing mixed results.

5

Don't routinely prescribe an antipsychotic medication to treat behavioral and emotional symptoms of childhood mental disorders in the absence of approved or evidence supported indications.

There are both on and off label clinical indications for antipsychotic use in children and adolescents. FDA approved and/or evidence supported indications for antipsychotic medications in children and adolescents include psychotic disorders, bipolar disorder, tic disorders, and severe irritability in children with autism spectrum disorders; there is increasing evidence that antipsychotic medication may be useful for some disruptive behavior disorders. Children and adolescents should be prescribed antipsychotic medications only after having had a careful diagnostic assessment with attention to comorbid medical conditions and a review of the patient's prior treatments. Efforts should be made to combine both evidence-based pharmacological and psychosocial interventions and support. Limited availability of evidence based psychosocial interventions may make it difficult for every child to receive this ideal combination. Discussion of potential risks and benefits of medication treatment with the child and their guardian is critical. A short and long term treatment and monitoring plan to assess outcome, side effects, metabolic status and discontinuation, if appropriate, is also critical. The evidence base for use of atypical antipsychotics in preschool and younger children is limited and therefore further caution is warranted in prescribing in this population.

How This List Was Created

The American Psychiatric Association (APA) created a work group of members from the Council on Research and Quality Care (CRQC) to identify, refine and ascertain the degree of consensus for five proposed items. Two rounds of surveys were used to arrive at the final list: the first round narrowed the list from more than 20 potential items by inquiring about the extent of overuse, the impact on patients' health, the associated costs of care and the level of evidence for each treatment or procedure; and the second gauged membership support for the top five and asked for suggested revisions and comments. The surveys targeted the CRQC; the Council on Geriatric Psychiatry; the Council on Children, Adolescents, and Their Families; and the Assembly, which is the APA's governing body consisting of representative psychiatrists from around the country. After the work group incorporated feedback from the two large surveys, the APA's Board of Trustees Executive Committee reviewed and unanimously approved the final list.

On April 22, 2015, APA revised item 3. [Read more about these changes and rationale.](#)

For APA disclosure and conflict of interest policy please visit www.psychiatry.org.

Sources

- American Psychiatric Association. Practice guideline for the psychiatric evaluation of adults, second edition. Am J Psychiatry. 2006 Jun;163(Suppl):3–36. Available from: <http://psychiatryonline.org/content.aspx?bookid=28§ionid=2021669>.

American Diabetes Association; American Psychiatric Association; American Association of Clinical Endocrinologists; North American Association for the Study of Obesity. Consensus development conference on antipsychotic drugs and obesity and diabetes. Diabetes Care. 2004;27(2):596-601.

Dixon L, Perkins D, Calmes C. Guideline watch (September 2009): practice guideline for the treatment of patients with schizophrenia [Internet]. Psychiatry Online. [cited 2013 Mar 8] Available from: <http://psychiatryonline.org/content.aspx?bookid=28§ionid=1682213>.

Maglione M, Ruelaz Maher A, Hu J, Wang Z, Shanman R, Shekelle PG, Roth B, Hilton L, Suttorp MJ, Ewing BA, Motala A, Perry T; Southern California Evidence-Based Practice Center. Off-label use of atypical antipsychotics: an update. Rockville, MD: Agency for Healthcare Research and Quality; 2011 Sep 437 p. Report No.: HHS290-2007-10062-1.

Nasrallah HA. Atypical antipsychotic-induced metabolic side effects: insights from receptor-binding profiles. Mol Psychiatry. 2008 Jan;13(1):27-35.
- American Psychiatric Association. Practice guideline for the treatment of patients with schizophrenia, second edition. Am J Psychiatry. 2004 Feb;161(2 Suppl):1-56. Available from: <http://psychiatryonline.org/content.aspx?bookid=28§ionid=1682213>.

Kane J, Honigfeld G, Singer J, Meltzer H. Clozapine for the treatment-resistant schizophrenic. A double-blind comparison with chlorpromazine. Arch Gen Psychiatry. 1988;45(9):789-96.

McEvoy JP, Lieberman JA, Stroup TS, Davis SM, Meltzer HY, Rosenheck RA, Swartz MS, Perkins DO, Keefe RS, Davis CE, Severe J, Hsiao JK, CATIE Investigators. Effectiveness of clozapine versus olanzapine, quetiapine, and risperidone in patients with chronic schizophrenia who did not respond to prior atypical antipsychotic treatment. Am J Psychiatry. 2006;163(4):600-10.

Maglione M, Ruelaz Maher A, Hu J, Wang Z, Shanman R, Shekelle PG, Roth B, Hilton L, Suttorp MJ, Ewing BA, Motala A, Perry T; Southern California Evidence-Based Practice Center. Off-label use of atypical antipsychotics: an update. Rockville, MD: Agency for Healthcare Research and Quality; 2011 Sep 437 p. Report No.: HHS290-2007-10062-1.

Specifications Manual for Joint Commission National Quality Measures (v2013A1). Measure Set: Hospital Based Inpatient Psychiatric Services (HBIPS), Set Measure ID: HBIPS-4.

Stahl SM, Grady MM. A critical review of atypical antipsychotic utilization: comparing monotherapy with polypharmacy and augmentation. Curr Med Chem. 2004; 11(3):313-27.
- American Psychiatric Association: Practice guideline for the treatment of patients with Alzheimer's disease and other dementias, second edition. Am J Psychiatry. 2007 Dec; 164(Dec suppl):5–56. Available from: <http://psychiatryonline.org/content.aspx?bookid=28§ionid=1679489>.

Ballard CG, Waite J, Birks J. Atypical antipsychotics for aggression and psychosis in Alzheimer's disease. Cochrane Database Syst Rev. 2006 Jan 25;(1):CD003476.

Gitlin LN, Kales HC, Lyketsos CG. Nonpharmacologic management of behavioral symptoms in dementia. JAMA. 2012 Nov 21; 308(19):2020-9.

Maglione M, Ruelaz Maher A, Hu J, Wang Z, Shanman R, Shekelle PG, Roth B, Hilton L, Suttorp MJ, Ewing BA, Motala A, Perry T; Southern California Evidence-Based Practice Center. Off-label use of atypical antipsychotics: an update. Rockville, MD: Agency for Healthcare Research and Quality; 2011 Sep 437 p. Report No.: HHS290-2007-10062-1.

Nasrallah HA. Atypical antipsychotic-induced metabolic side effects: insights from receptor-binding profiles. Mol Psychiatry. 2008 Jan;13(1):27-35.

Richter T, Meyer G, Möhler R, Köpke S. Psychosocial interventions for reducing antipsychotic medication in care home residents. Cochrane Database Syst Rev. 2012 Dec 12;CD008634.

Schneider LS, Tariot PN, Dagerman KS, Davis SM, Hsiao JK, Ismail MS, Lebowitz BD, Lyketsos CG, Ryan JM, Stroup TS, Sultzer DL, Weintraub D, Lieberman JA; CATIE-AD Study Group. Effectiveness of atypical antipsychotic drugs in patients with Alzheimer's disease. N Engl J Med. 2006;355(15):1525-38.
- American Diabetes Association; American Psychiatric Association; American Association of Clinical Endocrinologists; North American Association for the Study of Obesity. Consensus development conference on antipsychotic drugs and obesity and diabetes. Diabetes Care. 2004;27(2):596-601.

Maglione M, Ruelaz Maher A, Hu J, Wang Z, Shanman R, Shekelle PG, Roth B, Hilton L, Suttorp MJ, Ewing BA, Motala A, Perry T; Southern California Evidence-Based Practice Center. Off-label use of atypical antipsychotics: an update. Rockville, MD: Agency for Healthcare Research and Quality; 2011 Sep 437 p. Report No.: HHS290-2007-10062-1.

Nasrallah HA. Atypical antipsychotic-induced metabolic side effects: insights from receptor-binding profiles. Mol Psychiatry. 2008 Jan;13(1):27-35.
- Correll CU. Monitoring and management of antipsychotic-related metabolic and endocrine adverse events in pediatric patients. Int Rev Psychiatry. 2008; 20(2):195-201.

Findling RL, Drury SS, Jensen PS, Rapoport JL; AACAP Committee on Quality Issues. Practice parameter for the use of atypical antipsychotic medications in children and adolescents [Internet]. American Academy of Child and Adolescent Psychiatry. [cited 2013 Mar 3]. Available from: http://www.aacap.org/galleries/PracticeParameters/Atypical_Antipsychotic_Medications_Web.pdf.

Loy JH, Merry SN, Hetrick SE, Stasiak K. Atypical antipsychotics for disruptive behaviour disorders in children and youths. Cochrane Database Syst Rev. 2012 Sep 12;9:CD008559.

Zito JM, Burcu M, Ibe A, Safer DJ, Magder LS. Antipsychotic use by Medicaid-insured youths: impact of eligibility and psychiatric diagnosis across a decade. Psychiatr Serv. 2013 Mar 1;64(3):223-9.

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About the American Psychiatric Association

The American Psychiatric Association (APA), founded in 1844, is the world's largest psychiatric organization. It is a medical specialty society representing more than 33,000 psychiatric physicians from the United States and around the world. Its member physicians work together to ensure humane care and effective treatment for all persons with mental disorders, including intellectual disabilities and substance use disorders. APA is the voice and conscience of modern psychiatry. Participating in the *Choosing Wisely*® campaign furthers APA's mission to promote the highest quality care for individuals with mental disorders (including intellectual disabilities and substance use disorders) and their families.

For more information, visit www.psychiatry.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Patients and Providers Should Question

1

Do not place a central venous catheter if peripheral vein access is a safe and effective option.

For most adult patients and donors, peripheral venous access is the safest, quickest and most easily achievable route for performing a limited number of apheresis procedures. Avoiding a central venous catheter reduces the risk of harm.

2

Do not routinely use plasma as replacement fluid for therapeutic plasma exchange unless there is a clear indication to replete a plasma component.

Plasma is a limited resource with added concern for potential transmission of infectious agents and transfusion reactions. Albumin is an effective replacement fluid for therapeutic plasma exchange and is a safe alternative to plasma when a pathogenic protein or solute is removed without the need to replete any plasma component.

3

Do not continue simple transfusions in patients with stroke from sickle cell disease who have iron overload, if red blood cell exchange is available.

Stroke is a common cause of serious morbidity in children and mortality in adults with sickle cell disease. Exchange transfusion is a more effective method than simple transfusions to prevent both recurrent strokes and the complications of iron overload.

4

Do not routinely monitor coagulation tests during a course of therapeutic plasma exchange, unless the procedure is performed daily.

For most indications, therapeutic plasma exchange can be performed on an intermittent schedule using clotting factor deficient replacement fluid without the need for routine monitoring of the patient's hemostasis status. Daily treatments significantly reduce clotting factors; therefore, coagulation testing may be appropriate.

5

Do not routinely continue a series of apheresis procedures without a predefined objective goal, and stop the series if it is apparent that the goal cannot be reached or adverse effects outweigh potential benefits.

Apheresis procedures are performed sequentially until a predefined objective goal is reached. When the goal is either achieved or is determined to be unreachable the burden and potential adverse effects of performing additional procedures outweighs the potential benefits.

How This List Was Created

Recommendations were drafted by the ASFA Choosing Wisely Working Group, which consisted of nine society members from the major committees of ASFA. Guiding principles included a focus on frequent practices that should be questioned, are supported by evidence, free from harm, truly necessary and not duplicative of other procedures or tests. Nine draft statements were reviewed, rated and ranked, using a nominal group scoring approach, by 41 physician and allied health members representing a diverse cross-section of apheresis medicine practitioners and content experts. The top five draft recommendations, chosen by cumulative rating and ranking scores, were further refined before submission to the Board of Directors and the ABIM Foundation for external review. Recommendations were incorporated by the ASFA Choosing Wisely Working Group into the final list, which was ultimately approved by the Board of Directors for publication and distribution.

ASFA Choosing Wisely Working Group – (Committee representation)

Michael Linenberger, MD (Chair) – University of Washington/Fred Hutchinson Cancer Research Center

Joseph Schwartz, MD, MPH (Research Committee) – Columbia University Irving Medical Center

Sarita Joshi, MD (Communications Committee) – Cleveland Clinic Foundation

Meghan Delaney, DO, MPH (Clinical Applications Committee) – Children’s National Health System

Christine Fernandez, RN, MSN/Ed, OCN (Allied Health Committee) – Consultant

Laura Connelly-Smith, MBBCh, DM (JCA Special Issue Committee) – University of Washington/Fred Hutchinson Cancer Research Center

Vishesh Chhibber, MD (Education Committee) – Northwell Health

Yvette Tanheco, MD, PhD, MS (Apheresis Physicians Committee) – Columbia University Irving Medical Center

Quentin Eichbaum, MD, PhD, MPH (International Affairs Committee) – Vanderbilt University

Sources

- Putensen D, Leverett D, Patel B, Rivera J. Is peripheral access for apheresis procedures underutilized in clinical practice? – A single centre experience. *J Clin Apher.* 2017;32(6):553-59.
O’Leary MF, Dunbar NM, Kim HC, Draper NL, Linenberger M, Schwartz J, Miller Y, Murtaugh A, West FB, Fernando LP, Park YA. Venous access for hematopoietic progenitor cell collection: An international survey by the ASFA HPC donor subcommittee. *J Clin Apher.* 2016;31(6):529-34.
Foundation for the Accreditation of Cellular Therapy. *FACT-JACIE International Standards for Hematopoietic Cellular Therapy Product Collection, Processing, and Administration*, 6th edition. University of Nebraska Medical Center: FACT;2015.
- Schwartz J, Padmanabhan A, Aqai N, Balogun RA, Connelly-Smith L, Delaney M, Dunbar NM, Witt V, Wu Y, Shaz BH. Guidelines on the Use of Therapeutic Apheresis in Clinical Practice-Evidence-Based Approach from the Writing Committee of the American Society for Apheresis: The Seventh Special Issue. *J Clin Apher.* 2016;31(3):149-338.
Yang L, Stanworth S, Hopewell S, et al. Is fresh-frozen plasma clinically effective? An update of a systematic review of randomized controlled trials. *Transfusion.* 2012;52(8):1673-86.
Roback JD, Caldwell S, Carson J et al. Evidence-based practice guidelines for plasma transfusion. *Transfusion.* 2010;50(6):1227-39.
- Sarode R, Ballas SK, Garcia A, Kim HC, King K, Sachais B, Williams LA. Red blood cell exchange: 2015 American Society for Apheresis consensus conference on the management of patients with sickle cell disease. *J Clin Apher.* 2017;32(5):342-67.
Howard J. Sickle cell disease: when and how to transfuse. *Hematology Am Soc Hematol Educ Program.* 2016;2016(1):625-31.
National Heart, Lung, and Blood Institute. *Evidence-Based Management of Sickle Cell Disease. Expert Panel Report, 2014.*
- Weinstein R. Basic Principles of Therapeutic Blood Exchange. In: McLeod BC, Szczepiorkowski ZM, Weinstein R, Winters JL, eds. *Apheresis: Principles and Practice, 3rd edition.* Bethesda, MD: AABB Press, 2010:269-93.
Tek I, Arslan, O, Arat M, Ozcan M, Akdag B, Ilhan O. Effects of replacement fluids on coagulation system used for therapeutic plasma exchange. *Transfus Apher Sci.* 2003;28(1):3-7.
Zantek ND, Morgan S, Zantek PF, Mair DC, Bowman RJ, Aysola A. Effect of therapeutic plasma exchange on coagulation parameters in patients on warfarin. *J Clin Apher.* 2014;29(2):75-82.
- Schwartz J, Padmanabhan A, Aqai N, Balogun RA, Connelly-Smith L, Delaney M, Dunbar NM, Witt V, Wu Y, Shaz BH. Guidelines on the Use of Therapeutic Apheresis in Clinical Practice-Evidence-Based Approach from the Writing Committee of the American Society for Apheresis: The Seventh Special Issue. *J Clin Apher.* 2016;31(3):149-338.

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About the ASFA

The American Society for Apheresis (ASFA) is the premier organization of physicians, scientists, and allied health professionals whose mission is to advance apheresis medicine for patients, donors, and practitioners through education, evidence-based practice, research, and advocacy. ASFA creates guidelines for the appropriate use of apheresis techniques, provides education for apheresis practitioners, and promotes research in apheresis medicine, as well as provides information for patients regarding apheresis procedures. For more information about ASFA, please visit www.apheresis.org.



For more information or to see other lists of Five Things Patients and Providers Should Question, visit www.choosingwisely.org.



Five Things Physicians and Patients Should Question

1

Don't routinely use peripheral blood stem cells for patients with aplastic anemia when a suitable bone marrow donor is available due to a higher risk of graft-versus-host disease.

While faster engraftment with filgrastim-mobilized peripheral blood stem cells results in quicker recovery of peripheral blood counts compared to bone marrow in patients with aplastic anemia, the higher rate of graft-versus-host disease may be detrimental.

2

Don't use greater than 2 mg/kg/day of methylprednisolone (or equivalent) for the initial treatment of graft-versus-host disease.

Published studies have shown no advantage to using methylprednisolone-equivalent doses higher than 2 mg/kg/day in acute graft-versus-host disease. In addition, using higher doses increases risks of corticosteroid related toxicity. Furthermore, at least in patients with grade I-II acute graft-versus-host disease, initial therapy with lower-dose corticosteroids at 1 mg/kg/day may be equivalent.

3

Don't routinely use two cord blood units for standard umbilical cord blood transplantation when a single unit of adequate size is available, recognizing that higher cell doses are preferred when using units with greater HLA mismatch.

Randomized trials demonstrate similar clinical outcomes after single-unit and double-unit umbilical cord blood transplantation, including comparable rates of relapse, engraftment failure, overall survival, and transplantation related mortality. Moreover, graft-versus-host disease may be more frequent after double-cord blood transplantation.

4

Don't routinely use peripheral blood stem cells for matched unrelated donor transplantation using myeloablative conditioning and standard graft-versus-host disease prevention regimens when a suitable bone marrow donor is available.

Patients undergoing myeloablative matched unrelated donor hematopoietic cell transplantation with standard graft-versus-host disease prophylaxis (calcineurin inhibitor and methotrexate) with a peripheral blood stem cell graft experience more symptomatic chronic graft-versus-host disease than those receiving bone marrow, without affecting relapse rates or overall survival. Peripheral blood stem cells may be considered in cases with substantial recipient/donor size discrepancy, donor preference, and for malignant diseases with high risk for graft failure.

5

Don't routinely give immunoglobulin replacement to adult hematopoietic cell transplantation recipients in the absence of recurrent infections regardless of the IgG level.

Meta-analyses of controlled trials conclude that immunoglobulin replacement offers no advantage for infection prevention and overall survival, and may predispose to a higher risk of hepatic sinusoidal obstruction syndrome and venous thromboembolism, and impair the efficacy of post-transplant vaccinations. There may be subsets of patients where prophylactic immunoglobulin replacement may be considered, such as in umbilical cord blood transplant recipients, in children undergoing transplantation for inherited or acquired disorders associated with B-cell deficiency, and in chronic graft-versus-host disease patients with recurrent sino-pulmonary infections.

How This List Was Created

The American Society for Blood and Marrow Transplantation (ASBMT) and Canadian Blood and Marrow Transplant Group (CBMTG) established a *Choosing Wisely* BMT Task Force whose objective was to create a list of top five practices in blood and marrow transplantation to be questioned. The Task Force consisted of representatives from ASBMT's Quality Outcomes, Education, and Practice Guidelines Committees, ASBMT's Pharmacy Special Interest Group, CBMTG Program Directors, and Center for International Blood and Marrow Transplant Research (CIBMTR). Suggestions for current transplantation practices to question were elicited from the CBMTG Program Directors, members of ASBMT's Quality Outcomes, Practice Guidelines and Education committees, and chairs of the CIBMTR scientific working committees. Suggestions were ranked based on their potential impact on harm reduction, cost reduction, necessity of the test or practice, and the strength of available evidence. Through a modified Delphi process, suggestions were narrowed down to six, which were then subjected to systematic reviews. After further discussion by the Task Force, the final five recommendations were generated.

Sources

- 1 Killick SB, Bown N, Cavenagh J, et al. Guidelines for the diagnosis and management of adult aplastic anaemia. *British journal of Haematology*. 2016;172:187-207.
- 2 Barone A, Lucarelli A, Onofrillo D, et al. Diagnosis and management of acquired aplastic anemia in childhood. Guidelines from the Marrow Failure Study Group of the Pediatric Haemato-Oncology Italian Association (AIEOP). *Blood cells, Molecules & Diseases*. 2015;55:40-47.
- 3 Martin PJ, Rizzo JD, Wingard JR, et al. First- and second-line systemic treatment of acute graft-versus-host disease: recommendations of the American Society of Blood and Marrow Transplantation. *Biology of Blood and Marrow Transplantation*. 2012;18:1150-1163.
- 4 Wagner JE, Jr., Eapen M, Carter S, et al. One-unit versus two-unit cord-blood transplantation for hematologic cancers. *The New England Journal of Medicine*. 2014;371:1685-1694.
- 5 Hough R, Danby R, Russell N, et al. Recommendations for a standard UK approach to incorporating umbilical cord blood into clinical transplantation practice: an update on cord blood unit selection, donor selection algorithms and conditioning protocols. *British Journal of Haematology*. 2016;172:360-370.
- 6 Anasetti C, Logan BR, Lee SJ, et al. Peripheral-blood stem cells versus bone marrow from unrelated donors. *The New England Journal of Medicine*. 2012;367:1487-1496.
- 7 Lee SJ, Logan B, Westervelt P, et al. Comparison of Patient-Reported Outcomes in 5-Year Survivors Who Received Bone Marrow vs Peripheral Blood Unrelated Donor Transplantation: Long-term Follow-up of a Randomized Clinical Trial. *JAMA Oncology*. 2016;2:1583-1589.
- 8 Tomblyn M, Chiller T, Einsele H, et al. Guidelines for preventing infectious complications among hematopoietic cell transplantation recipients: a global perspective. *Biology of Blood and Marrow Transplantation*. 2009;15:1143-1238.
- 9 Raanani P, Gafter-Gvili A, Paul M, Ben-Bassat I, Leibovici L, Shpilberg O. Immunoglobulin prophylaxis in hematopoietic stem cell transplantation: systematic review and meta-analysis. *Journal of Clinical Oncology*. 2009;27:770-781.

About the ABIM Foundation

The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.



To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the American Society for Blood and Marrow

The American Society for Blood and Marrow Transplantation (ASBMT) is an international professional membership association of physicians, investigators and other healthcare professionals involved in blood and marrow transplantation and novel cellular therapies. The ASBMT represents the interests of transplant clinicians and investigators and the patients they serve in eight broad areas: research, representation, clinical standards, regulation, communications, accreditation, reimbursement, and recruiting and training clinical personnel.



Canadian Blood and Marrow Transplant

The Canadian Blood and Marrow Transplant Group (CBMTG) is a member-led, national, multidisciplinary organization providing leadership and promoting excellence in patient care, research and education in the field of blood and marrow transplantation in Canada.



For more information or to see other lists of Things Providers and Patients Should Question, visit www.choosingwisely.org.

Twenty Things Physicians and Patients Should Question

1

Don't perform population based screening for 25-OH-Vitamin D deficiency.

Vitamin D deficiency is common in many populations, particularly in patients at higher latitudes, during winter months and in those with limited sun exposure. Over the counter Vitamin D supplements and increased summer sun exposure are sufficient for most otherwise healthy patients. Laboratory testing is appropriate in higher risk patients when results will be used to institute more aggressive therapy (e.g., osteoporosis, chronic kidney disease, malabsorption, some infections, obese individuals).

2

Don't perform low risk HPV testing.

National guidelines provide for HPV testing in patients with certain abnormal Pap smears and in other select clinical indications. The presence of high risk HPV leads to more frequent examination or more aggressive investigation (e.g., colposcopy and biopsy). There is no medical indication for low risk HPV testing (HPV types that cause genital warts or very minor cell changes on the cervix) because the infection is not associated with disease progression and there is no treatment or therapy change indicated when low risk HPV is identified.

3

Avoid routine preoperative testing for low risk surgeries without a clinical indication.

Most preoperative tests (typically a complete blood count, Prothrombin Time and Partial Prothomboplastin Time, basic metabolic panel and urinalysis) performed on elective surgical patients are normal. Findings influence management in under 3% of patients tested. In almost all cases, no adverse outcomes are observed when clinically stable patients undergo elective surgery, irrespective of whether an abnormal test is identified. Preoperative testing is appropriate in symptomatic patients and those with risks factors for which diagnostic testing can provide clarification of patient surgical risk.

4

Only order Methylated Septin 9 (SEPT9) to screen for colon cancer on patients for whom conventional diagnostics are not possible.

Methylated Septin 9 (SEPT9) is a plasma test to screen patients for colorectal cancer. Its sensitivity and specificity are similar to commonly ordered stool guaiac or fecal immune tests. It offers an advantage over no testing in patients that refuse these tests or who, despite aggressive counseling, decline to have recommended colonoscopy. The test should not be considered as an alternative to standard diagnostic procedures when those procedures are possible.

5

Don't use bleeding time test to guide patient care.

The bleeding time test is an older assay that has been replaced by alternative coagulation tests. The relationship between the bleeding time test and the risk of a patient's actually bleeding has not been established. Further, the test leaves a scar on the forearm. There are other reliable tests of coagulation available to evaluate the risks of bleeding in appropriate patient populations.

Twenty Things Physicians and Patients Should Question

6

Don't order an erythrocyte sedimentation rate (ESR) to look for inflammation in patients with undiagnosed conditions. Order a C-reactive protein (CRP) to detect acute phase inflammation.

CRP is a more sensitive and specific reflection of the acute phase of inflammation than is the ESR. In the first 24 hours of a disease process, the CRP will be elevated, while the ESR may be normal. If the source of inflammation is removed, the CRP will return to normal within a day or so, while the ESR will remain elevated for several days until excess fibrinogen is removed from the serum.

7

Don't test vitamin K levels unless the patient has an abnormal international normalized ratio (INR) and does not respond to vitamin K therapy.

Measurements of the level of vitamin K in the blood are rarely used to determine if a deficiency exists. Vitamin K deficiency is very rare, but when it does occur, a prolonged prothrombin time (PT) and elevated INR will result. A diagnosis is typically made by observing the PT correction following administration of vitamin K, plus the presence of clinical risk factors for vitamin K deficiency.

8

Don't prescribe testosterone therapy unless there is laboratory evidence of testosterone deficiency.

With the increased incidence of obesity and diabetes, there may be increasing numbers of older men with lower testosterone levels that do not fully meet diagnostic or symptomatic criteria for hypogonadism. Current clinical guidelines recommend making a diagnosis of androgen deficiency only in men with consistent symptoms and signs coupled with unequivocally low serum testosterone levels. Serum testosterone should only be ordered on patients exhibiting signs and symptoms of androgen deficiency.

9

Don't test for myoglobin or CK-MB in the diagnosis of acute myocardial infarction (AMI). Instead, use troponin I or T.

Unlike CK-MB and myoglobin, the release of troponin I or T is specific to cardiac injury.

Troponin is released before CK-MB and appears in the blood as early as, if not earlier than, myoglobin after AMI. Approximately 30% of patients experiencing chest discomfort at rest with a normal CK-MB will be diagnosed with AMI when evaluated using troponins. Single-point troponin measurements equate to infarct size for the determination of the AMI severity. Accordingly, there is much support for relying solely on troponin and discontinuing the use of CK-MB and other markers.

10

Don't order multiple tests in the initial evaluation of a patient with suspected non-neoplastic thyroid disease. Order thyroid-stimulating hormone (TSH), and if abnormal, follow up with additional evaluation or treatment depending on the findings.

The TSH test can detect subclinical thyroid disease in patients without symptoms of thyroid dysfunction. A TSH value within the reference interval excludes the majority of cases of primary overt thyroid disease. If the TSH is abnormal, confirm the diagnosis with free thyroxine (T4).

Twenty Things Physicians and Patients Should Question

11 **Do not routinely perform sentinel lymph node biopsy or other diagnostic tests for the evaluation of early, thin melanoma because these tests do not improve survival.**

Sentinel lymph node biopsy (SLNB) is a minimally invasive staging procedure developed to identify patients with subclinical nodal metastases at higher risk of occurrence, who could be candidates for complete lymph node dissection or adjuvant systemic therapy. The National Comprehensive Cancer Network (NCCN) Melanoma Panel does not recommend SLNB for patients with in situ melanoma (stage 0). In general, the panel does not recommend SLNB for Stage 1A or 1B lesions that are very thin (0.75mm or less). In the rare event that a conventional high-risk feature is present, the decision about SLNB should be left to the patient and the treating physician.

12 **Do not routinely order expanded lipid panels (particle sizing, nuclear magnetic resonance) as screening tests for cardiovascular disease.**

A standard lipid profile includes total cholesterol, low-density lipoprotein (LDL) cholesterol, high-density lipoprotein (HDL) cholesterol, and triglycerides. These lipids are carried within lipoprotein particles that are heterogeneous in size, density, charge, core lipid composition, specific apolipoproteins, and function. A variety of lipoprotein assays have been developed that subfractionate lipoprotein particles according to some of these properties such as size, density or charge. However, selection of these lipoprotein assays for improving assessment of risk of cardiovascular disease and guiding lipid-lowering therapies should be on an individualized basis for intermediate to high-risk patients only. They are not indicated for population based cardiovascular risk screening.

Research evaluating the frequency and correlates of repeat lipid testing in patients with CHD demonstrates that individuals with LDL-C levels of less than 100mg/dl had no additional benefit from the intensification of lipid-lowering therapies. Understanding the frequency and correlates of redundant lipid testing could identify areas for quality improvement initiatives aimed at improving the efficiency of cholesterol care in patients with coronary heart disease (CHD).

Millions of U.S. adults are at increased ASCVD risk—some because they have had an ASCVD event, others because of ASCVD risk factors. Adherence to healthy lifestyle behaviors, control of blood pressure and diabetes, and avoidance of smoking is recommended for all adults. Statin therapy should be used to reduce ASCVD risk in individuals likely to have a clear net benefit (those with clinical ASCVD) or in primary prevention for adults with LDL-C levels over 190 mg/dL, those aged 40 to 75 years with diabetes, and those with a 10-year ASCVD risk 7.5% without diabetes. A clinician–patient discussion that considers potential ASCVD risk reduction, adverse effects, and patient preferences is needed to decide whether to initiate statin therapy, especially in lower-risk primary prevention.

13 **Do not test for amylase in cases of suspected acute pancreatitis. Instead, test for lipase.**

Amylase and lipase are digestive enzymes normally released from the acinar cells of the exocrine pancreas into the duodenum. Following injury to the pancreas, these enzymes are released into the circulation. While amylase is cleared in the urine, lipase is reabsorbed back into the circulation. In cases of acute pancreatitis, serum activity for both enzymes is greatly increased.

Serum lipase is now the preferred test due to its improved sensitivity, particularly in alcohol-induced pancreatitis. Its prolonged elevation creates a wider diagnostic window than amylase. In acute pancreatitis, amylase can rise rapidly within 3–6 hours of the onset of symptoms and may remain elevated for up to five days. Lipase, however, usually peaks at 24 hours with serum concentrations remaining elevated for 8–14 days. This means it is far more useful than amylase when the clinical presentation or testing has been delayed for more than 24 hours.

Current guidelines and recommendations indicate that lipase should be preferred over total and pancreatic amylase for the initial diagnosis of acute pancreatitis and that the assessment should not be repeated over time to monitor disease prognosis. Repeat testing should be considered only when the patient has signs and symptoms of persisting pancreatic or peripancreatic inflammation, blockage of the pancreatic duct or development of a pseudocyst. Testing both amylase and lipase is generally discouraged because it increases costs while only marginally improving diagnostic efficiency compared to either marker alone.

Twenty Things Physicians and Patients Should Question

14

Do not request serology for *H. pylori*. Use the stool antigen or breath tests instead.

Serologic evaluation of patients to determine the presence/absence of *Helicobacter pylori* (*H. pylori*) infection is no longer considered clinically useful. Alternative noninvasive testing methods (e.g., the urea breath test and stool antigen test) exist for detecting the presence of the bacteria and have demonstrated higher clinical utility, sensitivity, and specificity. Additionally, both the American College of Gastroenterology and the American Gastroenterology Association recommend either the breath or stool antigen tests as the preferred testing modalities for active *H. pylori* infection. Finally, several laboratories have dropped the serological test from their menus, and many insurance providers are no longer reimbursing patients for serologic testing.

15

Do not perform fluorescence in situ hybridization (FISH) for myelodysplastic syndrome (MDS)-related abnormalities on bone marrow samples obtained for cytopenias when an adequate conventional karyotype is obtained.

The presence of certain clonal abnormalities in the bone marrow or blood of patients with cytopenia(s) establishes or strongly supports the diagnosis of MDS, in some cases even in the absence of diagnostic morphologic findings. MDS FISH panels typically employ probes for four or more genetic loci, making this an expensive test. Multiple studies have demonstrated the added value of MDS FISH on bone marrow is extremely low when a satisfactory karyotype is obtained (20 interpretable metaphases). MDS FISH can be performed post hoc in the event of an unsatisfactory karyotype.

16

Do not order a frozen section on a pathology specimen if the result will not affect immediate (i.e., intraoperative or perioperative) patient management.

Although the result of an intraoperative frozen section evaluation is often helpful to determine the treatment path of a patient during a surgical procedure, the frozen section analysis may be limited in regards to sampling and technical issues that can hinder interpretation and/or compromise the integrity of the specimen for the final diagnosis. If there is no therapeutic decision to be made for the patient on the day of the surgical procedure based on the results of the frozen section, it is preferable to submit the specimen for routine (or rush, if necessary) histologic processing and permanent section evaluation.

17

Do not repeat hemoglobin electrophoresis (or equivalent) in patients who have a prior result and who do not require therapeutic intervention or monitoring of hemoglobin variant levels.

Pre-conception and antenatal hemoglobin electrophoresis screening is recommended, especially in high prevalence areas for sickle cell disease or thalassemia, and has become routine practice in order to detect abnormalities of hemoglobins S, C, D-Punjab, E, O-Arab, Lepore, beta-thalassemia trait, delta/beta thalassemia trait, alpha thalassemia trait (2 chain deletion), and hereditary persistence of fetal hemoglobin (HPFH). Partner testing should be offered when there is a risk of a significant hemoglobinopathy in the infant. Repeat hemoglobin electrophoresis testing is required only to make a more specific diagnosis or monitor the results of interventional therapies in patients with known hemoglobinopathies. Providers should investigate prior results before requesting a repeat hemoglobin electrophoresis

Twenty Things Physicians and Patients Should Question

18

Do not test for Protein C, Protein S, or Antithrombin (ATIII) levels during an active clotting event to diagnose a hereditary deficiency because these tests are not analytically accurate during an active clotting event.

These assays may be useful to test for an acquired deficiency (i.e., disseminated intravascular coagulation) in consumptive coagulopathies. These tests are not analytically accurate during an active clotting event. Moreover they are not clinically actionable at the time of an acute clot, because the same therapeutic intervention (anticoagulation) is performed regardless of the results. Deferral to the outpatient/non-acute setting allows for the testing to be done at a time when the results would change patient management, i.e., ceasing or continuing anticoagulation. Because anticoagulation may also impact the determination of results (e.g., Protein C and Protein S decrease on warfarin, while ATIII is actually elevated), testing while on anticoagulants may also yield misleading results and should be avoided.

19

Do not order red blood cell folate levels at all. In adults, consider folate supplementation instead of serum folate testing in patients with macrocytic anemia.

Since 1998, when the U.S. and Canada mandated that foods with processed grains be fortified with folic acid, there has been a significant decline in the incidence of folate deficiency. For the rare patient suspected of having a folate deficiency, simply treating with folic acid is a more cost-effective approach than blood testing. While red blood cell folate levels have been used in the past as a surrogate for tissue folate levels or a marker for folate status over the lifetime of red blood cells, the result of this testing does not, in general, add to the clinical diagnosis or therapeutic plan.

20

Do not use sputum cytology to evaluate patients with peripheral lung lesions.

Sputum cytology is not effective for evaluating peripheral lesions. For peripheral lesion evaluation, consider alternative diagnostic approaches (e.g., image guided needle aspiration).

How This List Was Created (1–5)

The American Society for Clinical Pathology (ASCP) list was developed under the leadership of the chair of ASCP's Institute Advisory Committee and Past President of ASCP. Subject matter and test utilization experts across the fields of pathology and laboratory medicine were included in this process for their expertise and guidance. The review panel examined hundreds of options based on both the practice of pathology and evidence available through an extensive review of the literature. The laboratory tests targeted in our recommendations were selected because they are tests that are performed frequently; there is evidence that the test either offers no benefit or is harmful; use of the test is costly and it does not provide higher quality care; and, eliminating it or changing to another test is within the control of the clinician. The final list is not exhaustive (many other tests/procedures were also identified and were also worthy of consideration), but the recommendations, if instituted, would result in higher quality care, lower costs, and more effective use of our laboratory resources and personnel.

How This List Was Created (6–10)

The American Society for Clinical Pathology (ASCP) list of recommendations was developed under the leadership of the ASCP Choosing Wisely Ad Hoc Committee. This committee is chaired by an ASCP Past President and comprises subject matter and test utilization experts across the fields of pathology and laboratory medicine. The committee considered an initial list of possible recommendations compiled as the result of a survey administered to Society members serving on ASCP's many commissions, committees, and councils. The laboratory tests targeted in our recommendations were selected because they are tests that are performed frequently; there is evidence that the test either offers no benefit or is harmful; use of the test is costly and it does not provide higher quality care; and eliminating it or changing to another test is within the control of the clinician. Implementation of these recommendations will result in higher quality care, lower costs, and a more effective use of our laboratory resources and personnel.

How This List Was Created (11–15)

The American Society for Clinical Pathology (ASCP) list of recommendations was developed under the leadership of the ASCP Effective Test Utilization Subcommittee. This committee is chaired by an ASCP Past President and comprises subject matter and test utilization experts across the fields of pathology and laboratory medicine. The committee considered an initial list of possible recommendations compiled as the result of a survey administered to Society members serving on ASCP's many commissions, committees, and councils. The laboratory tests targeted in our recommendations were selected because they are tests that are performed frequently; there is evidence that the test either offers no benefit or is harmful (either entirely or in specific clinical situations); use of the test is costly and it does not provide higher quality care; and eliminating it or changing to another test is within the control of the clinician. Implementation of these recommendations will result in higher quality care, lower costs, and a more effective use of our laboratory resources and personnel.

How This List Was Created (16–20)

The American Society for Clinical Pathology (ASCP) list of recommendations was developed under the leadership of the ASCP Effective Test Utilization Steering Committee. This committee is chaired by an ASCP Past President and comprises of subject matter and test utilization experts across the fields of pathology and laboratory medicine. The committee considered a list of possible recommendations compiled as the result of a survey administered to Society members serving on ASCP's many commissions, committees and councils. In addition, an announcement was made to ASCP's membership seeking suggestions for possible recommendations to promote member involvement. The laboratory tests targeted in our recommendations were selected because they are tests that are performed frequently; there is evidence that the test either offers no benefit or is harmful; use of the test is costly and it does not provide higher quality care; and eliminating it or changing to another test is within the control of the clinician. Implementation of these recommendations will result in higher quality care, lower costs and a more effective use of our laboratory resources and personnel.

ASCPs' disclosure and conflict of interest policy can be found at www.ascp.org.

Sources

- 1 Sattar N, Welsh P, Panarelli M, Forouchi NG. Increasing requests for vitamin D measurement: Costly, confusing, and without credibility. *Lancet* [Internet]. 2012 Jan 14 [cited 2012 Oct 12];379:95-96.
Bilinski K, Boyages S. The rising cost of vitamin D testing in Australia: time to establish guidelines for testing. *Med J Aust* [Internet]. 2012 Jul 16 [cited 2012 Oct 12];197 (2):90.
Lu CM. Pathology consultation on vitamin D testing: Clinical indications for 25(OH) vitamin D measurement [Letter to the editor]. *Am J Clin Pathol* [Internet]. 2012 May [cited 2012 Oct 12];137:831.
Holick M, Binkley N, Bischoff-Ferrari H, Gordon CM, Hanley DA, Heaney RP, Murad MH, Weaver CM; Endocrine Society. Evaluation, treatment, and prevention of vitamin D deficiency: An Endocrine Society Clinical Practice Guideline. *J Clin Endocrinol Metab* [Internet]. 2011 Jul [cited 2012 Oct 12];96(7):1911-1930.
- 2 Lee JW, Berkowitz Z, Saraiya M. Low-risk human papillomavirus testing and other non recommended human papillomavirus testing practices among U.S. health care providers. *Obstet Gynecol*. 2011 Jul;118(1):4-13.
Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE, Myers ER; ACS-ASCCP-ASCP Cervical Cancer Guideline Committee. American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology Screening Guidelines for the Prevention and early Detection of Cervical Cancer. *Am J Clin Pathol* [Internet]. 2012 May-Jun [cited 2012 Oct 12];137:516-542.
Zhao C, Chen X, Onisko A, Kanbour A, Austin RM. Follow-up outcomes for a large cohort of U.S. women with negative imaged liquid-based cytology findings and positive high risk human papillomavirus test results. *Gynecol Oncol* [Internet]. 2011 Aug [cited 2012 Oct 12];122:291–296.
American Society for Colposcopy and Cervical Pathology. Descriptions of new FDA-approved HPV DNA tests. HPV Genotyping Clinical Update.[Internet]. Frederick (MD): American Society for Colposcopy and Cervical Pathology. 2009. [Cited 2012 Oct 12]. Available from: www.asccp.org/ConsensusGuidelines/HPVGenotypingClinicalUpdate/tabid/5963/Default.aspx.

3

Keay L, Lindsley K, Tielsch J, Katz J, Schein O. Routine preoperative medical testing for cataract surgery. *Cochrane Database of Systematic Reviews*. 2012, Issue 3. Art. No.: CD007293. DOI: 10.1002/14651858.CD007293.pub3.

Katz R, Dexter F, Rosenfeld K, Wolfe L, Redmond V, Agarwal D, Salik I, Goldstein K, Goodman M, Glass PS. Survey study of anesthesiologists' and surgeons' ordering of unnecessary preoperative laboratory tests. *Anesth Analg*. 2011 Jan;112(1).

Munro J, Booth A, Nicholl J. Routine preoperative testing: A systematic review of the evidence. *Health Technol Assessmen*. 1997;1(12).

Reynolds TM. National Institute for Health and Clinical Excellence guidelines on preoperative tests: The use of routine preoperative tests for elective surgery. *Ann Clin Biochem [Internet]*. 2006 Jan [cited 2012 Oct 12];43:13-16.

Capdenat Saint-Martin E, Michel P, Raymond JM Iskandar H, Chevalier C, Petitpierre MN, Daubech L, Amouretti M, Maurette P. Description of local adaptation of national guidelines and of active feedback for rationalizing preoperative screening in patients at low risk from anaesthetics in a French university hospital. *Qual Health Care [Internet]*. 1998 Mar [cited 2012 Oct 12];7:5-11.

4

Rösch T, Church T, Osborn N, Wandell M, Lofton-Day C, Mongin S, Blumenstein BA, Allen JI, Snover D, Day R, Ransohoff DF. Prospective clinical validation of an assay for methylated SEPT9 DNA for colorectal cancer screening in plasma of average risk men and women over the age of 50. *Gut*. 2010;59(suppl III):A307.

Ahliquist DA, Taylor WR, Mahoney DW, Zou H, Domanico M, Thibodeau SN, Boardman LA, Berger BM, Lidgard GP. The stool DNA test is more accurate than the plasma septin 9 test in detecting colorectal neoplasia. *Clin Gastroenterol Hepatol. [Internet]*. 2012 Mar [cited 2012 Oct 12];10(3):272-7.

5

Lehman CM, Blaylock RC, Alexander DP, Rodges GM. Discontinuation of the bleeding time test without detectable adverse clinical impact. *Clin Chem [Internet]*. 2001;47(7) [cited 2012 Oct 12]:1204-1211.

Peterson P, Hayes TE, Arkin CF, Bovill EG, Fairweather RB, Rock WA Jr, Triplett DA, Brandt JT. The preoperative bleeding time test lacks clinical benefit. *Arch Surg [Internet]*. 1998 Feb [cited 2012 Oct 20];133(2):134-139.

Lind SE. The bleeding time does not predict surgical bleeding. *Blood [Internet]*. 1991 Jun [cited 2012 Oct 20]; 77(12):2547-52.

6

Crowson CS, Rahman MU, Matteson EL. Which measure of inflammation to use? A comparison of erythrocyte sedimentation rate and C-reactive protein measurements from randomized clinical trials of golimumab in rheumatoid arthritis. *J Rheumatol*. 2009 Aug;36 (8):1606-10.

Wu AH, Lewandowski K, Gronowski AM, Grenache DG, Sokoll LJ, Magnani B. Antiquated tests within the clinical pathology laboratory. *Am J Manag Care*. 2010 Sep;16(9):e220-7.

Black S, Kushner I, Samols D. C-reactive protein. *J Biol Chem*. 2004 Nov 19;279(47):48487-90.

Henriquez-Camacho C, Losa J. Biomarkers for sepsis. *Biomed Res Int*. 2014;2014:547818.

LeLubre C, Anselin S, Zouaoui Boudjeltia K, Biston P, Piagnerelli M. Interpretation of C-reactive protein concentrations in critically ill patients. *Biomed Res Int*. 2013;2013:124021.

7

Suttie JW. Vitamin K. In: Machlin L, ed. *Handbook of Vitamins*. New York (NY): Marcel Dekker; 1984:147.

Van Winckel M, De Bruyne R, Van De Velde S, Van Biervliet S. Vitamin K, an update for the paediatrician. *Eur J Pediatr*. 2009 Feb;168(2):127-34.

Shearer MJ. Vitamin K deficiency bleeding (VKDB) in early infancy. *Blood Rev*. 2009 Mar;23(2):49-59.

Van Hasselt PM, de Koning TJ, Kvist N, de Vries E, Lundin CR, Berger R, Kimpen JL, Houwen RH, Jorgensen MH, Verkade HJ; Netherlands Study Group for Biliary Atresia Registry. Prevention of vitamin K deficiency bleeding in breastfed infants: lessons from the Dutch and Danish biliary atresia registries. *Pediatrics*. 2008 Apr;121(4):e857-63.

Booth SL, Al Rajabi A. Determinants of vitamin K status in humans. *Vitam Horm*. 2008;78:1-22.

Krasinski SD, Russell RM, Furie BC, Kriger SF, Jacques PF, Furie B. The prevalence of vitamin K deficiency in chronic gastrointestinal disorders. *Am J Clin Nutr*. 1985 Mar;41(3):639-43.

Shearer MJ, Fux, Booth SL. Vitamin K nutrition, metabolism, and requirement: current concept and future research. *Adv Nutr*. 2012 Mar;3(2):182-95.

Liebman HA, Furie BC, Tong MJ, Blanchard RA, Lo KJ, Lee SD, Coleman MS, Furie B. Des-gamma-carboxy (abnormal) prothrombin as a serum marker of primary hepatocellular carcinoma. *N Engl J Med*. 1984 May 31;310(22):1427-31.

8

Layton JB, Li D, Meier CR, Sharpless JL, Stürmer T, Jick SS, Brookhart MA. Testosterone lab testing and initiation in the United Kingdom and the United States, 2000 to 2011. *J Clin Endocrinol Metab*. 2014 Mar;99(3):835-42.

Bhasin D, Cunningham GF, Hayes FJ, Matsumoto AM, Snyder PJ, Swerdloff RS, Montori VM; Task Force, Endocrine Society. Testosterone therapy in adult men with androgen deficiency syndromes: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2010 Jun;95(6):2536-59.

Liverman CT, Blaze DG, eds. *Testosterone and aging: clinical research directions*. Washington(DC): The National Academies Press; 2004.

9

Thygesen K, Alpert JS, White HD; Joint ESC/ACC/AHA/WHF Task Force for the Redefinition of Myocardial Infarction. Jaffe AS, Apple FS, Galvani M, Katus HA, Newby LK, Ravkilde J, Chaitman B, Clemmensen PM, Dellborg M, Hod H, Porela P, Underwood R, Bax JJ, Beller GA, Bonow R, Van der Wall EE, Bassand JP, Wijns W, Ferguson TB, Steg PG, Uretsky BF, Williams DO, Armstrong PW, Antman EM, Fox KA, Hamm CW, Ohman EM, Simoons ML, Poole-Wilson PA, Gurfinkel EP, Lopez-Sendon JL, Pais P, Mendis S, Zhu JR, Wallentin LC, Fernández-Avilés F, Fox KM, Parkhomenko AN, Priori SG, Tendera M, Voipio-Pulkki LM, Vahanian A, Camm AJ, De Caterina R, Dean V, Dickstein K, Filippatos G, Funck-Brentano C, Hellemans I, Kristensen SD, McGregor K, Sechtem U, Silber S, Tendera M, Widimsky P, Zamorano JL, Morais J, Brener S, Harrington R, Morrow D, Lim M, Martinez-Rios MA, Steinhubl S, Levine GN, Gibler WB, Goff D, Tubaro M, Dudek D, Al-Attar N. Universal definition of myocardial infarction. *Circulation*. 2007 Nov 27;116(22):2634-53.

Eggers KM, Oldgren J, Nordenskjöld A, Lindahl B. Diagnostic value of serial measurement of cardiac markers in patients with chest pain: limited value of adding myoglobin to troponin I for exclusion of myocardial infarction. *Am Heart J*. 2004 Oct;148(4):574-81.

Macrae AR, Kavsak PA, Lustig V, Bhargava R, Vandersluis R, Palomaki GE, Yerna MJ, Jaffe AS. Assessing the requirement for the 6-hour interval between specimens in the American Heart Association Classification of Myocardial Infarction in Epidemiology and Clinical Research Studies. *Clin Chem*. 2006 May;52(5):812-8.

Kavsak PA, Macrae AR, Newman AM, Lustig V, Palomaki GE, Ko DT, Tu JV, Jaffe AS. Effects of contemporary troponin assay sensitivity on the utility of the early markers myoglobin and CKMB isoforms in evaluating patients with possible acute myocardial infarction. *Clin Chem Acta*. 2007 May 1;380(1-2):213-6.

Saenger AK, Jaffe AS. Requiem for a heavyweight: the demise of the creatine kinase-MB. *Circulation*. 2008 Nov 18;118(21):2200-6.

Reichlin T, Hochholzer W, Bassetti S, Steuer S, Stelzig C, Hartwiger S, Biedert S, Schaub N, Buerge C, Potocki M, Noveanu M, Breidthardt T, Twerenbold R, Winkler K, Bingisser R, Mueller C. Early diagnosis of myocardial infarction with sensitive cardiac troponin assays. *N Engl J Med*. 2009 Aug 27;361(9):858-67.

10

Garber JR, Cobin RH, Gharib H, Hennessey JV, Klein I, Mechanick JI, Pessah-Pollack R, Singer PA, Woeber KA; American Association of Clinical Endocrinologists and American Thyroid Association Taskforce on Hypothyroidism in Adults. *ATA/AACE guidelines for hypothyroidism in adults*. *Endocr Pract*. 2012 Nov-Dec;18(6):988-1028.

Dufour DR. Laboratory tests of thyroid function: uses and limitations. *Endocrinol Metab Clin North Am*. 2007 Sep;36(3):579-94, v.

U.S. Preventative Services Task Force. Screening for thyroid disease: recommendation statement. *Ann Intern Med*. 2004 Jan 20;140(2):125-7.

11

Bichakjian CK, Halpern AC, Johnson TM, Foote Hood A, Grichnik JM, Swetter SM, Tsao H, Barbosa VH, Chuang TY, Duvic M, Ho VC, Sober AJ, Beutner KR, Bhushan R, Smith Begolka W; American Academy of Dermatology. Guidelines of care for the management of primary cutaneous melanoma. *American Academy of Dermatology. J Am Acad Dermatol.* 2011 Nov;65(5):1032–47.

American Joint Committee on Cancer. *AJCC cancer staging manual.* 7th ed. New York: Springer; 2010.

National Comprehensive Cancer Network. National Comprehensive Cancer Network clinical practice guidelines in oncology (NCCN Guidelines®): melanoma. (Version 3.2015).

12

Mark McConnell, John R. Downes, Chester B. Good. Decrease the incentives to order lipid panels. *JAMA Intern Med.* 2014; 174(3):473. doi:10.1001/jamainternmed.2013.12872.

Stone NJ, Robinson JG, Lichtenstein AH, Goff DC, et al. Treatment of blood cholesterol to reduce atherosclerotic cardiovascular disease risk in adults: synopsis of the 2013 American College of Cardiology/American Heart Association Cholesterol Guideline. *Ann Intern Med.* 2014; 160: 339-343.

Stone NJ, Robinson JG, Lichtenstein AH, BaireyMerz CN, et al. 2013 ACA/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Accessed September 11, 2014.

Sulkes D, Brown BG, Krauss RM, Segrest JP, et al. The editor's roundtable: expanded versus standard lipid panels in assessing and managing cardiovascular risk. *The American Journal of Cardiology,* 15 March 2008; 101(6): 828-842.

Virani SS, Woodard LD, Wang D, Chitwood SS, et al. Correlates of repeat lipid testing in patients with coronary heart disease. *JAMA Intern Med.* 2013; 12 Aug;173(15):1439-44.

13

Basnayake C, Ratnam D. Blood test for acute pancreatitis. *Aust Prescr.* Aug 2015;38:128-30.

Lankisch PG, Burchard-Reckert S, Lehnick D. Underestimation of acute pancreatitis: patients with only a small increase in amylase/lipase levels can also have or develop severe acute pancreatitis. *Gut.* Apr 1999;44(4):542-4.

Lippi, G, Valentino, M, Cervellin G. Laboratory diagnosis of acute pancreatitis: in search of the Holy Grail. *Crit Rev Clin Lab Sci.* Jan – Feb 2012; 49(1)18-21.

Shafqet MA, Brown TV, Sharma R. Normal lipase drug-induced pancreatitis: a novel finding. *Am J Emerg Med.* Mar 2015; 33(3):476.e5-6.

Smith RC, Southwell-Keely J, Chesher D. Should serum pancreatic lipase replace serum amylase as a biomarker of acute pancreatitis? *ANZ J Surg.* Jun 2005;75(6):399-404.

Yadav D, Agarwal N, Pitchumoni CS. A critical evaluation of laboratory tests in acute pancreatitis. *Am J Gastroenterol.* Jun 2002;97(6):1309-18.

Viel JF, Foucault P, Bureau F, Albert A, Drosdowsky MA. Combined diagnostic value of biochemical markers in acute pancreatitis. *ClinChimActa.* 1990;189(2):191-198.

14

Babak Pourakbari, Mona Ghazi, Shima Mahmoudi, Setareh Mamishi, Hossein Azhdarkosh, Mehri Najafi, Bahram Kazemi, Ali Salavati, and Akbar Mirsalehian. Diagnosis of *Helicobacter pylori* infection by invasive and noninvasive tests. *Braz J Microbiol.* 2013; 44(3): 795–798. Published online 2013 Nov 15.

Elvira Garza-González, Guillermo Ignacio Perez-Perez, Héctor Jesús Maldonado-Garza, and Francisco Javier Bosques-Padilla. A review of *Helicobacter pylori* diagnosis, treatment, and methods to detect eradication. *World J Gastroenterol.* 2014 Feb 14; 20(6): 1438–1449. Published online 2014 Feb 14. doi: 10.3748/wjg.v20.i6.1438

Theel ES, Johnson RD, Plumhoff E, Hanson CA: Use of the Optum Labs Data Warehouse to assess test ordering patterns for diagnosis of *Helicobacter pylori* infection in the United States. *J Clin Microbiol* 2015 Apr;53(4):1358-1360

Wang YK, Kuo FC, Liu CJ, Wu MC, Shih HY, Wang SS, Wu JY, Kuo CH, Huang YK, Wu DC. Diagnosis of *Helicobacter pylori* infection: Current options and developments. *World J Gastroenterol.* 2015 Oct 28;21(40):11221-35. doi: 10.3748/wjg.v21.i40.11221.

Tamadon MR, Saber Far M, Soleimani A, Ghorbani R, Semnani V, Malek F, Malek M. Evaluation of noninvasive tests for diagnosis of *Helicobacter pylori* infection in hemodialysis patients. *J Nephropathol.* 2013 Oct;2(4):249-53. Epub 2013 Sep 1.

Talley NJ, Ford AC. Functional Dyspepsia. *The New England Journal of Medicine.* 2015;373:1853-63. Published online 2015 November 5.

15

Coleman JF, Theil KS, Tubbs RR, et al. Diagnostic yield of bone marrow and peripheral blood FISH panel testing in clinically suspected myelodysplastic syndromes and/or acute myeloid leukemia: a prospective analysis of 433 cases. *American Journal of Clinical Pathology* 2011;135:915-920.

Jiang H, Xue Y, Wang Q, et al. The utility of fluorescence in situ hybridization analysis in diagnosing myelodysplastic syndromes is limited to cases with karyotype failure. *Leukemia Research* 2012;36:448-452.

Pitchford CW, Hettinga AC, Reichard KK. Fluorescence in situ hybridization testing for -5/5q, -7/7q, +8, and del(20q) in primary myelodysplastic syndrome correlates with conventional cytogenetics in the setting of an adequate study. *American Journal of Clinical Pathology* 2010;133:260-264.

Seegmiller AC, Wasserman A, Kim AS, et al. Limited utility of fluorescence in situ hybridization for common abnormalities of myelodysplastic syndrome at first presentation and follow-up of myeloid neoplasms. *Leukemia & Lymphoma* 2014;55:601-605.

16

Prieto VG, Argenyi ZB, Barnhill RL, Duray PH, Elenitsas R, From L, Guitart J, Horenstein MG, Ming ME, Piepkorn MW, Rabkin MS, Reed JA, Selim MA, Trotter MJ, Johnson MM, Shea CR. Are en face frozen sections accurate for diagnosing margin status in melanocytic lesions? *Am J Clin Pathol [Internet].* 2003 Aug [cited 2017 Jul 14]; 120:203-208

Taxy JB. Frozen section and the surgical pathologist: a point of view. *Arch Pathol Lab Med [Internet].* 2009 July [cited 2017 Jul 14]; 133: 1135-1138

Roy S, Parwani AV, Dhir R, Yousem SA, Kelly SM, Pantanowitz L. Frozen section diagnosis: is there discordance between what pathologists say and what surgeons hear? *Am J Clin Pathol [Internet].* 2013 Sept [cited 2017 July 14];140:363-369

Ali R, Hanly AM, Naughton P, Castineira CF, Landers R, Cahill RA, Watson RG. Intraoperative frozen section assessment of sentinel lymph nodes in the operative management of women with symptomatic breast cancer. *World Journal of Surgical Oncology [Internet].* 2008 June [cited 2017 July 14]; 6:69-74

Huber GF, Dziegielewska P, Matthews TW, Warshawski SJ, Kmet LM, Faris P, Khalil M, Dort JC. Intraoperative frozen-section analysis for thyroid nodules: a step toward clarity or confusion? *Arch Otolaryngol Head Neck Surg [Internet].* 2007 Sept [cited 2017 July 14];133(9):874-881

17

Michigan Department of Health & Human Services. Interpretation of newborn hemoglobin screening results. [Internet]. Lansing (MI): Michigan Department of Health & Human Services. 2015. [cited 2017 July 14]. Available from: http://www.michigan.gov/documents/mdch/Interpretation_of_Newborn_Hemoglobin_Screening_Results_Sep2013_438936_7.pdf

Centers for Disease Control and Prevention, Association of Public Health Laboratories. Hemoglobinopathies: Current practices for screening, confirmation and follow-up. [Internet]. Silver Spring (MD): Centers for Disease Control and Prevention, Association of Public Health Laboratories. 2015. [cited 2017 July 14]. Available from: https://www.cdc.gov/ncbddd/sicklecell/documents/nbs_hemoglobinopathy-testing_122015.pdf

Lane PA. Newborn screening for hemoglobin disorders. [Internet]. 2001. [cited 2017 July 14]. Available from <https://sickle.bwh.harvard.edu/screening.html>

Ryan K, Bain BJ, Worthington D, James J, Plews D, Mason A, Roper D, Rees DC, De la Salle B, Streetly A. Significant haemoglobinopathies: guidelines for screening and diagnosis. *British Journal of Haematology, [Internet].* 2010 Jan. [cited 2017 July 14]; 149, 35–49

18

Marlar, RA, Gusman, JN. Laboratory Testing Issues for Protein C, Protein S, and antithrombin. [Internet]. 2014. [cited 2017 July 31]. Available from <http://onlinelibrary.wiley.com/doi/10.1111/ijlh.12219/full>

McPherson R, Pincus M. 2011. Henry's clinical diagnosis and management by lab methods (22nd edition). St. Louis, MO: Elsevier.

Shen, Y., Tsai, J., Taiwo, E., Gavva, C., et al. Analysis of thrombophilia test ordering practices at an academic center. 2016. [cited 2017 July 31]. Available from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4866738/>

19

Joelson DW, Fiebig EW, Wu AH. Diminished need for folate measurements among indigent populations in the post folic acid supplementation era. Arch Path Lab Med. 2007; 131(3):477-480.

Ray, JG, Vermeulen MJ, Boss SC, Cole DE. Declining rate of folate insufficiency among adults following increased folic acid food fortification in Canada. Can J Public Health. 2002;3(4):249-253.

Latif T, His ED, Rybicki LA, Adelstein DJ. Is there a role for folate determinations in current clinical practice in the USA? Clin Lab Haematol. 2004;26(6):379-383.

Shojania AM, VonKuster K. Folate assays are no longer useful diagnostic tools in medical practice. Blood. 2005;106(11 pt1):12b.

Shojania AM. Folate assays are no longer useful as screening tests for malabsorption syndrome. Now, iron and B12 deficiency are more common than folate deficiency in adults with untreated celiac disease. Blood. 2005;106(11 pt1): 12b.

20

Demay RM, The Art & Science of Cytopathology. Chicago, IL: ASCP Press; 1996

Felten MK, Knoll L, Schikowsky C, et al. Is it useful to combine sputum cytology and low-dose spiral computed tomography for early detection of lung cancer in formerly asbestos-exposed power industry workers? J Occup Med Tox. 2014; 9(14): 1-9.

Katz RL, Zaidi TM, Fernandez RL, et al. Automated detection of genetic abnormalities combined with cytology in sputum is a sensitive predictor of lung cancer. Mod Pathol. 2008; 21(8): 950-960.

Read C, Janes S, George J, Spiro S. Early lung cancer: Screening and detection. Prim Care Respir J. 2006; 15(6): 332-336.

Xiang D, Zhang B, Doll D, Shen K, Kloecker G, Freter C. Lung cancer screening: From imaging to biomarker. Biomarker Res. 2013; 1(4): 1-9.

Usman AM, Miller J, Peirson L, Fitzpatrick-Lewis D, Kenny M, Sherifali D, Raina P. Screening for lung cancer: a systematic review and meta-analysis. Prev Med [Internet] 2016 Aug. [Cited 2017 July 14]; 89:301-14.

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About the American Society for Clinical Pathology

Founded in 1922 in Chicago, the American Society for Clinical Pathology (ASCP) is a medical professional society with more than 100,000 member board-certified anatomic and clinical pathologists, residents and fellows, laboratory professionals, and students. ASCP provides excellence in education, certification, and advocacy on behalf of patients, pathologists, and laboratory professionals.



For more information, visit www.ascp.org.

Five Things Physicians and Patients Should Question

1

Don't perform vaginal cytology (Pap test) or HPV screening in women who had hysterectomy (with removal of the cervix) for reasons other than high-grade cervical dysplasia (CIN 2/3) or cancer.

Vaginal cancer after hysterectomy is very rare, less likely than breast cancer for men, for which screening is not recommended. Screening these women is more likely to discover benign changes that prompt invasive testing than to prevent cancer. Continued vaginal cytology (Pap testing) is recommended for women who had a hysterectomy for the indication of high-grade cervical dysplasia or cancer, as their risk of vaginal cancer remains elevated. Vaginal assessment may also be indicated in the presence of HPV-associated vulvar cancer.

2

Don't perform cervical cytology (Pap tests) or HPV screening in immunocompetent women under age 21.

Cervical cancer is rare in adolescents and screening does not appear to lower that risk. Screening adolescents for cervical cancer exposes them to the potential harms of tests, biopsies, and procedures, without proven benefit.

3

Don't order screening tests for low-risk HPV types.

There is no role for testing for low-risk HPV types for cervical cancer screening or patient follow-up for abnormal results. Identification of a low-risk HPV type does not change patient management or treatment. Low-risk HPV tests should not be performed.

4

Avoid treatment of CIN 1 in women under age 25.

Regardless of prior cytology, treatment of cervical intraepithelial neoplasia grade 1 (CIN 1) in women aged 21–24 years is not recommended. CIN 1 is the histologic manifestation of HPV infection, and like HPV infection in young women regression rates are high. It is uncommon for these lesions to progress.

5

Don't perform annual cervical cytology (Pap test) or annual HPV screening of immunocompetent women with a history of negative screening.

There is a slight increase in cancer risk by increasing the interval between screens. However, this risk is balanced with potential harm from more colposcopy as a result of spurious HPV infection that, in most women, will clear spontaneously and is unlikely to progress to any clinically relevant cervical disease. Based on modeling studies of 3- or 5-year intervals, the screening intervals should be greater than a year, but the current evidence does not support a longer screening interval than 3 years for cervical cytology with HPV triage or for primary HPV screening with cytology triage.

How This List Was Created

As a national medical specialty society with membership across multiple disciplines and differing healthcare providers, including doctors and advanced practice nurses, the ASCCP (The Society for Lower Genital Tract Disorders) relies on input from its committee structure and governance for document development. For the *Choosing Wisely*[®] campaign, the list was obtained through expert discussion of members of the Practice Committee. A literature search was conducted related to each item. The list was then ratified by the Society's Executive Committee and Chief Medical Officer. Due to the complexity of language around cervical cancer screening, several items use more than one term to describe the same concept (i.e., cervical cytology/Pap test, and high-grade cervical dysplasia/CIN 2/3). This was done intentionally to avoid confusion, and the statements include all terms thought to be important by members of the ASCCP. All comments from the Executive committee were incorporated into the final approved list.

Sources

- American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE, Myers ER; American Cancer Society; American Society for Colposcopy and Cervical Pathology; American Society for Clinical Pathology. *Am J Clin Pathol.* 2012 Apr;137(4):516-42. *CA Cancer J Clin.* 2012 May-Jun;62(3):147-72. *J Low Genit Tract Dis.* 2012 Jul;16(3):175-204.

ACOG Committee on Practice Bulletins – Gynecology. Cervical Cancer Screening and Prevention. Practice Bulletin #157. *Obstet Gynecol* 2016;127:e1–20
- American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE, Myers ER; American Cancer Society; American Society for Colposcopy and Cervical Pathology; American Society for Clinical Pathology. *Am J Clin Pathol.* 2012 Apr;137(4):516-42. *CA Cancer J Clin.* 2012 May-Jun;62(3):147-72. *J Low Genit Tract Dis.* 2012 Jul;16(3):175-204.

<http://seer.cancer.gov/statfacts/html/cervix.html>
- Lee JW, Berkowitz Z, Saraiya M. Low-risk human papillomavirus testing and other nonrecommended human papillomavirus testing practices among U.S. health care providers. *Obstet Gynecol.* 2011 Jul;118(1):4-13.

American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE, Myers ER; American Cancer Society; American Society for Colposcopy and Cervical Pathology; American Society for Clinical Pathology. *Am J Clin Pathol.* 2012 Apr;137(4):516-42. *CA Cancer J Clin.* 2012 May-Jun;62(3):147-72. *J Low Genit Tract Dis.* 2012 Jul;16(3):175-204.

Booth CN, Bashleben C, Filomena CA, Means MM, Wasserman PG, Souers RJ, Henry MR. Monitoring and ordering practices for human papillomavirus in cervical cytology: findings from the College of American Pathologists Gynecologic Cytopathology Quality Consensus Conference working group 5. *Arch Pathol Lab Med.* 2013 Feb;137(2):214-9.

College of American Pathologists Policy on HPV testing: <http://www.cap.org/ShowProperty?nodePath=/UCMCon/Contribution%20Folders/WebContent/pdf/hpv-testing.pdf>
- Massad LS, Einstein MH, Huh WK, Katki HA, Kinney WK, et al. 2012 updated consensus guidelines for the management of abnormal cervical cancer screening tests and cancer precursors. *Obstet Gynecol.* 2013;121:829-46.

Moscicki AB, Shiboski S, Hills NK, Powell KJ, Jay N, Hanson EN, et al. Regression of low-grade squamous intraepithelial lesions in young women. *Lancet.* 2004;364:1678-83

Cox JT, Schiffman M, Solomon D. Prospective follow-up suggests similar risk of subsequent cervical intraepithelial neoplasia grade 2 or 3 among women with cervical intraepithelial neoplasia grade 1 or negative colposcopy and directed biopsy. *Am J Obstet Gynecol.* 2003;188:1406-12.
- Stout NK, Goldhaber-Fiebert JD, Ortendahl JD, Goldie SJ. Trade-offs in cervical cancer prevention: balancing benefits and risks. *Arch Intern Med.* 2008; 168:1881–1889.

Kulasingam S, Havrilesky L, Ghebre R, Myers E. Screening for Cervical Cancer: A DecisionAnalysis for the US Preventive Services Task Force. Rockville, MD: Agency for Healthcare Research and Quality; 2011. AHRQ Publication No.11-05157-EF

American Cancer Society, American Society for Colposcopy and Cervical Pathology, and American Society for Clinical Pathology screening guidelines for the prevention and early detection of cervical cancer. Saslow D, Solomon D, Lawson HW, Killackey M, Kulasingam SL, Cain J, Garcia FA, Moriarty AT, Waxman AG, Wilbur DC, Wentzensen N, Downs LS Jr, Spitzer M, Moscicki AB, Franco EL, Stoler MH, Schiffman M, Castle PE, Myers ER; American Cancer Society; American Society for Colposcopy and Cervical Pathology; American Society for Clinical Pathology. *Am J Clin Pathol.* 2012 Apr;137(4):516-42. *CA Cancer J Clin.* 2012 May-Jun;62(3):147-72. *J Low Genit Tract Dis.* 2012 Jul;16(3):175-204.

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About the American Society for Colposcopy and Cervical Pathology

The American Society for Colposcopy and Cervical Pathology (ASCCP) was



founded in 1964 as a non-profit specialty society and since then has been the primary source of postgraduate colposcopy training not only in the United States but globally.

While ASCCP's original purpose was educating and training clinicians to use colposcopy to evaluate and manage cervical neoplasia, for almost 25 years ASCCP's expanded goal has been to improve clinician competence, performance and patient outcomes through educational activities focused around the study, prevention, diagnosis, and management of lower genital tract disorders.

The ASCCP, the American Cancer Society, and the American Society for Clinical Pathology developed guidelines for the prevention and early detection of cervical cancer.

ASCCP worked with 23 other national organizations to develop clinical practice guidelines and algorithms for the Management of Women with Abnormal Cervical Cancer Screening Tests and Cancer Precursors.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1 **Avoid an open approach for primary bariatric surgical procedures.**

Compared to an open surgical approach, laparoscopy offers several advantages including shorter hospital length of stay, and decreased morbidity and mortality.

2 **Avoid routine postoperative antibiotics.**

An appropriate selection and dosage of a preoperative parenteral antibiotic should be administered within a designated time frame to patients undergoing bariatric procedures as prophylaxis against surgical site infection. Extending the duration of prophylactic antibiotics may increase the risk of superinfection with *Clostridium difficile* and the development of antimicrobial resistance.

3 **Don't routinely use the intensive care unit for postoperative monitoring.**

Most patients undergoing bariatric surgery do not require an intensive care unit for postoperative monitoring which can have higher rates of nosocomial infections and expose patients to resistant microorganisms.

4 **Don't routinely remove the gallbladder unless clinically indicated.**

Although infrequent, the incidence of bile duct injury rates has increased since the introduction of laparoscopic cholecystectomy. Major and even minor bile duct injuries can result in life-altering complications with significant morbidity and cost. Removal of normal and asymptomatic gallbladders at the time of bariatric surgery has not been shown to be necessary and may expose a patient to possible risk of complications without proven benefit.

5 **Avoid routine use of invasive monitoring.**

Arterial and central venous catheters are associated with risk of nosocomial infections and associated morbidity. Objective data does not support routine use of invasive monitoring for patients undergoing bariatric procedures at this time.

How This List Was Created

The American Society for Metabolic and Bariatric Surgery (ASMBS) initially solicited expert opinion from surgeons who are members of the Clinical Issues Committee. This committee is responsible for drafting guidelines and position statements for the ASMBS. We also received input from the Executive Council of the ASMBS to narrow the original list down to those with highest priority.

For ASMBS' disclosure and conflict of interest policy please visit www.asmb.org.

Sources

- Masoomi H, Nguyen NT, Stamos MJ, Smith BR. Overview of outcomes of laparoscopic and open Roux-en-Y gastric bypass in the United States. *Surg Technol Int*. 2012 Dec;22:72-6.

Banka G, Woodard G, Hernandez-Boussard T, Morton JM. Laparoscopic vs open gastric bypass surgery: differences in patient demographics, safety, and outcomes. *Arch Surg*. 2012 Jun;147(6):550-6.

Reoch J, Mottillo S, Shimony A, Filion KB, Christou NV, Joseph L, Poirier P, Eisenberg MJ. Safety of laparoscopic vs open bariatric surgery: a systematic review and meta-analysis. *Arch Surg*. 2011 Nov;146(11):1314-22.

Lancaster RT, Hutter MM. Bands and bypasses: 30-day morbidity and mortality of bariatric surgical procedures as assessed by prospective, multi-center, risk-adjusted ACS-NSQIP data. *Surg Endosc*. 2008 Dec;22(12):2554-63.

Nguyen NT, Goldman C, Rosenquist CJ, Arango A, Cole CJ, Lee SJ, Wolfe BM. Laparoscopic versus open gastric bypass: a randomized study of outcomes, quality of life, and costs. *Ann Surg*. 2001 Sep;234(3):279-89.

Nguyen NT, Ho HS, Palmer LS, Wolfe BM. A comparison study of laparoscopic versus open gastric bypass for morbid obesity. *J Am Coll Surg*. 2000 Aug;191(2):149-55.
- Bratzler DW, Dellinger EP, Olsen KM, Perl TM, Auwaerter PG, Bolon MK, Fish DN, Napolitano LM, Sawyer RG, Slain D, Steinberg JP, Weinstein RA; American Society of Health-System Pharmacists; Infectious Diseases Society of America; Surgical Infection Society; Society for Healthcare Epidemiology of America. Clinical practice guidelines for antimicrobial prophylaxis in surgery. *Surg Infect (Larchmt)*. 2013 Feb;14(1):73-156.

Chopra T, Zhao JJ, Alangaden G, Wood MH, Kaye KS. Preventing surgical site infections after bariatric surgery: value of perioperative antibiotic regimens. *Expert Rev Pharmacoecon Outcomes Res*. 2010 Jun;10(3):317-28.
- Grover BT, Priem DM, Mathiason MA, Kallies KJ, Thompson GP, Kothari SN. Intensive care unit stay not required for patients with obstructive sleep apnea after laparoscopic Roux-en-Y gastric bypass. *Surg Obes Relat Dis*. 2010 Mar-Apr;4(6):165-70.

El Shobary H, Backman S, Christou N, Schricer T. Use of critical care resources after laparoscopic gastric bypass: effect on respiratory complications. *Surg Obes Relat Dis*. 2008 Nov-Dec;4(6):698-702.

Hallowell PT, Stellato TA, Petrozzi MC, Schuster M, Graf K, Robinson A, Jasper JJ. Eliminating respiratory intensive care unit stay after gastric bypass surgery. *Surgery*. 2007 Oct;142(4):608-12.

Wallace WC, Cinat ME, Nastanski F, Gornick WB, Wilson SE. New epidemiology for postoperative nosocomial infections. *Am Surg*. 2000 Sep;66(9):874-8.
- Tsirline VB, Keilani ZM, El Djouzi S, Phillips RC, Kuwada TS, Gersin K, Simms C, Stefanidis D. How frequently and when do patients undergo cholecystectomy after bariatric surgery? *Surg Obes Relat Dis*. 2014 Mar-Apr;10(2):313-21.

Moon RC, Teixeira AF, DuCoin C, Varnadore S, Jawad MA. Comparison of cholecystectomy cases after Roux-en-Y gastric bypass, sleeve gastrectomy, and gastric banding. *Surg Obes Relat Dis*. 2014 Jan-Feb;10(1):64-8.

Grover BT, Kothari SN. Biliary issues in the bariatric population. *Surg Clin North Am*. 2014 Apr;94(2):413-25.

Patel JA, Patel NA, Piper GL, Smith DE 3rd, Malhotra G, Colella JJ. Perioperative management of cholelithiasis in patients presenting for laparoscopic Roux-en-Y gastric bypass: have we reached a consensus? *Am Surg*. 2009 Jun;75(6):470-6.

Warschkow R, Tarantino I, Ukegijni K, Beutner U, Güller U, Schmied BM, Müller SA, Schultes B, Thurnheer M. Concomitant cholecystectomy during laparoscopic Roux-en-Y gastric bypass in obese patients is not justified: a meta-analysis. *Obes Surg*. 2013 Mar;23(3):397-407.

D'Hondt M, Sergeant G, Deylgat B, Devriendt D, Van Rooy F, Vansteenkiste F. Prophylactic cholecystectomy, a mandatory step in morbidly obese patients undergoing laparoscopic Roux-en-Y gastric bypass? *J Gastrointest Surg*. 2011 Sep;15(9):1532-6.

Li VK, Pulido N, Fajnwaks P, Szomstein S, Rosenthal R, Martinez-Duarte P. Predictors of gallstone formation after bariatric surgery: a multivariate analysis of risk factors comparing gastric bypass, gastric banding, and sleeve gastrectomy. *Surg Endosc*. 2009 Jul;23(7):1640-4.

Ellner SJ, Myers TT, Piorkowski JR, Mavanur AA, Barba CA. Routine cholecystectomy is not mandatory during morbid obesity surgery. *Surg Obes Relat Dis*. 2007 Jul-Aug;3(4):456-60.

Portenier DD, Grant JP, Blackwood HS, Pryor A, McMahon RL, DeMaria E. Expectant management of the asymptomatic gallbladder at Roux-en-Y gastric bypass. *Surg Obes Relat Dis*. 2007 Jul-Aug;3(4):476-9.

Papasavas PK, Gagné DJ, Ceppa FA, Caushaj PF. Routine gallbladder screening not necessary in patients undergoing laparoscopic Roux-en-Y gastric bypass. *Surg Obes Relat Dis*. 2006 Jan-Feb;2(1):41-6.

Patel KR, White SC, Tejjirian T, Han SH, Russell D, Vira D, Liao L, Patel KB, Gracia C, Haigh P, Dutson E, Mehran A. Gallbladder management during laparoscopic Roux-en-Y gastric bypass surgery: routine preoperative screening for gallstones and postoperative prophylactic medical treatment are not necessary. *Am Surg*. 2006 Oct;72(10):857-61.

Swartz DE, Felix EL. Elective cholecystectomy after Roux-en-Y gastric bypass: why should asymptomatic gallstones be treated differently in morbidly obese patients? *Surg Obes Relat Dis*. 2005 Nov-Dec;1(6):555-60.

Caruana JA, McCabe MN, Smith AD, Camara DS, Mercer MA, Gillespie JA. Incidence of symptomatic gallstones after gastric bypass: is prophylactic treatment really necessary? *Surg Obes Relat Dis*. 2005 Nov-Dec;1(6):564-7.

Villegas L, Schneider B, Provost D, Chang C, Scott D, Sims T, Hill L, Hynan L, Jones D. Is routine cholecystectomy required during laparoscopic gastric bypass? *Obes Surg*. 2004 Feb;14(1):60-6.

Hamad GG, Ikramuddin S, Gourash WF, Schauer PR. Elective cholecystectomy during laparoscopic Roux-en-Y gastric bypass: is it worth the wait? *Obes Surg*. 2003 Feb;13(1):76-81.

Sugerman HJ, Brewer WH, Shiffman ML, Brolin RE, Fobi MA, Linner JH, MacDonald KG, MacGregor AM, Martin LF, Oram-Smith JC, Popoola D, Schirmer BD, Vickers FF. A multicenter, placebo-controlled, randomized, double-blind, prospective trial of prophylactic ursodiol for the prevention of gallstone formation following gastric-bypass-induced rapid weight loss. *Am J Surg*. 1995 Jan;169(1):91-6.
- Capella JF, Capella RF. Is routine invasive monitoring indicated in surgery for the morbidly obese? *Obes Surg*. 1996 Feb;6(1):50-53.

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About the American Society for Metabolic and Bariatric Surgery

The American Society for Metabolic and Bariatric Surgery (ASMBS) is the largest society for this specialty in the world designed for surgeons and integrated health professionals. Founded in 1983, the purpose of the society is to advance the art and science of metabolic and bariatric surgery by continually improving the quality and safety of care and treatment of people with obesity and obesity-related diseases by: (1) Advancing the science of metabolic and bariatric surgery and increasing public understanding of obesity; (2) Fostering collaboration between health professionals on obesity and related diseases; (3) Providing leadership in metabolic and bariatric surgery for the multidisciplinary management of obesity; (4) Advocating for health care policy that ensures patient access to prevention and treatment of obesity; (5) Serving the educational needs of our members, the public and other professionals.

For more information, visit www.asmb.org.



For more information or to see other lists of Things Providers and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't initiate whole breast radiotherapy as a part of breast conservation therapy in women age ≥ 50 with early stage invasive breast cancer without considering shorter treatment schedules.

- Whole breast radiotherapy decreases local recurrence and improves survival of women with invasive breast cancer treated with breast conservation therapy. Most studies have utilized "conventionally fractionated" schedules that deliver therapy over 5–6 weeks, often followed by 1–2 weeks of boost therapy.
- Recent studies, however, have demonstrated equivalent tumor control and cosmetic outcome in specific patient populations with shorter courses of therapy (approximately 4 weeks). Patients and their physicians should review these options to determine the most appropriate course of therapy.

2

Don't initiate management of low-risk prostate cancer without discussing active surveillance.

- Patients with prostate cancer have a number of reasonable management options. These include surgery and radiation, as well as conservative monitoring without therapy in appropriate patients.
- Shared decision-making between the patient and the physician can lead to better alignment of patient goals with treatment and more efficient care delivery.
- ASTRO has published patient-directed written decision aids concerning prostate cancer and numerous other types of cancer. These types of instruments can give patients confidence about their choices, improving compliance with therapy.

3

Don't routinely use extended fractionation schemes (>10 fractions) for palliation of bone metastases.

- Studies suggest equivalent pain relief following 30 Gy in 10 fractions, 20 Gy in 5 fractions, or a single 8 Gy fraction.
- A single treatment is more convenient but may be associated with a slightly higher rate of retreatment to the same site.
- Strong consideration should be given to a single 8 Gy fraction for patients with a limited prognosis or with transportation difficulties.

4

Don't routinely recommend proton beam therapy for prostate cancer outside of a prospective clinical trial or registry.

- There is no clear evidence that proton beam therapy for prostate cancer offers any clinical advantage over other forms of definitive radiation therapy. Clinical trials are necessary to establish a possible advantage of this expensive therapy.

5

Don't routinely use intensity modulated radiotherapy (IMRT) to deliver whole breast radiotherapy as part of breast conservation therapy.

- Clinical trials have suggested lower rates of skin toxicity after using modern 3-D conformal techniques relative to older methods of 2-D planning.
- In these trials, the term "IMRT" has generally been applied to describe methods that are more accurately defined as field-in-field 3-D conformal radiotherapy.
- While IMRT may be of benefit in select cases where the anatomy is unusual, its routine use has not been demonstrated to provide significant clinical advantage.

Five More Things Physicians and Patients Should Question

6

Don't recommend radiation following hysterectomy for endometrial cancer patients with low-risk disease.

- Patients with low-risk endometrial cancer including no residual disease in hysterectomy despite positive biopsy, grade 1 or 2 with <50% myometrial invasion and no additional high risk features such as age >60, lymphovascular space invasion or cervical involvement have a very low risk of recurrence following surgery.
- Meta-analysis studies of radiation therapy for low-risk endometrial cancer demonstrate increased side effects with no benefit in overall survival compared with surgery alone.

7

Don't routinely offer radiation therapy for patients who have resected non-small-cell lung cancer (NSCLC) negative margins N0-1 disease.

- Patients with early stage NSCLC have several management options following surgery. These options include: observation, chemotherapy and radiotherapy.
- Two meta-analysis studies of post-operative radiotherapy in early NSCLC with node negative or N1 disease suggest increased side effects with no benefit for disease-free survival or overall survival compared to observation.
- Patients with positive margins following surgery may benefit from post-operative radiotherapy to improve local control regardless of status of their nodal disease.

8

Don't initiate non-curative radiation therapy without defining the goals of treatment with the patient and considering palliative care referral.

- Well-defined goals of therapy are associated with improved quality of life and better understanding on the part of patients and their caregivers.
- Palliative care can be delivered concurrently with anti-cancer therapies.
- Early palliative care intervention may improve patient outcomes, including survival.

9

Don't routinely recommend follow-up mammograms more often than annually for women who have had radiotherapy following breast conserving surgery.

- Studies indicate that annual mammograms are the appropriate frequency for surveillance of breast cancer patients who have had breast conserving surgery and radiation therapy with no clear advantage to shorter interval imaging.
- Patients should wait 6–12 months after the completion of radiation therapy to begin their annual mammogram surveillance.
- Suspicious findings on physical examination or surveillance imaging might warrant a shorter interval between mammograms.

10

Don't routinely add adjuvant whole brain radiation therapy to stereotactic radiosurgery for limited brain metastases.

- Primary analyses of randomized studies have demonstrated no overall survival benefit from the addition of adjuvant whole brain radiation therapy (WBRT) to stereotactic radiosurgery (SRS) in the management of selected patients with good performance status and brain metastases from solid tumors.
- The addition of WBRT to SRS is associated with diminished cognitive function and worse patient-reported fatigue and quality of life. These results are consistent with the worsened self-reported cognitive function and diminished verbal skills observed in randomized studies of prophylactic cranial irradiation for small cell or non-small-cell lung cancer.
- Patients treated with radiosurgery for brain metastases can develop metastases elsewhere in the brain. Careful surveillance and the judicious use of salvage therapy at the time of brain relapse allow appropriate patients to enjoy the highest quality of life without a detriment in overall survival. Patients should discuss these options with their radiation oncologist.

How This List Was Created (1–5)

Following approval of the participation of the American Society for Radiation Oncology (ASTRO) in the *Choosing Wisely* campaign, a survey was sent to ASTRO committees and panels related to health policy, government relations, and clinical affairs and quality in order to identify potential items for inclusion in the list. A work group, comprised of seven physicians drawn from these three areas, was also selected and convened. The work group members were asked to pick their top eight items from the total of 34 topics that had been suggested in the initial survey. The results were tabulated and a list of the highest scoring items generated, creating a short list of 13 draft items.

Three conference calls were subsequently held to further refine the list and finalize the wording of the items based on input from ASTRO's Board of Directors. A literature review was conducted for each topic by ASTRO staff and each work group member took the lead on writing text and selecting references for one or more draft items. The final items for submission were selected by ASTRO's Board of Directors. ASTRO's disclosure and conflict of interest policy can be found at: www.astro.org.

How This List Was Created (6–10)

In January 2014, the American Society for Radiation Oncology (ASTRO) formed a group to develop its second *Choosing Wisely* list, which included representatives from health policy, government relations, and clinical affairs and quality. The work group began by narrowing a list of 28 draft concepts to nine potential *Choosing Wisely* items. Next, an electronic anonymous survey was sent to the ASTRO membership to rate the value and relevancy of each of the items. The survey also included an open text box for members to comment on the suggested items and to provide additional ideas for *Choosing Wisely* items. Based on the survey results, the work group submitted a short list of eight items to the ASTRO Board of Directors, from which the Board chose five items to move forward.

Literature reviews were conducted for the five *Choosing Wisely* items selected by the Board and the group drafted verbiage, bullet points and references for each item. Following a second review by the Board of Directors, one of the items was replaced with an alternate item from the short list. The final list received approval from the Board and was then submitted to the ABIM Foundation. ASTRO's disclosure and conflict of interest policy can be found at: www.astro.org.

Sources

- Clarke M, Collins R, Darby S, Davies C, Elphinstone P, Evans E, Godwin J, Gray R, Hicks C, James S, MacKinnon E, McGale P, McHugh T, Peto R, Taylor C, Wang Y; Early Breast Cancer Trialists' Collaborative Group (EBCTCG). Effects of radiotherapy and of differences in the extent of surgery for early breast cancer on local recurrence and 15-year survival: an overview of the randomised trials. *Lancet*. 2005 Dec 17;366(9503):2087–2106.

Smith BD, Bentzen SM, Correa CR, Hahn CA, Hardenbergh PH, Ibbott GS, McCormick B, McQueen JR, Pierce LJ, Powell SN, Recht A, Taghian AG, Vicini FA, White JR, Haffty BG. Fractionation for whole breast irradiation: an American Society for Radiation Oncology (ASTRO) evidence-based guideline. *Int J Radiation Oncology Biol Phys*. 2011 Sep 1;81(1):59–68.

Early Breast Cancer Trialists' Collaborative Group (EBCTCG), Darby S, McGale P, Correa C, Taylor C, Arriagada R, Clarke M, Cutter D, Davies C, Ewertz M, Godwin J, Gray R, Pierce L, Whelan T, Wang Y, Peto R. Effect of radiotherapy after breast-conserving surgery on 10-year recurrence and 15-year breast cancer death: meta-analysis of individual patient data for 10,801 women in 17 randomised trials. *Lancet*. 2011 Nov 12;378(9804):1707–16.

Haviland JS, Owen JR, Dewar JA, Agrawal RK, Barrett J, Barrett-Lee PJ, Dobbs HJ, Hopwood P, Lawton PA, Magee BJ, Mills J, Simmons S, Sydenham MA, Venables K, Bliss JM, Yarnold JR; START Trialists' Group. The UK Standardisation of Breast Radiotherapy (START) trials of radiotherapy hypofractionation for treatment of early breast cancer: 10-year follow-up results of two randomised controlled trials. *Lancet Oncol*. 2013 Oct;14(11):1086–94.
- Dahabreh IJ, Chung M, Balk EM, Yu WW, Mathew P, Lau J, Ip S. Active surveillance in men with localized prostate cancer: a systematic review. *Ann Intern Med*. 2012 Apr 17;156(8):582–90.

Witt TJ, Brawer MK, Jones KM, Barry MJ, Aronson WJ, Fox S, Gingrich JR, Wei JT, Gilhooly P, Grob BM, Nsouli I, Iyer P, Cartagena R, Snider G, Roehrborn C, Sharifi R, Blank W, Pandya P, Andriole GL, Cullin D, Wheeler T; Prostate Cancer Intervention versus Observation Trial (PIVOT) Study Group. Radical prostatectomy versus observation for localized prostate cancer. *N Engl J Med*. 2012 Jul 19;367(3):203–13.

Bill-Axelsson A, Holmberg L, Ruutu M, Garmo H, Stark JR, Busch C, Nordling S, Häggman M, Andersson SO, Brattell S, Spångberg A, Palmgren J, Steineck G, Adami HO, Johansson JE; SPCG-4 Investigators. Radical prostatectomy versus watchful waiting in early prostate cancer. *N Engl J Med*. 2011 May 5;364(18):1708–17.

Klotz L, Zhang L, Lam A, Nam R, Mamedov A, Loblaw A. Clinical results of long-term follow-up of a large, active surveillance cohort with localized prostate cancer. *J Clin Oncol*. 2010 Jan 1;28(1):126–31.

Stacey D, Bennett CL, Barry MJ, Col NF, Eden KB, Holmes-Rovner M, Llewellyn-Thomas H, Lyddiatt A, Légaré F, Thomson R. Decision aids for people facing health treatment or screening decisions. *Cochrane Database Syst Rev*. 2011 Oct 5;10:CD001431.

Hamdy FC, Donovan JL, Lane JA, Mason M, Metcalfe C, Holding P, Davis M, Peters TJ, Martin RM, Oxley J, Robinson M, Staffurth J, Walsh E, Bollina P, Catto J, Doble A, Doherty A, Gillatt D, Kockelbergh R, Kynaston H, Paul A, Powell P, Prescott S, Rosario DJ, Rowe E, Neal DE, ProtecT Study Group. 10-Year Outcomes after Monitoring, Surgery, or Radiotherapy for Localized Prostate Cancer. *N Engl J Med*. 2016 Oct 13;375(15):1415–1424.

Donovan JL, Hamdy FC, Lane JA, Mason M, Metcalfe C, Walsh E, Blazeyby JM, Peters TJ, Holding P, Bonington S, Lennon T, Bradshaw L, Cooper D, Herbert P, Howson J, Jones A, Lyons N, Salter E, Thompson P, Tidball S, Blaikie J, Gray C, Bollina P, Catto J, Doble A, Doherty A, Gillatt D, Kockelbergh R, Kynaston H, Paul A, Powell P, Prescott S, Rosario DJ, Rowe E, Davis M, Turner EL, Martin RM, Neal DE, ProtecT Study Group. Patient-Reported Outcomes after Monitoring, Surgery, or Radiotherapy for Prostate Cancer. *N Engl J Med*. 2016 Oct 13;375(15):1425–1437.

Sanda MG, Chen RC, Crispino T, Freedland S, Greene K, Klotz LH, Makarov DV, Nelson JB, Reston J, Rodrigues G, Sandler HM, Taplin ME, Cadeddu JA. Clinically Localized Prostate Cancer: AUA/ASTRO/SUO Guideline. 2017. <http://www.auanet.org/Documents/education/clinical-guidance/Clinically-Localized-Prostate-Cancer.pdf>.
- Lutz S, Berk L, Chang E, Chow E, Hahn C, Hoskin P, Howell D, Konski A, Kachnic L, Lo S, Sahgal A, Silverman L, von Gunten C, Mendel E, Vassil A, Bruner DW, Hartsell W; American Society for Radiation Oncology (ASTRO). Palliative radiotherapy for bone metastases: an ASTRO evidence-based guideline. *Int J Radiat Oncol Biol Phys*. 2011 Mar 15;79(5):965–76.

Lutz S, Balboni T, Jones J, Lo S, Petit J, Rich SE, Wong R, Hahn C. Palliative radiation therapy for bone metastases: Update of an ASTRO Evidence-Based Guideline. *Pract Radiat Oncol*. 2017 Jan-Feb;7(1):4–12.

Expert Panel On Radiation Oncology-Bone Metastases, Lutz ST, Lo SS, Chang EL, Galanopoulos N, Howell DD, Kim EY, Konski AA, Pandit-Taskar ND, Ryu S, Silverman LN, Van Poznak C, Weber KL. ACR Appropriateness Criteria® non-spine bone metastases. *J Palliat Med*. 2012 May;15(5):521–26.

Chow E, Zheng L, Salvo N, Dennis K, Tsao M, Lutz S. Update on the systematic review of palliative radiotherapy trials for bone metastases. *Clin Oncol (R Coll Radiol)*. 2012 Mar;24(2):112–24.
- Mohler JL, Armstrong AJ, Bahnson RR, Boston B, Busby JE, D'Amico A, Eastham JA, Enke CA, George D, Horwitz EM, Huben RP, Kantoff P, Kawachi M, Kuettel M, Lange PH, Macvicar G, Pilmack ER, Pow-Sang JM, Roach M 3rd, Rohren E, Roth BJ, Shrieve DC, Smith MR, Srinivas S, Twardowski P, Walsh PC. NCCN clinical practice guidelines in oncology: prostate cancer. *J Natl Compr Canc Netw*. 2010 Feb;8(2):162–200.

Sheets NC, Goldin GH, Meyer AM, Wu Y, Chang Y, Stürmer T, Holmes JA, Reeve BB, Godley PA, Carpenter WR, Chen RC. Intensity-modulated radiation therapy, proton therapy, or conformal radiation therapy and morbidity and disease control in localized prostate cancer. *JAMA*. 2012 Apr 18;307(15):1611–20.

Yu JB, Soulos PR, Herrin J, Cramer LD, Potosky AL, Roberts KB, Gross CP. Proton versus intensity-modulated radiotherapy for prostate cancer: patterns of care and early toxicity. *J Natl Cancer Inst*. 2013 Jan 2;105(1):25–32.

Coen JJ, Zietman AL, Rossi CJ, Grocela JA, Efsthathiou JA, Yan Y, Shipley WU. Comparison of high-dose proton radiotherapy and brachytherapy in localized prostate cancer: a case-matched analysis. *Int J Radiat Oncol Biol Phys*. 2012 Jan 1;82(1): e25–31.
- Barnett GC, Wilkinson JS, Moody AM, Wilson CB, Twyman N, Wishart GC, Burnet NG, Coles CE. Randomized controlled trial of forward-planned intensity modulated radiotherapy for early breast cancer: interim results at 2 years. *Int J Radiat Oncol Biol Phys*. 2012 Feb 1;82(2):715–23.

Donovan E, Bleakley N, Denholm E, Evans P, Gothard L, Hanson J, Peckitt C, Reise S, Ross G, Sharp G, Symonds-Taylor R, Tait D, Yarnold J; Breast Technology Group. Randomised trial of standard 2-D radiotherapy (RT) versus intensity modulated radiotherapy (IMRT) in patients prescribed breast radiotherapy. *Radiother Oncol*. 2007 Mar;82(3):254–64.

Pignol JP, Olivetto I, Rakovitch E, Gardner S, Sixel K, Beckham W, Vu TT, Truong P, Ackerman I, Paszat L. A multicenter randomized trial of breast intensity-modulated radiation therapy to reduce acute radiation dermatitis. *J Clin Oncol*. 2008 May 1;26(13): 2085–92.

Smith B, Pan I, Shih Y, Smith GL, Harris JR, Punglia R, Pierce LJ, Jaggi R, Hayman JA, Giordano SH, Buchholz TA. Adoption of intensity-modulated radiation therapy for breast cancer in the United States. *J Natl Cancer Inst*. 2011 May 18;103(10):798–809.

6

Diavolitsis V, Rademaker A, Lurain J, Hoekstra A, Strauss J, Small W Jr. Clinical outcomes in international federation of gynecology and obstetrics stage IA endometrial cancer with myometrial invasion treated with or without postoperative vaginal brachytherapy. *Int J Radiat Oncol Biol Phys.* 2012 Oct 1;84(2):415–9.

Johnson N, Cornes P. Survival and recurrent disease after postoperative radiotherapy for early endometrial cancer: systematic review and meta-analysis. *BJOG.* 2007 Nov;114(11):1313–20.

Kong A, Johnson N, Kitchener HC, Lawrie TA. Adjuvant radiotherapy for stage I endometrial cancer: an updated Cochrane systematic review and meta-analysis. *J Natl Cancer Inst.* 2012 Nov 7;104(21):1625–34.

Creutzberg CL, Nout RA. The role of radiotherapy in endometrial cancer: current evidence and trends. *Curr Oncol Rep.* 2011 Dec;13(6):472–8.

Klopp A, Smith BD, Alektiar K, Cabrera A, Damato AL, et al. The role of postoperative radiation therapy for endometrial cancer: executive summary of an American Society for Radiation Oncology evidence-based guideline. *Pract Radiat Oncol.* 2014 May-Jun;4(3):137–44.

7

Perry MC. A phase III study of surgical resection and paclitaxel/carboplatin chemotherapy with or without adjuvant radiation therapy for resected stage III non-small-cell lung cancer: cancer and leukemia group B 9734. *Clin Lung Cancer.* 2007 Jan; 8(4):268–72.

Trodella L. Adjuvant radiotherapy in non-small cell lung cancer with pathological stage I: definitive results of a phase III randomized trial. *Radiother Oncol.* 2002;62(1):11–9.

Keller SM. A randomized trial of postoperative adjuvant therapy in patients with completely resected stage II or IIIa non-small-cell lung cancer. *Eastern Cooperative Oncology Group. N Engl J Med.* 2000;343:1217–22.

Feng QF. A study of postoperative radiotherapy in patients with non-small-cell lung cancer: a randomized trial. *Int J Radiat Oncol Biol Phys.* 2000 Jul 1;47(4):925–9.

Mayer R. Postoperative radiotherapy in radically resected non-small-cell lung cancer. *Chest* 1997;112:954–9.

Rodrigues G, Choy H, Bradley J, Rosenzweig KE, Bogart J, Curran WJ Jr, Gore E, Langer C, Louie AV, Lutz S, Machtay M, Puri V, Werner-Wasik M, Videtic GM. Adjuvant radiation therapy in locally advanced non-small cell lung cancer: Executive summary of an American Society for Radiation Oncology (ASTRO) evidence-based clinical practice guideline. *Pract Radiat Oncol.* 2015 May-Jun;5(3):149–55.

8

WHO Definition of Palliative Care. World Health Organization. 2014 [cited on 2014 Aug 12]. Available from: <http://www.who.int/cancer/palliative/definition/en/>.

Bakitas M, Lyons KD, Hegel MT. Effects of a palliative care intervention on clinical outcomes in patients with advanced cancer: the Project ENABLE II randomized controlled trial. *JAMA.* 2009;302:741–9.

Higginson IJ, Evans CJ. What is the evidence that palliative care teams improve outcomes for cancer patients and their families? *Cancer J.* 2010;16:423–35.

Temel JS, Greer JA, Muzikansky A. Early palliative care for patients with metastatic non-small-cell lung cancer. *N Engl J Med.* 2010;363:733–42.

Smith T, Temin S, Alesi E. American Society of Clinical Oncology Provisional Clinical Opinion: the integration of palliative care into standard oncology care. *J Clin Oncol.* 2012;30:880–7.

9

Khatcheressian JL. Breast cancer follow-up and management after primary treatment: an American Society of Clinical Oncology Clinical Practice Guideline Update. *J Clin Oncol.* 2013 Mar 1;31(7):961–5.

Grunfeld E. Cancer practice guidelines for the care and treatment of breast cancer: follow-up after treatment for breast cancer (summary of the 2005 update). *CMAJ.* 2005 May 10;172(10):1319–20.

Gradishar WJ. NCCN Clinical Practice Guidelines in Oncology. Breast Cancer. Version 3.2014.

Rojas MP. Follow-up strategies for women treated with early breast cancer. *Cochrane Database Syst Rev.* 2005;1:CD001768.

McNaul D, Darke M, Garg M, Dale P. An evaluation of post-lumpectomy recurrence rates: is follow-up every 6 months for 2 years needed? *J Surg Oncol.* 2013;107(6):597–601.

10

Soffiatti R, Kocher M, Abacioglu UM, Villa S, Fauchon F, Baumert BG, Fariselli L, Tzuk-Shina T, Kortmann RD, Carrie C, Ben Hassel M, Kouri M, Valeinis E, van den Berge D, Mueller RP, Tridello G, Collette L, Bottomley A. A European organisation for research and treatment of cancer phase III trial of adjuvant whole-brain radiotherapy versus observation in patients with one to three brain metastases from solid tumors after surgical resection or radiosurgery: quality-of-life results. *J Clin Oncol.* 2013 Jan 1;31(1):65–72.

Chang EL, Wefel JS, Hess KR, Allen PK, Lang FF, Kornguth DG, Arbuckle RB, Swint JM, Shiu AS, Maor MH, Meyers CA. Neurocognition in patients with brain metastases treated with radiosurgery or radiosurgery plus whole-brain irradiation: a randomized controlled trial. *Lancet.* 2009 Nov;10(11):1036–44.

Aoyama H, Shirato H, Tago M, Nakagawa K, Toyoda T, Hatano K, Kenjyo M, Oya N, Hirota S, Shioura H, Kunieda E, Inomata T, Hayakawa K, Katoh N, Kobashi G. Stereotactic radiosurgery plus whole-brain radiation therapy vs stereotactic radiosurgery alone for treatment of brain metastases: a randomized controlled trial. *JAMA.* 2006 Dec 7;295(21):2483–91.

Kocher M, Soffiatti R, Abacioglu U, Villà S, Fauchon F, Baumert BG, Fariselli L, Tzuk-Shina T, Kortmann RD, Carrie C, Ben Hassel M, Kouri M, Valeinis E, van den Berge D, Collette S, Collette L, Mueller RP. Adjuvant whole-brain radiotherapy versus observation after radiosurgery or surgical resection of one to three cerebral metastases: results of the EORTC 22952–26001 study. *J Clin Oncol.* 2011 Jan 10;29(2):134–41.

Gondi V, Paulus R, Bruner DW, Meyers CA, Gore EM, Wolfson A, Werner-Wasik M, Sun AY, Choy H, Movsas B. Decline in tested and self-reported cognitive functioning after prophylactic cranial irradiation for lung cancer: pooled secondary analysis of Radiation Therapy Oncology Group randomized trials 0212 and 0214. *Int J Radiat Oncol Biol Phys.* 2013 Jul 15;86(4):656–64.

Brown PD, Jaeckle K, Ballman KV, Farace E, Cerhan JH, Anderson SK, Carrero XW, Barker FG 2nd, Deming R, Burri SH, Menard C, Chung C, Stieber VW, Pollock BE, Galanis E, Buckner JC, Asher AL. Effect of Radiosurgery Alone vs Radiosurgery With Whole Brain Radiation Therapy on Cognitive Function in Patients With 1 to 3 Brain Metastases: A Randomized Clinical Trial. *JAMA.* 2016 Jul 26;316(4):401–409.

About the ABIM Foundation

The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.

To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About the American Society for Radiation Oncology

ASTRO is the premier radiation oncology society in the world, with more than 10,000 members who are physicians, nurses, biologists, physicists, radiation therapists, dosimetrists and other health care professionals that specialize in treating patients with radiation therapies. As the leading organization in radiation oncology, the Society is dedicated to improving patient care through professional education and training, support for clinical practice and health policy standards, advancement of science and research, and advocacy. To learn more about ASTRO, visit www.astro.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Ten Things Physicians and Patients Should Question

1

Don't perform routine diagnostic laparoscopy for the evaluation of unexplained infertility.

In patients undergoing evaluation for infertility, routine diagnostic laparoscopy should not be performed unless there is a suspicion of pelvic pathology based on clinical history, an abnormal pelvic exam or abnormalities identified with less invasive testing. In patients with a normal hysterosalpingogram or the presence of a unilaterally patent tube, diagnostic laparoscopy typically will not change the initial recommendation for treatment.

2

Don't perform advanced sperm function testing, such as sperm penetration or hemizona assays, in the initial evaluation of the infertile couple.

Studies document that extreme variability exists among these tests, with very little correlation between results and outcomes. They have also been shown not to be cost-effective and often lead to more expensive treatments.

3

Don't perform a postcoital test (PCT) for the evaluation of infertility.

The PCT suffers from poor reproducibility and its predictive value for pregnancy is no better than chance. Utilizing the PCT leads to more tests and treatments but yields no improvement in cumulative pregnancy rates.

4

Don't routinely order thrombophilia testing on patients undergoing a routine infertility evaluation.

There is no indication to order these tests, and there is no benefit to be derived in obtaining them in someone that does not have any history of bleeding or abnormal clotting and in the absence of any family history. This testing is not a part of the infertility workup. Furthermore, the testing is costly, and there are risks associated with the proposed treatments, which would also not be indicated in this routine population.

5

Don't perform immunological testing as part of the routine infertility evaluation.

Diagnostic testing of infertility requires evaluation of factors involving ovulation, fallopian tube patency and spermatogenesis based upon clinical history. Although immunological factors may influence early embryo implantation, routine immunological testing of couples with infertility is expensive and does not predict pregnancy outcome.

6

Don't obtain a karyotype as part of the initial evaluation for amenorrhea.

Amenorrhea is the absence of menstruation and can be attributed to many causes. A karyotype (chromosomal analysis) is not indicated as an initial test for amenorrhea as it is not a screening test. However, it is indicated to further evaluate the etiology of an elevated follicle-stimulating hormone (FSH) in a woman under 40 years of age or in the presence of physical findings suggestive of disorders of sexual development.

7

Don't prescribe testosterone or testosterone products to men contemplating/attempting to initiate pregnancy.

Testosterone therapy is widely used as treatment for hypoandrogenemia and associated symptoms such as sexual dysfunction. However, it is well established that exogenous testosterone and other androgens can lead to decreased or absent sperm production, low sperm count, and infertility. Furthermore, this is not always reversible, even after removing the exogenous androgens.

8

Don't obtain follicle-stimulating hormone (FSH) levels in women in their 40s to identify the menopausal transition as a cause of irregular or abnormal menstrual bleeding.

Menstrual bleeding patterns for women after age 40 are less predictable than in the younger years due to the normal menopausal transition. Menopause is defined as the absence of menstrual periods for one year when no other cause can be identified (it is often accompanied by symptoms such as hot flashes and night sweats). During this time, blood levels of FSH vary both from woman to woman and from day to day in the same woman. An FSH level does not predict when the transition to menopause will occur, diagnose that it has begun or provide reassurance that contraception is no longer necessary. If there are no other causes of irregular or abnormal bleeding, the treatment for these women will not change based on the FSH level.

9

Don't perform endometrial biopsy in the routine evaluation of infertility.

Endometrial biopsy performed for histologic dating does not distinguish fertile from infertile women. Chronic endometritis on endometrial biopsy does not predict the likelihood of pregnancy in general nor is it associated with live birth rates in assisted reproductive technology cycles. Endometrial biopsy should not be utilized in the routine evaluation of infertility.

10

Don't perform prolactin testing as part of the routine infertility evaluation in women with regular menses.

It has become common practice to obtain prolactin levels in the routine infertility evaluation. However, there is no reason to expect that a woman would exhibit clinically significant, elevated prolactin levels in the presence of normal menstrual cycles and without galactorrhea (milk discharge from breast). Therefore, serum testing of prolactin levels in a normally menstruating woman without galactorrhea provides no benefit and would not impact clinical management.

How This List Was Created

The Practice Committee of the American Society for Reproductive Medicine (ASRM) reviewed evidence from ASRM's practice documents to identify possible topics along with suggestions for possible topics from the ASRM Board of Directors. By consensus, the Practice Committee narrowed the list to the top Ten most overused tests within specified parameters. Additional input was sought from the ASRM Board of Directors and members and incorporated. The final list was reviewed and approved by the ASRM Board of Directors. The ASRM Board of Directors and Practice Committee are comprised of representatives from every aspect of reproductive medicine through our five affiliated societies including the Society for Assisted Reproductive Technologies, the Society of Reproductive Surgeons, the Society for Reproductive Endocrinology and Infertility, the Society for Male Reproduction and Urology and the Society of Reproductive Biologists & Technologists.

ASRM's disclosure and conflict of interest policy can be found at www.asrm.org.

Sources

1

Pavone ME, Hirshfeld-Cytron JE, Kazer RR. The progressive simplification of the infertility evaluation. *Obstet Gynecol Surv.* 2011 Jan;66(1):31-41.

Lavy Y, Lev-Sagie A, Holtzer H, Revel A, Hurwitz A. Should laparoscopy be a mandatory component of the infertility evaluation in infertile women with normal hysterosalpingogram or suspected unilateral distal tubal pathology? *Eur J Obstet Gynecol Reprod Biol.* 2004 May 10;114(1):64-8.

Badawy A, Khiary M, Ragab A, Hassan M, Sherif L. Laparoscopy - or not - for management of unexplained infertility. *J Obstet Gynaecol.* 2010;30(7):712-5.

Bosteels J, Van Herendael B, Weyers S, D'Hooghe T. The position of diagnostic laparoscopy in current fertility practice. *Hum Reprod Update.* 2007 Sep-Oct;13(5):477-85.

2

Male Infertility Best Practice Policy Committee of the American Urological Association; Practice Committee of the American Society for Reproductive Medicine. Report on optimal evaluation of the infertile male. *Fertil Steril.* 2004; 82(suppl 1):S123-S130 (updated 2010).

Oei SG, Helmerhorst FM, Keirse MJ. Routine postcoital testing is unnecessary. *Hum Reprod.* 2001;16:1051-3.

3

Leushuis E, van der Steeg JW, Steures P, Koks C, Oosterhuis J, Bourdrez P, Bossuyt PM, van der Veen F, Mol BW, Hompes PG. CECERM study group. Prognostic value of the postcoital test for spontaneous pregnancy. *Fertil Steril.* 2011;95:2050-5.

Oei SG, Helmerhorst FM, Keirse MJ. Routine postcoital testing is unnecessary. *Hum Reprod.* 2001;16:1051-3.

Oei SG, Helmerhorst FM, Bloemenkamp KW, Meerpoel DEM, Keirse MJNC. Effectiveness of the postcoital test: randomised controlled trial. *BMJ.* 1998;317:502-5.

Glatstein IZ, Best CL, Palumbo A, Sleeper LA, Friedman A, Hornstein MD. The reproducibility of the postcoital test: a prospective study. *Obstet Gynecol.* 1995;85:396-400.

Griffith CS, Grimes DA. The validity of the postcoital test. *Am J Obstet Gynecol.* 1990;162:615-20.

Collins JA, So Y, Wilson EH, Wrixon W, Casper RF. The postcoital test as a predictor of pregnancy among 355 infertile couples. *Fertil Steril.* 1984;41:703-8.

4

Lockwood C, Wendel G; Committee on Practice Bulletins—Obstetrics. Practice bulletin no. 124: inherited thrombophilias in pregnancy. *Obstet Gynecol*. 2011 Sept;118(3):730–40.

Casadei L, Puca F, Privitera L, Zamaro V, Emidi E. Inherited thrombophilia in infertile women: implication in unexplained infertility. *Fertil Steril*. 2010 Jul;94(2):755–7.

The Practice Committee of the American Society for Reproductive Medicine. Diagnostic evaluation of the infertile female: a committee opinion. *Fertil Steril*. 2012 Aug;98:302–7.

Baglin T, Gray E, Greaves M, Hunt B, Keeling D, Machin S, Mackie I, Makris M, Nokes T, Perry D, Tait RC, Walker I, Watson H. Clinical guidelines for testing for heritable thrombophilia. *Br J Haematol*. 2010;149:209–20.

5

Cervera R, Balasch J. Bidirectional effects on autoimmunity and reproduction. *Hum Reprod*. 2008;14:359–66.

Carp HJA, Selmi C, Shoenfel Y. The autoimmune bases of infertility and pregnancy loss. *J Autoimmun*. 2012;38:J266–74.

6

Baker VL. Primary ovarian insufficiency in the adolescent. *Curr Opin Obstet Gynecol*. 2013 Oct;25(5):375–81.

Nelson LM, Covington SN, Rebar RW. An update: spontaneous premature ovarian failure is not an early menopause. *Fertil Steril*. 2005 May;83(5):1327–32.

Bachmann GA, Kemmann E. Prevalence of oligomenorrhea and amenorrhea in a college population. *Am J Obstet Gynecol*. 1982 Sep 1;144(1):98–102.

Reindollar RH, Byrd JR, McDonough PG. Delayed sexual development: a study of 252 patients. *Am J Obstet Gynecol*. 1981 Jun 15;140(4):371–80.

Reindollar RH, Novak M, Tho SP, McDonough PG. Adult-onset amenorrhea: a study of 262 patients. *Am J Obstet Gynecol*. 1986 Sep;155(3):531–43.

Klein DA, Poth MA. Amenorrhea: an approach to diagnosis and management. *Am Fam Physician*. 2013 Jun 1;87(11):781–8.

7

Amory JK. Progress and prospects in male hormonal contraception. *Curr Opin Endocrinol Diabetes Obes*. 2008 Jun;15(3):255–60.

Gu Y, Liang X, Wu W, Liu M, Song S, Cheng L, Bo L, Xiong C, Wang X, Liu X, Peng L, Yao K. Multicenter contraceptive efficacy trial of injectable testosterone undecanoate in Chinese men. *J Clin Endocrinol Metab*. 2009;94(6):1910–5.

Moss JL, Crosnoe LE, Kim ED. Effect of rejuvenation hormones on spermatogenesis. *Fertil Steril*. 2013 Jun;99(7):1814–20.

8

Paramsothy P, Harlow SD, Greendale GA, Gold EB, Crawford SL, Elliott MR, Lisabeth LD, Randolph JF Jr. Bleeding patterns during the menopausal transition in the multi-ethnic Study of Women's Health Across the Nation (SWAN): a prospective cohort study. *BJOG*. 2014 Nov;121(12):1564–73.

Harlow SD, Lin X, Ho MJ. Analysis of menstrual diary data across the reproductive life span applicability of the bipartite model approach and the importance of within-woman variance. *J Clin Epidemiol*. 2000 Jul;53(7):722–33.

Treloar AE, Boynton RE, Behn BG, Brown BW. Variation of the human menstrual cycle through reproductive life. *Int J Fertil*. 1967 Jan-Mar;12(1 Pt 2):77–126.

Vollman RF. The degree of variability of the length of the menstrual cycle in correlation with age of woman. *Gynaecologia*. 1956 Nov;142(5):310–4.

Burger HG, Hale GE, Robertson DM, Dennerstein L. A review of hormonal changes during the menopausal transition: focus on findings from the Melbourne Women's Midlife Health Project. *Hum Reprod Update*. 2007 Nov–Dec;13(6):559–65.

Burger HG. Diagnostic role of follicle-stimulating hormone (FSH) measurements during the menopausal transition—an analysis of FSH, oestradiol and inhibin. *Eur J Endocrinol*. 1994 Jan;130(1):38–42.

9

Coutifaris C, Myers ER, Guzick DS, Diamond MP, Carson SA, Legro RS, et al; NICHD National Cooperative Reproductive Medicine Network. Histological dating of timed endometrial biopsy tissue is not related to fertility status. *Fertil Steril* 2004 Nov;82(5):1264–72.

Murray MJ, Meyer WR, Zaino RJ, Lessey BA, Novotny DB, Ireland K, Zeng D, Fritz MA. A critical analysis of the accuracy, reproducibility, and clinical utility of histologic endometrial dating in fertile women. *Fertil Steril*. 2004 May;81(5):1333–43.

Batista MC, Cartledge TP, Merino MJ, Axiotis C, Platia MP, Merriam GR, Loriaux DL, Nieman LK. Midluteal phase endometrial biopsy does not accurately predict luteal function. *Fertil Steril*. 1993 Feb;59(2):294–300.

Gibson M. Clinical evaluation of luteal function. *Semin Reprod Endocrinol*. 1990;8:130–41.

Dockery P, Li TC, Rogers AW, Cooke ID, Lenton EA, Warren MA. An examination of the variation in timed endometrial biopsies. *Hum Reprod*. 1988 Aug;3(6):715–20.

Kasius JC, Fatemi HM, Bourgain C, Sie-Go DM, Eijkemans RJ, Fauser BC, Devroey P, Broekmans FJ. The impact of chronic endometritis on reproductive outcome. *Fertil Steril*. 2011 Dec;96(6):1451–6.

Haggerty C, Ness RB, Amortegui A, Hendrix SL, Hillier SL, Holley RL, Peipert J, Randall H, Sondheimer SJ, Soper DE, Sweet RL, Trucco G. Endometritis does not predict reproductive morbidity after pelvic inflammatory disease. *Am J Obstet Gynecol*. 2003 Jan;188(1):141–8.

10

Glazener CM, Kelly NJ, Hull MG. Prolactin measurement in the investigation of infertility in women with a normal menstrual cycle. *Br J Obstet Gynaecol*. 1987 Jun;94(6):535–8.

Kostrzak A, Warenik-Szymankiewicz A, Meczekalski B. The role of serum PRL bioactivity evaluation in hyperprolactinaemic women with different menstrual disorders. *Gynecol Endocrinol*. 2009 Dec;25(12):799–806.

About the ABIM Foundation

The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.

To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About the American Society for Reproductive Medicine

The American Society for Reproductive Medicine (ASRM) is a multidisciplinary organization dedicated to the advancement of the art, science and practice of reproductive medicine. The Society accomplishes its mission through the pursuit of excellence in education and research and through advocacy on behalf of patients, physicians and affiliated health care providers. The Society is committed to facilitating and sponsoring educational activities for the lay public and continuing medical education activities for professionals who are engaged in the practice of and research in reproductive medicine.

For more information about ASRM, visit www.asrm.org.



For more information or to see other lists of Things Providers and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1 **Don't obtain baseline laboratory studies in patients without significant systemic disease (ASA I or II) undergoing low-risk surgery – specifically complete blood count, basic or comprehensive metabolic panel, coagulation studies when blood loss (or fluid shifts) is/are expected to be minimal.**

Performing routine laboratory tests in patients who are otherwise healthy is of little value in detecting disease. Evidence suggests that a targeted history and physical exam should determine whether pre-procedure laboratory studies should be obtained. The current recommendation from the 2003 ASA amendment that all female patients of childbearing age be offered pregnancy testing rather than required to undergo testing has provided individual physicians and hospitals the opportunity to set their own practices and policies relating to preoperative pregnancy testing. Some institutions respect the right of a patient to refuse testing after a thorough explanation of the anesthetic risks during pregnancy and the required signing of a waiver. The avoidance of the routine administration of the pregnancy test was therefore excluded from our Top 5 preoperative recommendations.

The risk specifically related to the surgical procedure could however modify the above preoperative recommendation to obtain laboratory studies and when the need arises; the decision to implement should include a joint decision between the anesthesiologists and surgeons. This should be applicable to all outpatient surgery.

2 **Don't obtain baseline diagnostic cardiac testing (trans-thoracic/esophageal echocardiography – TTE/TEE) or cardiac stress testing in asymptomatic stable patients with known cardiac disease (e.g., CAD, valvular disease) undergoing low or moderate risk non-cardiac surgery.**

Advances in cardiovascular medical management, particularly the introduction of perioperative beta-blockade and improvements in surgical and anesthetic techniques, have significantly decreased operative morbidity and mortality rates in noncardiac surgery. Surgical outcomes continue to improve causing the mortality rate of major surgeries to be low and the need for revascularization minimal. Consequently, the role of preoperative cardiac stress testing has been reduced to the identification of extremely high-risk patients, for instance, those with significant left main disease for which preoperative revascularization would be beneficial regardless of the impending procedure. In other words, testing may be appropriate if the results would change management prior to surgery, could change the decision of the patient to undergo surgery, or change the type of procedure that the surgeon will perform.

3 **Don't use pulmonary artery catheters (PACs) routinely for cardiac surgery in patients with a low risk of hemodynamic complications (especially with the concomitant use of alternative diagnostic tools (e.g., TEE).**

The increased risk of hemodynamic complications as indicated above is defined as a patient with clinical evidence of significant cardiovascular disease; pulmonary dysfunction, hypoxia, renal insufficiency or other conditions associated with hemodynamic instability (e.g., advanced age, endocrine disorders, sepsis, trauma, burns).

The use of a PAC during cardiac surgery has been associated with increased mortality and a higher risk of severe end-organ complications. There is clear consensus in the literature that the use of a PAC cannot be recommended as a matter of routine, but for a definite role in a very select group of patients undergoing cardiac surgery. According to a survey by practicing anesthesiologists, the use of PAC could be recommended for specific indications in cardiac surgery including coronary artery bypass grafting (CABG) with poor left ventricular (LV) function, LV aneurysmectomy, recent myocardial infarction, pulmonary hypertension, diastolic dysfunction, acute ventricular septal rupture and insertion of left ventricular assist device. The appropriate indications remain debatable. However, although the PAC has no role in routine perioperative care, the existence of a specific subpopulation for which the use of this device may be beneficial cannot be excluded.

4

Don't administer packed red blood cells (PRBCs) in a young healthy patient without ongoing blood loss and hemoglobin of ≥ 6 g/dL unless symptomatic or hemodynamically unstable.

The hemoglobin transfusion threshold used in multiple studies has varied from 6.0 to 10.0 g/dL. The optimal hemoglobin/hematocrit criterion for transfusion remains controversial in several clinical settings. Nevertheless, compared with higher hemoglobin thresholds, a lower hemoglobin threshold is associated with fewer red blood cell units transfused without adverse associations with mortality, cardiac morbidity, functional recovery or length of hospital stay. Hospital mortality remains lower in patients randomized to a lower hemoglobin threshold for transfusion versus those randomized to a higher hemoglobin threshold.

The decision to transfuse should be based on a combination of both clinical and hemodynamic parameters.

5

Don't routinely administer colloid (dextrans, hydroxylethyl starches, albumin) for volume resuscitation without appropriate indications.

There is no evidence from multiple randomized controlled trials and recent reviews/meta-analyses that resuscitation with colloids reduces the risk of death compared to crystalloids. Colloids offer no survival benefit and are considerably more expensive than crystalloids; their continued routine use in clinical practice should therefore be questioned. Recent perioperative data on the use of colloids in certain populations remain controversial; nevertheless, there is consensus on the avoidance of the routine use of colloids for volume resuscitation in the general surgical population given the overwhelming amount of evidence in the literature of possible harm when used in un-indicated patients. Health care providers should refer to the current evolving literature when faced with specific conditions like sepsis, traumatic brain injury, acute renal injury and burns thereby creating a forum for discussion among the care providers of the efficacy of such a treatment in that individual patient.

Nevertheless, it is important to note that the endpoint in most studies is mortality and morbidity. There is insufficient data to adequately address the need of colloids over crystalloids for other endpoints of interest like hypotension, need for blood transfusion, length of hospital stay, etc. Further research may be required to delineate the existence of any particular benefits of colloids over crystalloids.

How This List Was Created

The list started as an academic project of Onyi C. Onuoha, M.D., M.P.H. A review of the literature and practice guidelines as approved by the American Society of Anesthesiologists (ASA) was performed to identify an evidence-based list of activities to question within the field of anesthesiology. A multi-step survey of anesthesiologists in both the academic and private sector and ASA Committees of Jurisdiction was performed to generate a “Top 5 List” list of preoperative and intraoperative activities. The final list was endorsed by the ASA and accepted for the *Choosing Wisely*[®] campaign. We believe that developing strategies whereby all stakeholders in the perioperative team are involved in the implementation is a means in which anesthesiologists could be engaged in the efforts to reduce over-utilization of low value, non-indicated medical services evident in the U.S. health system today.

ASA's disclosure and conflict of interest policy can be found at www.asahq.org.

Sources

Committee on Standards and Practice Parameters, Apfelbaum JL, Connis RT, Nickinovich DG; American Society of Anesthesiologists Task Force on Preanesthesia Evaluation, Pasternak LR, Arens JF, Caplan RA, Connis RT, Fleisher LA, Flowerdew R, Gold BS, Mayhew JF, Nickinovich DG, Rice LJ, Roizen MF, Twersky RS. Practice advisory for preanesthesia evaluation: an updated report by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. *Anesthesiology*. 2012 Mar;116(3):522–38.

Kumar A, Srivastava U. Role of routine laboratory investigations in preoperative evaluation. *J Anaesthesiol Clin Pharmacol*. 2011;27(2):174–9.

Mollov JL, Twersky RS. (2013). Is routine preoperative pregnancy testing necessary? In L. Fleisher, Evidence-based practice of anesthesiology (3rd ed., pp. 26-30). Philadelphia (PA): Elsevier Saunders.

Soares Dde S, Brandao RR, Mourao MR, Azevedo VL, Figueiredo AV, Trindade ES. Relevance of routine testing in low risk patients undergoing minor and medium surgical procedures. *Rev Bras Anesthesiol*. 2013;63(2):197–201.

Brown SR, Brown J. Why do physicians order preoperative test? A qualitative study. *Fam Med*. 2011;43(5):338–43.

Czoski-Murray C, Lloyd JM, McCabe C, Claxton K, Oluboyede Y, Roberts J, Nicholls JP, Rees A, Reilly CS, Young D, Fleming T. What is the value of routinely testing full blood count, electrolytes and urea, and pulmonary function test before elective surgery in patients with no apparent clinical indication and in subgroups of patients with common comorbidities: a systematic review of the clinical and cost-effective literature. *Health Technol Assess*. 2012;16(50):1–159.

Katz RI, Dexter F, Rosenfeld K, Wolfe L, Redmond V, Agarwal D, Salik I, Goldstein K, Goodman M, Glass PS. Survey study of anesthesiologists' and surgeons' ordering of unnecessary preoperative laboratory tests. *Anesth Analg*. 2011;112(1):207–12.

Keay L, Lindsley K, Tielsch J, Katz J, Schein O. Routine preoperative testing for cataract surgery. *Cochrane Database Syst Rev*. 2012;3:CD007293.

Committee on Standards and Practice Parameters, Apfelbaum JL, Connis RT, Nickinovich DG; American Society of Anesthesiologists Task Force on Preanesthesia Evaluation, Pasternak LR, Arens JF, Caplan RA, Connis RT, Fleisher LA, Flowerdew R, Gold BS, Mayhew JF, Nickinovich DG, Rice LJ, Roizen MF, Twersky RS. Practice advisory for preanesthesia evaluation: an updated report by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. *Anesthesiology*. 2012 Mar;116(3):522–38.

Miller AL, Beckman JA. (2013). Which patient should have a preoperative cardiac evaluation (stress test)? In L. Fleisher, Evidence-based practice of anesthesiology (3rd ed., pp. 61–70). Philadelphia (PA): Elsevier Saunders.

Schiefermueller J, Myerson S, Handa AI. Preoperative assessment and perioperative management of cardiovascular risk. *Angiology*. 2013;64(2):146–50.

Sheffield KM, McAdams PS, Benarroch-Gampel J, Goodwin JS, Boyd CA, Zhang D, Riall TS. Overuse of preoperative cardiac stress testing in medicare patients undergoing elective noncardiac surgery. *Ann Surg*. 2013; 257(1):73–80.

Almanaseer Y, Mukherjee D, Kline-Rogers EM, Kesterson SK, Sonnad SS, Roges B, Smith D, Furney S, Ernst R, McCort J, Eagle KA. Implementation of the ACC/AHA guidelines for preoperative cardiac risk assessment in a general medicine preoperative clinic: improving efficiency and preserving outcomes. *Cardiology*. 2005;103(1):24–9.

Cinello M, Nucifora G, Bertolissi M, Badano LP, Fresco C, Gonano N, Fioretti PM. American College of Cardiology/American Heart Association perioperative assessment guidelines for noncardiac surgery reduces cardiologic resource utilization preserving favorable outcome. *J Cardiovasc Med*. 2007;8(11):882–8.

Augoustides JG, Neuman MD, Al-Ghofaily L, Silvay G. Preoperative cardiac risk assessment for noncardiac surgery: defining costs and risks. *J Cardiothorac Vasc Anesth*. 2013;27(2):395–9.

Falcone RA, Nass C, Jermyn R, Hale CM, Stierer T, Jones CE, Walters GK, Fleisher LA. The value of preoperative pharmacologic stress testing before vascular surgery using ACC/AHA guidelines: a prospective randomized trial. *J Cardiothorac Vasc Anesth*. 2003;17(6):694–8.

Poldermans D, Boersma E. Beta-blocker therapy in noncardiac surgery. *N Engl J Med*. 2005;353:412–4.

American Society of Anesthesiologists Task Force on Pulmonary Artery Catheterization. Practice guidelines for pulmonary artery catheterization. *Anesthesiology*. 2003 Oct; 99:988–1014.

Schwann NM, Hillel Z, Hoelt A, Barash P, Mohnle P, Miao Y, Mangano DT. Lack of effectiveness of the pulmonary artery catheter in cardiac surgery. *Anesth Analg*. 2011;113(5):994–1002.

Rajaram SS, Desai NK, Kalra A, Gajera M, Cavanaugh SK, Brampton W, Young D, Harvey S, Bowan K. Pulmonary artery catheters for adult patients in intensive care. *Cochrane Database Syst Rev*. 2013;2:CD003408.

Kanchi M. Do we need a pulmonary artery catheter in cardiac anesthesia? – An Indian perspective. *Ann Card Anaesth*. 2011;14(1):25–9.

Harvey S, Stevens K, Harrison D, Young D, Brampton W, McCabe C, Singer M, Rowan K. An evaluation of the clinical and cost-effectiveness of pulmonary artery catheters in patient management in intensive care: a systematic review and a randomized controlled trial. *Health Technol Assess*. 2006;10(29):1–133.

Ramsey SD, Saint S, Sullivan SD, Day L, Kelley K, Bowdye A. Clinical and economic effects of pulmonary artery catheterization in nonemergent coronary artery bypass surgery. *J Cardiothorac Vasc Anesth*. 2000;14(2):113–8.

Chatterjee K. Historical Perspectives in Cardiology. The Swan-Ganz catheters: past, present, and future – a viewpoint. *Circulation*. 2009;119:147–52.

Sandham JD, Hull RD, Brant RF, Knox L, Pineo GF, Doig CJ, Laporta DP, Viner S, Passerini L, Devitt H, Kirby A, Jacka M; Canadian Critical Care Clinical Trials Group. A randomized, controlled trial of the use of pulmonary-artery catheters in high-risk surgical patients. *N Engl J Med*. 2003;348:5–14.

Miller AL, Beckman JA. (2013). Which patient should have a preoperative cardiac evaluation (stress test)? In L. Fleisher, Evidence-based practice of anesthesiology (3rd ed., pp. 61–70). Philadelphia (PA): Elsevier Saunders.

4

American Society of Anesthesiologists Task Force on Perioperative Blood Transfusion and Adjuvant Therapies. Practice guidelines for perioperative blood transfusion and adjuvant therapies. *Anesthesiology*. 2006 Jul;105(1):198–208.

Carson JL, Carless PA, Hebert PC. Outcomes using lower versus higher hemoglobin thresholds for red blood cell transfusion. *JAMA*. 2013;309(1):83–4.

Carson JL, Patel MS. (2013). Is there an optimal perioperative hemoglobin level? In L. Fleisher, Evidence-based practice of anesthesiology (3rd ed., pp. 155–163). Philadelphia (PA): Elsevier Saunders.

Goodnough LT, Levy JH, Murphy MF. Concepts of blood transfusion in adults. *Lancet*. 2013;381(9880):1845–54.

Carson JL, Carless PA, Hebert PC. Transfusion threshold and other strategies for guiding allogeneic red blood cell transfusion. *Cochrane Database Syst Rev*. 2012; 4:CD002042.

Bittencourt R, Costa J, Lobo JE, Aquiar FC. Consciously transfusion of blood products. Systematic review of indicative factors for blood components infusion trigger. *Rev Bras Anesthesiol*. 2012;62(3):402–10.

Carson JL, Grossman BJ, Kleinman S, Tinmouth AT, Marques MB, Fung MK, Holcomb JB, Illoh O, Kaplan LJ, Katz LM, Rao SV, Roback JD, Shander A, Tobian AA, Weinstein R, Swinton-McLaughlin LG, Djulbegovic B, Clinical Transfusion Medicine Committee of the AABB. Red blood cell transfusion: a clinical perspective guideline from the AABB. *Ann Intern Med*. 2012;157(1):49–58.

Toy P, Feiner J, Viele MK, Watson J, Yeap H, Weiskopf RB. Fatigue during acute isovolemic anemia in healthy resting humans. *Transfusion*. 2000;40(4):457–60.

5

Committee on Standards and Practice Parameters, Apfelbaum JL, Connis RT, Nickinovich DG; American Society of Anesthesiologists Task Force on Preanesthesia Evaluation, Pasternak LR, Arens JF, Caplan RA, Connis RT, Fleisher LA, Flowerdew R, Gold BS, Mayhew JF, Nickinovich DG, Rice LJ, Roizen MF, Twersky RS. Practice advisory for preanesthesia evaluation: an updated report by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. *Anesthesiology*. 2012 Mar;116(3):522–38.

Perel P, Roberts I, Pearson M. Colloid versus crystalloid for fluid resuscitation in critically ill patients (Review). *The Cochrane Collaboration, the Cochrane Library* 2009;3.

Perel P, Roberts I, Ker K. Colloids versus crystalloids for fluid resuscitation in critically ill patients. *Cochrane Database Syst Rev*. 2013 Feb 28;2.

Perel P, Roberts I. Colloids versus crystalloids for fluid resuscitation in critically ill patients. *Cochrane Database Syst Rev*. 2012 Jun 13;6.

Perel P, Roberts I. Colloids versus crystalloids for fluid resuscitation in critically ill patients. *Cochrane Database Syst Rev*. 2011 Mar 16;(3):CD000567.

Perel P, Roberts I. Colloids versus crystalloids for fluid resuscitation in critically ill patients. *Cochrane Database Syst Rev*. 2007 Oct 17;(4):CD000567.

Roberts I, Alderson P, Bunn F, Chinnock P, Ker K, Schierhout G. Colloids versus crystalloids for fluid resuscitation in critically ill patients. *Cochrane Database Syst Rev*. 2004 Oct 18;(3):CD000567.

Kruer RM, Ensor CR. Colloids in the intensive care unit. *Am J Health Syst Pharm*. 2012 Oct 1;69(19):1635–42.

NATA: Network for Advancement and Transfusion Alternatives. Crystalloids versus colloids: the controversy [Internet]. NATA. 2013 [cited 2013 Sep 20]. Available from: <http://www.nataonline.com/np/158/crystalloids-versus-colloids-controversy>.

Reinhart K, Perner A, Sprung CL, Jaeschke R, Schortgen F, Johan Groeneveld AB, Beale R, Hartog CS; European Society of Intensive Care Medicine. Consensus statement of the ESICM task force on colloid volume therapy in critically ill patients. *Intensive Care Med*. 2012;38(3):368–83.

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About the American Society of Anesthesiologists

The American Society of Anesthesiologists (ASA) is an educational research and scientific association of physicians organized to raise and maintain the standards of the medical practice of anesthesiology and improves the care of the patient. Since its founding in 1905, the Society's achievements have made it an important voice in American medicine and the foremost advocate for all patients who require anesthesia or relief from pain. As physicians, anesthesiologists are responsible for administering anesthesia to relieve pain and for managing vital life functions, including breathing, heart rhythm and blood pressure, during surgery. After surgery, they maintain the patient in a comfortable state during the recovery and are involved in the provision of critical care medicine in the intensive care unit.

For more information about ASA, visit www.asahq.org.



Five Things Physicians and Patients Should Question

1

Don't prescribe opioid analgesics as first-line therapy to treat chronic non-cancer pain.

Physicians should consider multimodal therapy, including non-drug treatments such as behavioral and physical therapies prior to pharmacological intervention. If drug therapy appears indicated, non-opioid medication (e.g., NSAIDs, anticonvulsants, etc.) should be trialed prior to commencing opioids.

2

Don't prescribe opioid analgesics as long-term therapy to treat chronic non-cancer pain until the risks are considered and discussed with the patient.

Patients should be informed of the risks of such treatment, including the potential for addiction. Physicians and patients should review and sign a written agreement that identifies the responsibilities of each party (e.g., urine drug testing) and the consequences of non-compliance with the agreement. Physicians should be cautious in co-prescribing opioids and benzodiazepines. Physicians should proactively evaluate and treat, if indicated, the nearly universal side effects of constipation and low testosterone or estrogen.

3

Avoid imaging studies (MRI, CT or X-rays) for acute low back pain without specific indications.

Imaging for low back pain in the first six weeks after pain begins should be avoided in the absence of specific clinical indications (e.g., history of cancer with potential metastases, known aortic aneurysm, progressive neurologic deficit, etc.). Most low back pain does not need imaging and doing so may reveal incidental findings that divert attention and increase the risk of having unhelpful surgery.

4

Don't use intravenous sedation for diagnostic and therapeutic nerve blocks, or joint injections as a default practice.*

Intravenous sedation, such as with propofol, midazolam or ultrashort-acting opioid infusions for diagnostic and therapeutic nerve blocks, or joint injections, should not be used as the default practice. Ideally, diagnostic procedures should be performed with local anesthetic alone. Intravenous sedation can be used after evaluation and discussion of risks, including interference with assessing the acute pain relieving effects of the procedure and the potential for false positive responses. American Society of Anesthesiologists Standards for Basic Anesthetic Monitoring should be followed in cases where moderate or deep sedation is provided or anticipated.

5

Avoid irreversible interventions for non-cancer pain that carry significant costs and/or risks.

Irreversible interventions for non-cancer pain, such as peripheral chemical neurolytic blocks or peripheral radiofrequency ablation, should be avoided because they may carry significant long-term risks of weakness, numbness or increased pain.

*This recommendation does not apply to pediatric patients.

How This List Was Created

The American Society of Anesthesiologists (ASA) Committee on Pain Medicine was charged with developing the “Top 5 List” on pain medicine for the *Choosing Wisely*® campaign. Committee members submitted potential recommendations for the campaign, and from this list voted on which recommendations should be included in the final “Top 5 List.” The literature was then searched to provide supporting evidence. The Committee communicated electronically and met in person during the development and approval process. Once approved by the Committee, the “Top 5 List” was reviewed by ASA’s Chair of the Section on Subspecialties, Vice President for Scientific Affairs, Executive Committee and Administrative Council. ASA’s “Top 5 List” for pain medicine has been endorsed by the American Pain Society.

ASA’s disclosure and conflict of interest policy can be found at www.asahq.org.

Sources

- Chou R, Fanciullo GJ, Fine PG, Adler JA, Ballantyne JC, Davies P, Donovan MI, Fishbain DA, Foley KM, Fudin J, Gilson AM, Kelter A, Mauskop A, O’Connor PG, Passik SD, Pasternak GW, Portenoy RK, Rich BA, Roberts RG, Todd KH, Miaskowski C. Clinical guidelines for the use of chronic opioid therapy in chronic noncancer pain [Internet]. *J Pain*. 2009 Feb [cited 2014 Jan 10];10(2):113–30. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/19187889>

American Society of Anesthesiologists Task Force on Chronic Pain Management, American Society of Regional Anesthesia and Pain Medicine. Practice guidelines for chronic pain management: an updated report by the American Society of Anesthesiologists Task Force on Chronic Pain Management and the American Society of Regional Anesthesia and Pain Medicine. *Anesthesiology*. 2010 Apr;112(4):810–33.

Argoff CE, Albrecht P, Irving G, Rice F. Multimodal analgesia for chronic pain: rationale and future directions. *Pain Med*. 2009;10(S2):S53–66.
- Manchikanti L, Abdi S, Atluri S, Balog CC, Benyamin RM, Boswell MV, Brown KR, Bruel BM, Bryce DA, Burks PA, Burton AW, Calodney AK, Caraway DL, Cash KA, Christo PJ, Damron KS, Datta S, Deer TR, Diwan S, Eriator I, Falco FJ, Fellows B, Geffert S, Gharibo CG, Glaser SE, Grider JS, Hameed H, Hameed M, Hansen H, Harned ME, Hayek SM, Helm S 2nd, Hirsch JA, Janata JW, Kaye AD, Kaye AM, Kloth DS, Koyyalagunta D, Lee M, Malla Y, Manchikanti KN, McManus CD, Pampati V, Parr AT, Pasupuleti R, Patel VB, Sehgal N, Silverman SM, Singh V, Smith HS, Snook LT, Solanki DR, Tracy DH, Vallejo R, Wargo BW; American Society of Interventional Pain Physicians. American Society of Interventional Pain Physicians (ASIPP) guidelines for responsible opioid prescribing in chronic non-cancer pain: Part 2—guidance. *Pain Physician*. 2012 July;15:S67–116.

Atluri S, Akbik H, Sudarshan G. Prevention of opioid abuse in chronic non-cancer pain: an algorithmic, evidence based approach. *Pain Physician*. 2012 Jul;15:ES177–89.

Colameco S, Coren JS, Ciervo CA. Continuous opioid treatment for chronic noncancer pain: a time for moderation in prescribing. *Postgrad Med*. 2009;121(4):61–6.

Kahan M, Srivastava A, Wilson L, Gourlay D, Midmer D. Misuse of and dependence on opioids: study of chronic pain patients. *Can Fam Physician*. 2006;52(9):1081–7.

Warner EA. Opioids for the treatment of chronic noncancer pain. *Am J Med*. 2012;125(12):1155–61.
- Chou R, Fu R, Carrino JA, Deyo RA. Imaging strategies for low-back pain: systematic review and meta-analysis. *Lancet*. 2009;373(9662):463–72.

Chou R, Gaseem A, Snow V, Casey D, Cross JT, Shekelle P, Owens DK; Clinical Efficacy Assessment Subcommittee of the American College of Physicians; American College of Physicians; American Pain Society Low Back Pain Guidelines Panel. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. *Ann Intern Med*. 2007;147(7):478–91.

Davis PC, Wippold FJ, Brunberg JA, Cornelius RS, De La Paz RL, Dormont PD, Gray L, Jordan JE, Mukherji SK, Seidenwurm DJ, Turski PA, Zimmerman RD, Sloan MA. ACR appropriateness criteria on low back pain. *J Am Coll Radiol*. 2009;6(6):401–7.

Kendrick D, Fielding K, Bentley E, Miller P, Kerslake R, Pringle M. The role of radiography in primary care patients with low back pain of at least 6 weeks duration: a randomized (unblinded) controlled trial. *Health Technol Assess*. 2001;5(30):1–69.

Miller P, Kendrick D, Bentley E, Fielding K. Cost-effectiveness of lumbar spine radiography in primary care patients with low back pain. *Spine*. 2002;27(20):2291–7.
- American Society of Anesthesiologists Task Force on Chronic Pain Management, American Society of Regional Anesthesia and Pain Medicine. Practice guidelines for chronic pain management: an updated report by the American Society of Anesthesiologists Task Force on Chronic Pain Management and the American Society of Regional Anesthesia and Pain Medicine. *Anesthesiology*. 2010 Apr;112(4):810–33.

Cohen SP, Raja SN. Pathogenesis, diagnosis and treatment of lumbar zygapophysial (facet) joint pain. *Anesthesiology*. 2007 Mar;106:591–614.

Dreyfuss P, Cohen S, Chen AS, Bohart Z, Bogduk N. Is immediate pain relief after a spinal injection procedure enhanced by intravenous sedation? *PM R* 2009;1:60–3.

Manchikanti L, Pampati V, Damron KS, McManus CD, Jackson SD, Barnhill RC, Martin JC. The effect of sedation on diagnostic validity of facet joint nerve blocks: an evaluation to assess similarities in population with involvement in cervical and lumbar regions. *Pain Physician*. 2006;9:47–52.

Smith HS, Colson J, Sehgal N. An update of evaluation of intravenous sedation on diagnostic spinal injection procedures. *Pain Physician*. 2013;16:SE17–28.
- American Society of Anesthesiologists Task Force on Chronic Pain Management, American Society of Regional Anesthesia and Pain Medicine. Practice guidelines for chronic pain management: an updated report by the American Society of Anesthesiologists Task Force on Chronic Pain Management and the American Society of Regional Anesthesia and Pain Medicine. *Anesthesiology*. 2010 Apr;112(4):810–33.

Jackson TP, Gaeta R. Neurolytic blocks revisited. *Curr Pain Headache Rep*. 2008 Jan;12(1):7–13.

Mallis A, Furlan A. Sympathectomy for neuropathic pain. *Cochrane Database Syst Rev* 2003; 2:CD002918. Update in *Cochrane Database Syst Rev*. 2010;(7):CD002918.

About the ABIM Foundation

The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.

To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About the American Society of Anesthesiologists

The American Society of Anesthesiologists (ASA) is an educational research and scientific association of physicians organized to raise and maintain the standards of the medical practice of anesthesiology and improve the care of the patient. Since its founding in 1905, the Society’s achievements have made it an important voice in American medicine and the foremost advocate for all patients who require anesthesia or relief from pain. As physicians, anesthesiologists are responsible for administering anesthesia to relieve pain and for managing vital life functions, including breathing, heart rhythm and blood pressure, during surgery. After surgery, they maintain the patient in a comfortable state during the recovery and are involved in the provision of critical care medicine in the intensive care unit.

For more information about ASA, visit www.asahq.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't routinely order breast MRI in new breast cancer patients.

After a new diagnosis of breast cancer, breast MRI can be useful in selected patients to aid treatment decisions. However, there is a lack of evidence that routine use of MRI lessens cancer recurrence, death from cancer or the need for re-operation after lumpectomy surgery. The routine use of MRI is associated with an increased need for subsequent breast biopsy procedures, delays in time to treatment and higher cost of care. Increased mastectomy rates can occur if the MRI finds additional cancers or indeterminate findings cause patient anxiety, leading to patient requests for mastectomy.

2

Don't routinely excise all the lymph nodes beneath the arm in patients having lumpectomy for breast cancer.

After a new diagnosis of invasive breast cancer, most patients undergoing partial breast removal (lumpectomy) benefit from a sentinel node (SN) biopsy, a procedure that removes a small number of lymph nodes beneath the arm. In the past, patients found to have cancer in any SN underwent extra surgery to remove more nodes. Recent evidence suggests further node surgery is not necessary in patients with cancer found in fewer than three SN if the patient receives other recommended cancer treatments.

3

Don't routinely order specialized tumor gene testing in all new breast cancer patients.

There are multiple new tumor multi-gene signature tests that provide selected patients with information about their risk of distant cancer recurrence, dying of cancer or the likelihood they will benefit from chemotherapy. These tests are helpful in selected patients, including those with early stage hormone receptor positive cancers with low scores on 21 gene recurrence testing, who can safely omit chemotherapy. There is no evidence these tests should be used routinely in every patient. These tests should not be done in patients who indicate the test results would not change their choice of treatment.

4

Don't routinely re-operate on patients with invasive cancer if the cancer is close to the edge of the excised lumpectomy tissue.

Patients undergoing partial breast removal (lumpectomy) of the breast for **invasive** cancer benefit from re-operation to excise more breast tissue if microscopic review of the lumpectomy breast tissue indicates cancer cells at the tissue edge. However, if cancer cells are close to the edge, but not at the actual edge, then re-operation is not mandatory but can be considered on a case-by-case basis.

5

Don't routinely perform a double mastectomy in patients who have a single breast with cancer.

After a new diagnosis of breast cancer in a single breast, many patients desire removal of both breasts, believing their cancer risk in the other breast is high and their cancer cure rate will be improved with double mastectomy. Double mastectomy should not be routinely performed in these patients until they have been provided with adequate understandable information about the generally low risk they will develop cancer in the other breast and the minimal effectiveness, if any, of double mastectomy improving their life expectancy.

How This List Was Created

The American Society of Breast Surgeons (ASBrS) Patient Safety and Quality Committee (PSQC) received approval from the ASBrS Board of Directors to create and rank a list of appropriateness domains of breast care to be submitted to the ABIM Foundation *Choosing Wisely* campaign. The PSQC discussed the goals of *Choosing Wisely* and solicited candidate measures from its members at their 2014 and 2015 Annual Meetings. The PSQC members were asked to identify measures that addressed the goals of *Choosing Wisely*. Committee members were provided with a full description of the *Choosing Wisely* campaign and its goals, as well as its emphasis on decreasing unnecessary tests and interventions. In addition, PSQC members were provided with the previous *Choosing Wisely* recommendation from other organizations for breast. Specific recommendations were made to consider domains of care that reflected appropriateness, waste and value as noted in recent publications, randomized trials and meta-analysis.

Committee members were instructed to rank candidate choices specifically as follows:

Rank for appropriateness and value of care; value to be defined by quality of care in the numerator and burdens of care in the denominator. Burdens would include cost of care and non-cost patient burdens of care, such as the unnecessary need for a second surgery or a procedure or a test. Rank based on the importance criteria of the National Quality Forum (NQF) for creation of quality measures. The four pillars of NQF importance were described to members. PSQC members were asked to consider the number of patients nationally that could be helped by our choices; i.e., the number of patients at risk for inappropriate care when you estimate the difference between perceived or measured actual care and achievable care.

After creation of a list of candidate choices, two rounds of modified Delphi process ranking were performed electronically in March, 2014 and July, 2015 following the iterative and analytic methodology described by Fitch K, Bernstein SJ, Aguilar MD, et al., in "The Rand/UCLA Appropriateness Method User's Manual". Arlington, VA: RAND, 2001. Thirty eight domain choices were included in the final round of ranking.

Each candidate choice was ranked on a scale of 1–9 where 1 meant the statement had no value or importance and was not appropriate for a patient and 9 meant it had the highest possible value, importance and appropriateness. Panelists were asked to score by their opinion, not how they thought other surgeons or experts would score it.

After each round of ranking, a spreadsheet with ranking results was provided to committee members. The spreadsheet was formatted from top to bottom by committee median score. Inter-round electronic communication followed with opportunity for participants to discuss the choices, lobbying for either increasing or decreasing a choice's rank.

There were 16 choices deemed appropriate (median score 7–9) by the panelists as defined by the Rand/UCLA User's Manual. The top five choices had median ranks of 8 or 9. Four of the ASBrS top five choices were already part of the *Choosing Wisely* Campaign of other organizations, so these were excluded from the ASBrS final list. To finish our list of five, we used the next highest ranked choices.

The final list of five choices was distributed to the entire PSQC twice by email for further vetting. As a result, minor word edits but no substantive content changes were made. Subsequently, the document was reviewed and edited by the ASBrS Research Committee, then sent to the ASBrS Board of Directors for review. The ASBrS Board of Directors approved the final five choices in April 2016.

ASBrS Patient Safety and Quality Committee Members:

Jeffrey Landercasper MD, Gundersen Medical Foundation, La Crosse, WI, USA

Lisa Bailey MD, Bay Area Breast Surgeons, Inc., Oakland, CA USA

Tiffany S. Berry MD, Norton Healthcare, Louisville, KY, USA

Robert R. Buras MD, Anne Arundel Medical Center, Annapolis, MD, USA

Amy C. Degnim MD, Mayo Clinic, Rochester, MN, USA

Oluwadamilola M. Fayanju MD, MD Anderson, Houston, Texas

Joshua Froman MD, Mayo Clinic Health System, Owatonna, MN, USA

Jennifer Gass MD, Women and Infants Hospital, Providence, RI, USA

Caprice Greenberg MD, University of Wisconsin School of Public Health and Medicine, Madison, WI, USA

Starr Koslow Mautner MD, Baptist Health South Florida, Miami, FL, USA

Helen Krontiras, MD, University of Alabama at Birmingham, Birmingham, AL, USA

Roshni Rao MD, University of Texas Southwestern Medical Center, Dallas, TX, USA

Michelle Sowden DO, University of Vermont Medical Center, Burlington, VT, USA

Judy A. Tjoe MD, Aurora Health Care, Milwaukee, WI, USA

Barbara Wexelman MD, Trihealth Cancer Institute, Cincinnati, OH, USA

Lee Wilke MD, University of Wisconsin of Madison, Madison, WI, USA

Steven L Chen MD, MBA, OasisMD, San Diego, CA, USA

Sources

- 1
Position Statement on the use of Magnetic Resonance Imaging in breast surgical oncology [Internet]. Columbia (MD): The American Society of Breast Surgeons; 2007 May 6 [updated 2010 July 27; cited 2016 Apr 21]. Available from: www.breastsurgeons.org/statements/index.php.
NCCN Clinical Practice Guidelines for Breast Cancer. Version 3 [Internet]. Fort Washington (PA): National Comprehensive Cancer Network; 2015 [cited 2016 Apr 21]. Available from: www.nccn.org.
Pilewskie M and Morrow M. Applications for breast magnetic resonance imaging. *Surg Oncol Clin N Am*. 2014 Jul;23(3):431-49.
Houssami N, Turner R, Macaskill P, Turnbull LW, McCready DR, Tuttle TM, Vapiwala N, Solin LJ. An individual person data meta-analysis of preoperative magnetic resonance imaging and breast cancer recurrence. *J Clin Oncol*. 2014 Feb 10;32(5):392-401.
Houssami N, Turner R, Morrow M. Preoperative magnetic resonance imaging in breast cancer: meta-analysis of surgical outcomes. *Ann Surg*. 2013 Feb;257(2):249-55.
Peters NH, van Esser S, van den Bosch MA, Storm RK, Plaisier PW, van Dalen T, Diepstraten SC, Weits T, Westenend PJ, Stapper G, Fernandez-Gallardo MA, Borel Rinkes IH, van Hillegersberg R, Mali WP, Peeters PH. Preoperative MRI and surgical management in patients with nonpalpable breast cancer: the MONET – randomized controlled trial. *Eur J Cancer*. 2011;47(6):879–86.
Turnbull L, Brown S, Harvey I, Olivier C, Drew P, Napp V, Hanby A, Brown J. Comparative effectiveness of MRI in breast cancer (COMICE) trial: a randomised controlled trial. *Lancet* 2010;375(9714):563–71.
Houssami N, Ciatto S, Macaskill P, Lord SJ, Warren RM, Dixon JM, Irwig L. Accuracy and surgical impact of magnetic resonance imaging in breast cancer staging: systematic review and metaanalysis in detection of multifocal and multicentric cancer. *J Clin Oncol* 2008; 26(19):3248–58.
- 2
American Society of Breast Surgeons Position Statement on Management of the axilla in patients with invasive breast cancer oncology [Internet]. Columbia (MD): The American Society of Breast Surgeons; 2011 Aug 31 [cited 2015 Dec 2]. Available from www.breastsurgeons.org/statements/index.php
NCCN Clinical Practice Guidelines for Breast Cancer. Version 3 [Internet]. Fort Washington (PA): National Comprehensive Cancer Network; 2015 [cited 2016 Apr 21]. Available from: www.nccn.org.
Giuliano AE, Hunt KK, Ballman KV, Beitsch PD, Whitworth PW, Blumencranz PW, Leitch AM, Saha S, McCall LM, Morrow M. Axillary dissection vs no axillary dissection in women with invasive breast cancer and sentinel node metastasis: a randomized clinical trial. *JAMA*. 2011 Feb 9;305(6):569-75.
- 3
NCCN Clinical Practice Guidelines for Breast Cancer. Version 3 [Internet]. Fort Washington (PA): National Comprehensive Cancer Network; 2015 [cited 2016 Apr 21]. Available from: www.nccn.org.
Paik S, Shak S, Tang C, Kim C, Baker J, Cronin M, Baehner FL, Walker MG, Watson D, Park T, Hiller W, Fisher ER, Wickerham DL, Bryant J, Wolmark N. A multigene assay to predict recurrence of tamoxifen-treated, node-negative breast cancer. *N Engl J Med*. 2004 Dec 30;351(27):2817-26.
Dowsett M, Cuzick J, Wale C, Forbes J, Mallon EA, Salter J, Quinn E, Dumbier A, Baum M, Buzdar A, Howell A, Bugarini R, Baehner FL, Shak S. Prediction of risk of distant recurrence using the 21-gene recurrence score in node negative and node-positive postmenopausal patients with breast cancer treated with anastrozole or tamoxifen: a TransATAC study. *J Clin Oncol*. 2010 Apr 10;28(11):1829-34.
Augustovski F, Soto N, Caporale J, Gonzalez L, Gibbons L, Ciapponi A. Decision-making impact on adjuvant chemotherapy allocation in early node-negative breast cancer with a 21-gene assay: systematic review and metaanalysis. *Breast Cancer Res Treat*. 2015 Aug; 152(3):611-25.
Carlson JJ, Roth JA. The impact of the Oncotype Dx breast cancer assay in clinical practice: a systematic review and meta-analysis. *Breast Cancer Res Treat*. 2013 Aug; 141(1):13-22.
- 4
Moran MS, Schnitt SJ, Giuliano AE, Harris JR, Khan SA, Horton J, Klimberg S, Chavez-MacGregor M, Freedman G, Houssami N, Johnson PL, Morrow M. Society of Surgical Oncology-American Society for Radiation Oncology consensus guideline on margins for breast-conserving surgery with whole breast irradiation in stages I and II invasive breast cancer. *Ann Surg Oncol*. 2014 Mar;21(3):704–16.
American Society of Breast Surgeons Position Statement on breast cancer lumpectomy margins [Internet]. Columbia (MD): The American Society of Breast Surgeons; 2013 Jan 16 [cited 2016 Apr 21]. Available from: [Accessible at www.breastsurgeons.org/statements/index.php](http://www.breastsurgeons.org/statements/index.php)
NCCN Clinical Practice Guidelines for Breast Cancer. Version 3 [Internet]. Fort Washington (PA): National Comprehensive Cancer Network; 2015 [cited 2016 Apr 21]. Available from: www.nccn.org.
- 5
Grimmer L, Liederbach E, Velasco J, Pesce C, Wang CH, Yao K. Variation in Contralateral Prophylactic Mastectomy Rates According to Racial Groups in Young Women with Breast Cancer, 1998 to 2011: A Report from the National Cancer Data Base. *J Am Coll Surg*. 2015 Jul;221(1):187-96.
Pesce CE, Liederbach E, Czechura T, Winchester DJ, Yao K. Changing surgical trends in young patients with early stage breast cancer, 2003 to 2010: a report from the National Cancer Data Base. *J Am Coll Surg*. 2014 Jul;219(1):19-28.
Fayanju OM, Stoll CR, Fowler S, Colditz GA, Margenthaler JA. Contralateral prophylactic mastectomy after unilateral breast cancer: a systematic review and meta-analysis. *Ann Surg*. 2014 Dec;260(6):1000-10.
Giuliano AE, Boalbol S, Degnim AC, Kuerer H, Leitch AM, Morrow M. Society of Surgical Oncology: position statement on prophylactic mastectomy. *Ann Surg Oncol*. 2007 Sep; 14:2425–7.
Portschy PR, Abbott AM, Burke EE, Nzara R, Marmor S, Kuntz KM, Tuttle TM. Perceptions of Contralateral Breast Cancer Risk: A Prospective, Longitudinal Study. *Ann Surg Oncol*. 2015 Nov;22(12):3846-52.
Portschy PR, Kuntz KM, Tuttle TM. Survival outcomes after contralateral prophylactic mastectomy: a decision analysis. *J Natl Cancer Inst*. 2014 Jul 16;106(8).
Mutter RW, Frost MH, Hoskin TL, Johnson JL, Hartmann LC, Boughey JC. Breast cancer after prophylactic mastectomy (bilateral or contralateral prophylactic mastectomy), a clinical entity: presentation, management, and outcomes. *Breast Cancer Res Treat*. 2015 Aug;153(1):183-90.
Sparano JA, Gray RJ, Makower DF, Pritchard KI, Albain KS, Hayes DF, Geyer CE Jr, Dees EC, Perez EA, Olson JA Jr, Zujewski J, Lively T, Badve SS, Saphner TJ, Wagner LI, Whelan TJ, Ellis MJ, Paik S, Wood WC, Ravdin P, Keane MM, Gomez Moreno HL, Reddy PS, Goggins TF, Mayer IA, Brufsky AM, Toppmeyer DL, Kaklamani VG, Atkins JN, Berenberg JL, Sledge GW. Prospective Validation of a 21-Gene Expression Assay in Breast Cancer. *N Engl J Med*. 2015 Nov 19;373(21):2005-14.

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About the American Society of Breast Surgeons

The American Society of Breast Surgeons is the primary leadership organization for general surgeons who treat patients with breast disease, and is committed to continually improving the practice of breast surgery by serving as an advocate for surgeons who seek excellence in the care of breast patients. This mission is accomplished by providing a forum for the exchange of ideas and by promoting education, research and the development of advanced surgical techniques.

Founded in 1995, the Society now has more than 3,000 members throughout the United States and in 52 countries around the world.

For more information, visit www.breastsurgeons.org.



For more information or to see other lists of Things Clinicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't routinely excise areas of pseudoangiomatous stromal hyperplasia (PASH) of the breast in patients who are not having symptoms from it.

PASH is a benign breast condition that can present as either an abnormality on imaging or a palpable mass. Unless the lesion is suspicious or a patient has symptoms, a diagnosis of PASH on needle biopsy does not necessitate surgical removal.

2

Don't routinely surgically excise biopsy proven fibroadenomas that are smaller than 2 centimeters in size.

Fibroadenomas are non-cancerous solid masses within the breast that should be removed only if they are large, bothersome to the patient, or increasing in size. If a needle biopsy shows that a mass less than 2 centimeters in size is a fibroadenoma, with no other concerning features, it does not have to be surgically removed.

3

Don't routinely operate for a breast abscess without an initial attempt to percutaneously aspirate or drain it.

An abscess is an infection of the breast tissue, forming pockets of pus that can be painful. Many times these can be treated by placing a large needle in the pocket and draining the fluid instead of performing an operation where an incision is made and the fluid removed. The needle removal of the fluid forms less scar and sometimes avoids an operation.

4

Don't perform screening mammography in asymptomatic patients with normal exams who have less than 5-year life expectancy.

Mammography identifies breast cancers at early stages and has demonstrated benefits in reducing mortality and morbidity from a breast cancer diagnosis. There is minimal benefit of screening mammography in women with life expectancies of <5 years. Additionally, there is a risk of false positives and potential procedures that do not provide patients improved outcomes.

5

Don't routinely drain non-painful fluid-filled breast cysts.

Breast cysts are common. They are harmless fluid filled sacs. If an ultrasound (sonogram) confirms that a breast mass is a simple cyst, it does not need to be drained unless it is bothersome to the patient or if there are concerns it could be something other than a cyst or has complex characteristics.

How This List Was Created

The American Society of Breast Surgeons (ASBrS) Patient Safety and Quality Committee (PSQC) received approval from the ASBrS Board of Directors to create and rank a list of “appropriateness” domains of benign breast care to be submitted to the ABIM Foundation’s Choosing Wisely Campaign. The PSQC discussed the goals of the *Choosing Wisely* campaign and solicited candidate measures from its members starting in August, 2016. The PSQC members were asked to identify measures that addressed the goals of *Choosing Wisely*. Committee members were provided with a full description of the *Choosing Wisely* campaign and its goals, as well as its emphasis on decreasing “unnecessary” tests and interventions. Specific recommendations were made to consider domains of care that reflected “appropriateness”, “waste”, and “value” as noted in recent publications, randomized trials, and meta-analyses.

Committee members were instructed to rank candidate choices specifically as follows:

Voting will occur on a Likert-type scale delineated below:

Rank each Quality Measure (QM) from 1–9. Nine is the highest score for “validity”, 1 is the lowest. Do not give a “lower rank” to a candidate QM because you are concerned about feasibility of measurement, or risk adjustment. Do not assign your numerical score to “weight” your answer with more influence on the final score compared to other panelists; ie. if you believe a “choice’s” score is 4, but you believe other panelists will assign a score “too high”, you should assign a “4”, not a “1,2 or 3”.

Formal definition provided by RAND for “validity”: adherence to this QM is critical to provide quality patient care, regardless of cost or feasibility. Not providing this level of care is a “breach” in care and unacceptable. Level of validity is your personal judgment, not what others believe (or don’t believe) is important. In other words, the strength of this process is that you all are experts and it is natural that opinions may differ. You must provide your opinion. The QM should apply to the average patient in the average hospital with the average physician. Do not be distracted by the special situation in which the QM being ranked may be of different importance in a specific unusual situation. The QM may provide benefit not always to the individual patient, but rather to overall breast care. 1=definitely not valid. 9=valid. 5=uncertain validity.

After creation of a list of 28 candidate measures, two rounds of modified Delphi process ranking were performed electronically—October, 2016 and December, 2016—following the iterative and analytic methodology in the RAND UCLA Ranking manual.*

After each round of ranking, a spreadsheet with ranking results was provided to committee members. Inter-round electronic communication followed with opportunities for participants to discuss the choices, lobby for either or decreasing a choices “rank”, and review areas of significant discordance between participants. After the second round of ranking, the remaining 20 candidate measures all had a median appropriateness score of 7. Subsequently, high scoring items were chosen to inform the final list of 5 choices; these were chosen to reflect the values of the Choosing Wisely Campaign, have broad applicability and impact, and that were consistent with the mission of ASBrS. The final list of 5 choices was distributed to the entire PSQC twice by email for further vetting and a final round of discussion occurred on February 8, 2017.

* *The RAND/UCLA Appropriateness Method User’s Manual 2008. Accessible April 3, 2017 at www.rand.org/pubs/monograph_reports/MR1269.*

Conflict of Interest (COI):

General COI for the ASBrS PSQC and the ASBrS Board of Directors are on file with the ASBrS staff. The Chair of the PSQC reviewed, then asked for an update of COI before, during and after the ranking process was completed and determined there were no COI for the process or the result.

ASBrS Patient Safety and Quality Committee Members:

Roshni Rao MD Co-Chair, New York Presbyterian/Columbia University, New York, NY
Jeffrey Landercasper MD Co-Chair, Gunderson Medical Foundation, La Crosse, WI
Lisa Bailey MD, Bay Area Breast Surgeons, Inc., Oakland, CA
Tiffany S. Berry MD, Norton Healthcare, Louisville, KY
Robert R. Buras MD, Anne Arundel Medical Center, Annapolis, MD
Steven L Chen MD, MBA, OasisMD, San Diego, CA
Amy C. Degnim MD, Mayo Clinic, Rochester, MN
Oluwadamilola “Lola” Fayanju MD, Duke University School of Medicine/Duke Cancer Institute, Durham, NC
Joshua Froman MD, Mayo Clinic Health System, Owatonna, MN
Jennifer Gass MD, Women and Infants Hospital, Providence, RI
Negar Golesorkhi, MD, Sentara Northern Virginia Medical Center, Woodbridge, VA
Caprice Greenberg MD, University of Wisconsin School of Public Health and Medicine, Madison, WI
Starr Koslow Mautner MD, Miami Cancer Institute, Baptist Health South Florida, Miami, FL
Helen Krontiras MD, University of Alabama at Birmingham, Birmingham, AL
Kandice Ludwig MD, Indiana University School of Medicine, Indianapolis, IN
Ayemoethu Ma MD, Mount Sinai St. Luke’s, New York, NY
Michelle Sowden DO, University of Vermont, Burlington, VT
Barbara Wexelman MD, Trihealth Cancer Institute, Cincinnati, OH
Lee Wilke MD, University of Wisconsin at Madison, Madison, WI

Sources

- 1 Raj SD, Sahani VG, Adrada BE, et al. Pseudoangiomatous Stromal Hyperplasia of the Breast: Multimodality Review With Pathologic Correlation. *Curr Probl Diagn Radiol*. 2017;46: 130-135.
Virk RK, Khan A. Pseudoangiomatous stromal hyperplasia: an overview. *Arch Pathol Lab Med*. 2010;134: 1070-1074.
- 2 Amin AL, Purdy AC, Mattingly JD, Kong AL, Termuhlen PM. Benign breast disease. *Surg Clin North Am*. 2013;93: 299-308.
Gould DJ, Salmans JA, Lassinger BK, et al. Factors associated with phyllodes tumor of the breast after core needle biopsy identifies fibroepithelial neoplasm. *J Surg Res*. 2012;178: 299-303.
- 3 Lam E, Chan T, Wiseman SM. Breast abscess: evidence based management recommendations. *Expert Rev Anti Infect Ther*. 2014;12: 753-762.
Trop I, Dugas A, David J, et al. Breast abscesses: evidence-based algorithms for diagnosis, management, and follow-up. *Radiographics*. 2011;31: 1683-1699.
Naeem M, Rahimnajjad MK, Rahimnajjad NA, Ahmed QJ, Fazel PA, Owais M. Comparison of incision and drainage against needle aspiration for the treatment of breast abscess. *Am Surg*. 2012;78: 1224-1227.
- 4 Schonberg MA, Breslau ES, McCarthy EP. Targeting of mammography screening according to life expectancy in women aged 75 and older. *J Am Geriatr Soc*. 2013;61: 388-395.
Walter LC, Schonberg MA. Screening mammography in older women: a review. *JAMA*. 2014;311: 1336-1347.
- 5 Amin AL, Purdy AC, Mattingly JD, Kong AL, Termuhlen PM. Benign breast disease. *Surg Clin North Am*. 2013;93: 299-308.
Berg WA, Sechtin AG, Marques H, Zhang Z. Cystic breast masses and the ACRIN 6666 experience. *Radiol Clin North Am*. 2010;48: 931-987.
Sanders LM, Lacz NL, Lara J. 16 year experience with aspiration of noncomplex breast cysts: cytology results with focus on positive cases. *Breast J*. 2012;18: 443-452.

About the ABIM Foundation

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About the American Society of Breast Surgeons

The American Society of Breast Surgeons is the primary leadership organization for general surgeons who treat patients with breast disease, and is committed to continually improving the practice of breast surgery by serving as an advocate for surgeons who seek excellence in the care of breast patients. This mission is accomplished by providing a forum for the exchange of ideas and by promoting education, research and the development of advanced surgical techniques.



Founded in 1995, the Society now has more than 3,000 members throughout the United States and in 52 countries around the world.

For more information, visit www.breastsurgeons.org.

For more information or to see other lists of Things Clinicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

The American Society of Clinical Oncology (ASCO) is a medical professional oncology society committed to conquering cancer through research, education, prevention and delivery of high-quality patient care. ASCO recognizes the importance of evidence-based cancer care and making wise choices in the diagnosis and management of patients with cancer. After careful consideration by experienced oncologists, ASCO highlights ten categories of tests, procedures and/or treatments whose common use and clinical value are not supported by available evidence. These test and treatment options should not be administered unless the physician and patient have carefully considered if their use is appropriate in the individual case. As an example, when a patient is enrolled in a clinical trial, these tests, treatments and procedures may be part of the trial protocol and therefore deemed necessary for the patient's participation in the trial.

These items are provided solely for informational purposes and are not intended to replace a medical professional's independent judgment or as a substitute for consultation with a medical professional. Patients with any specific questions about the items on this list or their individual situation should consult their health care provider. New evidence may emerge following the development of these items. ASCO is not responsible for any injury or damage arising out of or related to any use of these items or to any errors or omissions.

1

Don't use cancer-directed therapy for solid tumor patients with the following characteristics: low performance status (3 or 4), no benefit from prior evidence-based interventions, not eligible for a clinical trial, and no strong evidence supporting the clinical value of further anti-cancer treatment.

- Studies show that cancer directed treatments are likely to be ineffective for solid tumor patients who meet the above stated criteria.
- Exceptions include patients with functional limitations due to other conditions resulting in a low performance status or those with disease characteristics (e.g., mutations) that suggest a high likelihood of response to therapy.
- Implementation of this approach should be accompanied with appropriate palliative and supportive care.

2

Don't perform PET, CT, and radionuclide bone scans in the staging of early prostate cancer at low risk for metastasis.

- Imaging with PET, CT, or radionuclide bone scans can be useful in the staging of specific cancer types. However, these tests are often used in the staging evaluation of low-risk cancers, despite a lack of evidence suggesting they improve detection of metastatic disease or survival.
- Evidence does not support the use of these scans for staging of newly diagnosed low grade carcinoma of the prostate (Stage T1c/T2a, prostate-specific antigen (PSA) <10 ng/ml, Gleason score less than or equal to 6) with low risk of distant metastasis.
- Unnecessary imaging can lead to harm through unnecessary invasive procedures, over-treatment, unnecessary radiation exposure, and misdiagnosis.

3

Don't perform PET, CT, and radionuclide bone scans in the staging of early breast cancer at low risk for metastasis.

- Imaging with PET, CT, or radionuclide bone scans can be useful in the staging of specific cancer types. However, these tests are often used in the staging evaluation of low-risk cancers, despite a lack of evidence suggesting they improve detection of metastatic disease or survival.
- In breast cancer, for example, there is a lack of evidence demonstrating a benefit for the use of PET, CT, or radionuclide bone scans in asymptomatic individuals with newly identified ductal carcinoma in situ (DCIS), or clinical stage I or II disease.
- Unnecessary imaging can lead to harm through unnecessary invasive procedures, over-treatment, unnecessary radiation exposure, and misdiagnosis.

4

Don't perform surveillance testing (biomarkers) or imaging (PET, CT, and radionuclide bone scans) for asymptomatic individuals who have been treated for breast cancer with curative intent.

- Surveillance testing with serum tumor markers or imaging has been shown to have clinical value for certain cancers (e.g., colorectal). However for breast cancer that has been treated with curative intent, several studies have shown there is no benefit from routine imaging or serial measurement of serum tumor markers in asymptomatic patients.
- False-positive tests can lead to harm through unnecessary invasive procedures, over-treatment, unnecessary radiation exposure, and misdiagnosis.

5

Don't use white cell stimulating factors for primary prevention of febrile neutropenia for patients with less than 20 percent risk for this complication.

- ASCO guidelines recommend using white cell stimulating factors when the risk of febrile neutropenia, secondary to a recommended chemotherapy regimen, is approximately 20 percent and equally effective treatment programs that do not require white cell stimulating factors are unavailable.
- Exceptions should be made when using regimens that have a lower chance of causing febrile neutropenia if it is determined that the patient is at high risk for this complication (due to age, medical history, or disease characteristics).

Five More Things Physicians and Patients Should Question

6

Don't give patients starting on a chemotherapy regimen that has a low or moderate risk of causing nausea and vomiting antiemetic drugs intended for use with a regimen that has a high risk of causing nausea and vomiting.

- Over the past several years, a large number of effective drugs with fewer side effects have been developed to prevent nausea and vomiting from chemotherapy. When successful, these medications can help patients avoid spending time in the hospital, improve their quality of life and lead to fewer changes in the chemotherapy regimen.
- Oncologists customarily use different antiemetic drugs depending on the likelihood (low, moderate or high) for a particular chemotherapy program to cause nausea and vomiting. For chemotherapy programs that are likely to produce severe and persistent nausea and vomiting, there are new agents that can prevent this side effect. However, these drugs are very expensive and not devoid of side effects. For this reason, these drugs should be used only when the chemotherapy drugs that have a high likelihood of causing severe or persistent nausea and vomiting.
- When using chemotherapy that is less likely to cause nausea and vomiting, there are other effective drugs available at a lower cost.

7

Don't use combination chemotherapy (multiple drugs) instead of chemotherapy with one drug when treating an individual for metastatic breast cancer unless the patient needs a rapid response to relieve tumor-related symptoms.

- Although chemotherapy with multiple drugs, or combination chemotherapy, for metastatic breast cancer may slow tumor growth for a somewhat longer time than occurs when treating with a single agent, use of combination chemotherapy has not been shown to increase overall survival. In fact, the trade-offs of more frequent and severe side effects may have a net effect of worsening a patient's quality of life, necessitating a reduction in the dose of chemotherapy.
- Combination chemotherapy may be useful and worth the risk of more side effects in situations in which the cancer burden must be reduced quickly because it is causing significant symptoms or is life threatening. As a general rule, however, giving effective drugs one at a time lowers the risk of side effects, may improve a patient's quality of life, and does not typically compromise overall survival.

8

Avoid using PET or PET-CT scanning as part of routine follow-up care to monitor for a cancer recurrence in asymptomatic patients who have finished initial treatment to eliminate the cancer unless there is high-level evidence that such imaging will change the outcome.

- PET and PET-CT are used to diagnose, stage and monitor how well treatment is working. Available evidence from clinical studies suggests that using these tests to monitor for recurrence does not improve outcomes and therefore generally is not recommended for this purpose.
- False positive tests can lead to unnecessary and invasive procedures, overtreatment, unnecessary radiation exposure and incorrect diagnoses.
- Until high level evidence demonstrates that routine surveillance with PET or PET-CT scans helps prolong life or promote well-being after treatment for a specific type of cancer, this practice should not be done.

9

Don't perform PSA testing for prostate cancer screening in men with no symptoms of the disease when they are expected to live less than 10 years.

- Since PSA levels in the blood have been linked with prostate cancer, many doctors have used repeated PSA tests in the hope of finding "early" prostate cancer in men with no symptoms of the disease. Unfortunately, PSA is not as useful for screening as many have hoped because many men with prostate cancer do not have high PSA levels, and other conditions that are not cancer (such as benign prostate hyperplasia) can also increase PSA levels.
- Research has shown that men who receive PSA testing are less likely to die specifically from prostate cancer. However when accounting for deaths from all causes, no lives are saved, meaning that men who receive PSA screening have not been shown to live longer than men who do not have PSA screening. Men with medical conditions that limit their life expectancy to less than 10 years are unlikely to benefit from PSA screening as their probability of dying from the underlying medical problem is greater than the chance of dying from asymptomatic prostate cancer.

10

Don't use a targeted therapy intended for use against a specific genetic aberration unless a patient's tumor cells have a specific biomarker that predicts an effective response to the targeted therapy.

- Unlike chemotherapy, targeted therapy can significantly benefit people with cancer because it can target specific gene products, i.e., proteins that cancer cells use to grow and spread, while causing little or no harm to healthy cells. Patients who are most likely to benefit from targeted therapy are those who have a specific biomarker in their tumor cells that indicates the presence or absence of a specific gene alteration that makes the tumor cells susceptible to the targeted agent.
- Compared to chemotherapy, the cost of targeted therapy is generally higher, as these treatments are newer, more expensive to produce and under patent protection. In addition, like all anti-cancer therapies, there are risks to using targeted agents when there is no evidence to support their use because of the potential for serious side effects or reduced efficacy compared with other treatment options.

Abbreviations

CT, computed tomography; DCIS, ductal carcinoma in situ; PET, positron emission tomography; PSA, prostate-specific antigen.

How This List Was Created (1–5)

The American Society of Clinical Oncology (ASCO) has had a standing Cost of Cancer Care Task Force since 2007. The role of the Task Force is to assess the magnitude of rising costs of cancer care and develop strategies to address these challenges. In response to the 2010 *New England Journal of Medicine* article by Howard Brody, MD, “Medicine’s Ethical Responsibility for Health Care Reform – the Top Five List,” a subcommittee of the Cost of Cancer Care Task Force began work to identify common practices in oncology that were both common as well as lacking sufficient evidence for widespread use. Upon joining the Choosing Wisely campaign, the members of the subcommittee conducted a literature search to ensure the proposed list of items were supported by available evidence in oncology; ultimately the proposed Top Five list was approved by the full Task Force. The initial draft list was then presented to the ASCO Clinical Practice Committee, a group composed of community-based oncologists as well as the presidents of the 48 state/regional oncology societies in the United States. Advocacy groups were also asked to weigh in to ensure the recommendations would achieve the dual purpose of increasing physician-patient communication and changing practice patterns. A plurality of more than 200 clinical oncologists reviewed, provided input and supported the list. The final Top Five list in oncology was then presented to, discussed and approved by the Executive Committee of the ASCO Board of Directors and published in the *Journal of Clinical Oncology*. ASCO’s disclosure and conflict of interest policies can be found at www.asco.org.

How This List Was Created (6–10)

To guide ASCO in developing this list, suggestions were elicited from current ASCO committee members (approximately 700 individuals); 115 suggestions were received. After removing duplicates, researching the literature and discussing practice patterns, the Value in Cancer Care Task Force culled the list to 11 items, which comprised an ASCO Top Five voting slate that was sent back to the membership of all standing committees. Approximately 140 oncologists from its leadership cadre voted, providing ASCO with an adequate sample size and perspective on what oncologists find to be of little value. The list was reviewed and finalized by the Value in Cancer Care Task Force and ultimately reviewed and approved by the ASCO Board of Directors and published in the *Journal of Clinical Oncology*. ASCO’s disclosure and conflict of interest policies can be found at www.asco.org.

Sources

- Azzoli CG, Temin S, Aliff T, et al: 2011 focused update of 2009 American Society of Oncology clinical practice guideline update on chemotherapy for stage IV non–small cell lung cancer. *J Clin Oncol* 29:3825–3831, 2011

Ettinger DS, Akerley W, Bepler G, et al: Non-small cell lung cancer. *J Natl Compr Canc Netw* 8:740–801, 2010

Carlson RW, Allred DC, Anderson BO, et al: Breast cancer. *J Natl Compr Canc Netw* 7:122–192, 2009

Engstrom PF, Benson AB 3rd, Chen YJ, et al: Colon cancer clinical practice guidelines. *J Natl Compr Canc Netw* 3:468–491, 2005

Smith TJ, Hillner BE: Bending the cost curve in cancer care. *N Engl J Med* 364:2060–2065, 2011

Peppercorn JM, Smith TJ, Helft PR, et al: American Society of Clinical Oncology statement: Toward individualized care for patients with advanced cancer. *J Clin Oncol* 29:755–760, 2011
- Makarov DV, Desai RA, Yu JB, et al: The population level prevalence and correlates of appropriate and inappropriate imaging to stage incident prostate cancer in the Medicare population. *J Urol* 187:97-102, 2012

National Comprehensive Cancer Network: NCCN clinical practice guidelines in oncology (NCCN guidelines)-Prostate cancer. Version 4.2011

Thompson I, Thrasher JB, Aus G, et al: Guideline for the management of clinically localized prostate cancer: 2007 update. *J Urol* 177:2106–2130, 2007
- Carlson RW, Allred DC, Anderson BO, et al: Invasive breast cancer. *J Natl Compr Canc Netw* 9:136–222, 2011
- Locker GY, Hamilton S, Harris J, et al: ASCO 2006 update of recommendations for the use of tumor markers in gastrointestinal cancer. *J Clin Oncol* 24:5313–5327, 2006

Desch CE, Benson AB 3rd, Somerfield MR, et al: Colorectal cancer surveillance: 2005 update of an American Society of Clinical Oncology practice guideline. *J Clin Oncol* 23:8512-8519, 2005

Carlson RW, Allred DC, Anderson BO, et al: Breast cancer. *J Natl Compr Canc Netw* 7:122–192, 2009

Khatcheressian JL, Wolff AC, Smith TJ, et al: American Society of Clinical Oncology 2006 update of the breast cancer follow-up and management guideline in the adjuvant setting. *J Clin Oncol* 24: 5091–5097, 2006

Harris L, Fritsche H, Mennel R, et al: American Society of Clinical Oncology 2007 update of recommendations for the use of tumor markers in breast cancer. *J Clin Oncol* 25:5287–5312, 2007
- Smith TJ, Khatcheressian J, Lyman GH, et al: ASCO 2006 update of recommendations for the use of white blood cell growth factors: An evidence based clinical practice guideline. *J Clin Oncol* 24:3187–3205, 2006
- Basch E, Prestrud AA, Hesketh PJ, Kris MG, Feyer PC, Somerfield MR, Chesney M, Clark-Snow RA, Flaherty AM, Freundlich B, Morrow G, Rao KV, Schwartz RN, Lyman GH; American Society of Clinical Oncology. Antiemetics: American Society of Clinical Oncology clinical practice guideline update. *J Clin Oncol*. 2011 Nov 1;29:4189–98.

Saito M, Aogi K, Sekine I, Yoshizawa H, Yanagita Y, Sakai H, Inoue K, Kitagawa C, Ogura T, Mitsuhashi S. Palonosetron plus dexamethasone versus granisetron plus dexamethasone for prevention of nausea and vomiting during chemotherapy: a double-blind, double-dummy, randomized, comparative phase III trial. *Lancet Oncol*. 2009 Feb;10(2):115–24.

Aapro M, Fabi A, Nole F, Medici M, Steger G, Bachmann C, Roncoroni S, Roila F. Double-blind, randomised, controlled study of the efficacy and tolerability of palonosetron plus dexamethasone for 1 day with or without dexamethasone on days 2 and 3 in the prevention of nausea and vomiting induced by moderately emetogenic chemotherapy. *Ann Oncol*. 2010 May;21(5):1083–8.

Yu Z, Liu W, Wang L, Liang H, Huang Y, Si X, Zhang H, Liu D, Zhang H. The efficacy and safety of palonosetron compared with granisetron in preventing highly emetogenic chemotherapy-induced vomiting in the Chinese cancer patients: a phase II, multicenter, randomized, double-blind, parallel, comparative clinical trial. *Support Care Cancer*. 2009 Jan;17(1):99–102.

7

Cardoso F, Costa A, Norton L, Cameron D, Cufer T, Fallowfield L, Francis P, Gligorov J, Kyriakides S, Lin N, Pagani O, Senkus E, Thomssen C, Apro M, Bergh J, Di Leo A, El Saghir N, Ganz PA, Gelmon K, Goldhirsch A, Harbeck N, Houssami N, Hudis C, Kaufman B, Leadbeater M, Mayer M, Rodger A, Rugo H, Sacchini V, Sledge G, van't Veer L, Viale G, Krop I, Winer E. 1st International consensus guidelines for advanced breast cancer (ABC 1). *Breast*. 2012 Jun;21(3):242–52.

Carrick S, Parker S, Thornton CE, Ghersi D, Simes J, Wilken N. Single agent versus combination chemotherapy for metastatic breast cancer. *Cochrane Database Syst Rev*. 2009 Apr 15;(2):CD003372.

National Comprehensive Cancer Network: NCCN clinical practice guidelines in oncology (NCCN Guidelines); breast cancer version: 1.2013.

Slamon DJ, Leyland-Jones B, Shak S, Fuchs H, Paton V, Bajamonde A, Fleming T, Eiermann W, Wolter J, Pegram M, Baselga J, Norton L. Use of chemotherapy plus a monoclonal antibody against HER2 for metastatic breast cancer that overexpresses HER2. *N Engl J Med*. 2001 Mar 15;344(11):783–92.

Howell A, Robertson JF, Quaresma Albano J, Aschermannova A, Mauriac L, Kleeberg UR, Vergote I, Erikstein B, Webster A, Morris C. Fulvestrant, formerly ICI 182,780, is as effective as anastrozole in postmenopausal women with advanced breast cancer progressing after prior endocrine treatment. *J Clin Oncol*. 2002 Aug 15;20(16):3396–403.

Lutz S, Berk L, Chang E, Chow E, Hahn C, Hoskin P, Howell D, Konksi A, Kachnic L, Lo S, Sahgal A, Silverman L, von Gunten C, Mendel E, Vassil A, Bruner DW, Hartsell W; American Society for Radiation Oncology (ASTRO). Palliative radiotherapy for bone metastases: an ASTRO evidence-based guideline. *Int J Radiat Oncol Biol Phys*. 2011 Mar 15;79(4):965–76.

8

Phurrough S, Cano C, Dei Cas R, Ballantine L, Carino T; Centers for Medicare and Medicaid Services. Decision memo for positron emission tomography (FDG) for solid tumors (CAG–00181R4). Baltimore (MD): Centers for Medicare and Medicaid Services; 2003 Jul 8. 55 p. Report No.: CAG–00106R.

PET imaging in Ontario [Internet]. Ontario (CA): Cancer Care Ontario; 2012 May 28 [cited 26 Sep 2013]. Available from: www.cancercare.on.ca/ocs/clinicalprogs/imaging/pet.

Labianca R, Nordlinger B, Beretta GD, Brouquet A, Cervantes A; ESMO Guidelines Working Group. Primary colon cancer: ESMO Clinical Practice Guidelines for diagnosis, adjuvant treatment and follow-up. *Ann Oncol*. 2010 May;21 Suppl 5:v70–v7.

9

Raghavan D. PSA – Please Stop Agonizing (over prostate-specific antigen interpretation). *Mayo Clin Proc*. 2013 Jan;88:1–3.

Schroder FH, Hugosson J, Roobol MJ, Tammela TL, Ciatto S, Nelen V, Kwiatkowski M, Lujan M, Lilja H, Zappa M, Denis LJ, Recker F, Páez A, Määttä L, Bangma CH, Aus G, Carlsson S, Villers A, Rebillaud X, van der Kwast T, Kujala PM, Blijenberg BG, Stenman UH, Huber A, Taari K, Hakama M, Moss SM, de Koning HJ, Auvinen A; ERSPC Investigators. Prostate-cancer mortality at 11 years of follow-up. *N Engl J Med*. 2012 Mar 15;366(11):981–90.

Hugosson J, Carlsson S, Aus G, Bergdahl S, Khatami A, Lodding P, Pihl C-G, Stranne J, Holmberg E, Lilja H. Mortality results from the Göteborg randomized population-based prostate-cancer screening trial. *Lancet Oncol*. 2010 Aug;11(8):725–32.

Andriole GL, Crawford ED, Grubb RL III, Buys SS, Chia D, Church TR, Fouad MN, Gelmann EP, Kvale PA, Reding DJ, Weissfeld JL, Yokochi LA, O'Brien B, Clapp JD, Rathmell JM, Riley TL, Hayes RB, Kramer BS, Izmirlian G, Miller AB, Pinsky PF, Prorok PC, Gohagan JK, Berg CD; PLCO Project Team. Mortality results from a randomized prostate-cancer screening trial. *N Engl J Med*. 2009 Mar 26;360(12):1310–9.

Moyer VA; U.S. Preventive Services Task Force. Screening for prostate cancer: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med*. 2012 Jul 17;157(2):1–15.

Qaseem A, Barry MJ, Denberg TD, Owens DK, Shekelle P; Clinical Guidelines Committee of the American College of Physicians. Screening for prostate cancer: A guidance statement from the Clinical Guidelines Committee of the American College of Physicians. *Ann Intern Med*. 2013 May 21;158(10):761–9.

Carter HB, Albertson PC, Barry MJ, Etzioni R, Freedland SJ, Greene KL, Holmberg L, Kantoff P, Konety BR, Murad MH, Penson DF, Zietman AL. Early detection of prostate cancer: AUA Guideline. *J Urol*. 2013 Aug;190(2):419–26.

Basch E, Oliver TK, Vickers A, Thompson I, Kantoff P, Parnes H, Loblaw DA, Roth B, Williams J, Nam RK. Screening for prostate cancer with prostate-specific antigen testing: American Society of Clinical Oncology provisional clinical opinion. *J Clin Oncol*. 2012 Aug 20;30(24):3020–5.

10

Shaw A, Kim D, Nakagawa K, Seto T, Crinó L, Ahn MJ, De Pas T, Besse B, Solomon BJ, Blackhall F, Wu YL, Thomas M, O'Byrne KJ, Moro-Sibilot D, Camidge DR, Mok T, Hirsh V, Riey GJ, Iyer S, Tassell V, Polli A, Wilner KD, Jänne PA. Crizotinib versus chemotherapy in advanced ALK-positive lung cancer. *N Engl J Med*. 2013 Jun 20;368(25):2385–94.

Sequist L, Yang J, Yamamoto N, O'Byrne K, Hirsh V, Mok T, Geater SL, Orlov S, Tsai CM, Boyer M, Su WC, Bannoun J, Kato T, Gorbunova V, Lee KH, Shah R, Massey D, Zazulina V, Shahidi M, Schuler M. Phase III study of afatinib or cisplatin plus pemetrexed in patients with metastatic lung adenocarcinoma with EGFR mutations. *J Clin Oncol*. 2013 Sep 20;31(27):3327–3334.

Chapman P, Hauschild A, Robert C, Haanen JB, Ascierto P, Larkin J, Dummer R, Garbe C, Testori A, Maio M, Hogg D, Lorigan P, Lebbe C, Jouary T, Schadendorf D, Ribas A, O'Day SJ, Sosman JA, Kirkwood JM, Eggermont AM, Dreno B, Nolop K, Li J, Nelson B, Hou J, Lee RJ, Flaherty KT, McArthur GA; BRIM-3 Study Group. Improved survival with vemurafenib in melanoma with BRAF V600E mutation. *N Engl J Med*. 2011 Jun 30;364(26):2507–16.

Lynch T, Bell D, Sordella R, Gurubhagavatula S, Okimoto RA, Brannigan BW, Harris PL, Haserlat SM, Supko JG, Haluska FG, Louis DN, Christiani DC, Settleman J, Haber DA. Activating mutations in the epidermal growth factor receptor underlying responsiveness of non-small-cell lung cancer to gefitinib. *N Engl J Med*. 2004 May 20;350(21):2129–39.

Keedy V, Temin S, Somerfield M, Beasley MB, Johnson DH, McShane LM, Milton DT, Strawn JR, Wakelee HA, Giaccone G. American Society of Clinical Oncology provisional clinical opinion: epidermal growth factor receptor (EGFR) mutation testing for patients with advanced non-small-cell lung cancer considering first-line EGFR tyrosine kinase inhibitor therapy. *J Clin Oncol*. 2011 May 20;29(15):2121–7.

Allegra C, Jessup J, Somerfield M, Hamilton SR, Hammond EH, Hayes DF, McAllister PK, Morton RF, Schilsky RL. American Society of Clinical Oncology provisional clinical opinion: testing for KRAS gene mutations in patients with metastatic colorectal carcinoma to predict response to anti-epidermal growth factor receptor monoclonal antibody therapy. *J Clin Oncol*. 2009 Apr 20;27(12):2091–6.

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About the American Society of Clinical Oncology

The American Society of Clinical Oncology (ASCO) is the world's leading professional organization representing physicians who care for people with cancer. With more than 30,000 members, ASCO is committed to improving cancer care through scientific meetings, educational programs and peer-reviewed journals. ASCO is supported by its affiliate organization, the Conquer Cancer Foundation, which funds ground-breaking research and programs that make a tangible difference in the lives of people with cancer. ASCO's membership is comprised of clinical oncologists from all oncology disciplines and sub-specialties including medical oncology, therapeutic radiology, surgical oncology, pediatric oncology, gynecologic oncology, urologic oncology, and hematology; physicians and health care professionals participating in approved oncology training programs; oncology nurses; and other health care practitioners with a predominant interest in oncology.

For more information, please visit www.asco.org.



Five Things Physicians and Patients Should Question

1

Don't order follow up or serial echocardiograms for surveillance after a finding of trace valvular regurgitation on an initial echocardiogram.

Trace mitral, tricuspid and pulmonic regurgitation can be detected in 70% to 90% of normal individuals and has no adverse clinical implications. The clinical significance of a small amount of aortic regurgitation with an otherwise normal echocardiographic study is unknown.

2

Don't repeat echocardiograms in stable, asymptomatic patients with a murmur/click, where a previous exam revealed no significant pathology.

Repeat imaging to address the same question, when no pathology has been previously found and there has been no clinical change in the patient's condition, is not indicated.

3

Avoid echocardiograms for preoperative/perioperative assessment of patients with no history or symptoms of heart disease.

Perioperative echocardiography is used to clarify signs or symptoms of cardiovascular disease, or to investigate abnormal heart tests. Resting left ventricular (LV) function is not a consistent predictor of perioperative ischemic events; even reduced LV systolic function has poor predictive value for perioperative cardiac events.

4

Avoid using stress echocardiograms on asymptomatic patients who meet "low risk" scoring criteria for coronary disease.

Stress echocardiography is mostly used in symptomatic patients to assist in the diagnosis of obstructive coronary artery disease. There is very little information on using stress echocardiography in asymptomatic individuals for the purposes of cardiovascular risk assessment, as a stand-alone test or in addition to conventional risk factors.

5

Avoid transesophageal echocardiography (TEE) to detect cardiac sources of embolization if a source has been identified and patient management will not change.

Tests whose results will not alter management should not be ordered. Protocol-driven testing can be useful if it serves as a reminder not to omit a test or procedure, but should always be individualized to the particular patient. While TEE is safe, even the small degree of risk associated with a procedure is not justified if there is no expected clinical benefit.

How This List Was Created

The American Society of Echocardiography (ASE) identified these interventions after careful review of evidence and clinical guidelines. In particular, ASE's cardiovascular care experts reviewed the ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 Appropriateness Use Criteria for Echocardiography (AUC), which was published in March 2011. ASE's cardiovascular care scenarios were chosen based on the highest likelihood of improving patient care and reducing inappropriate test use. Leaders in the organization transformed the scenarios into plain language and produced the clinical explanations for each procedure.

ASE's disclosure and conflict of interest policy can be found at www.asecho.org.

Sources

- Douglas PS, Garcia MJ, Haines DE, Lai WW, Manning WJ, Patel AR, Picard MH, Polk DM, Ragosta M, Ward RP, Weiner RB. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 appropriate use criteria for echocardiography: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Society of Echocardiography, American Heart Association, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Critical Care Medicine, Society of Cardiovascular Computed Tomography, and Society for Cardiovascular Magnetic Resonance. *J Am Soc Echocardiogr* 2011;24:229-67.

Bonow RO, Carabello BA, Chatterjee K, de Leon AC Jr., Faxon DP, Freed MD, Gaasch WH, Lytle BW, Nishimura RA, O'Gara PT, O'Rourke RA, Otto CM, Shah PM, Shanewise JS. 2008 focused update incorporated into the ACC/AHA 2006 guidelines for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Develop Guidelines for the Management of Patients With Valvular Heart Disease). *J Am Coll Cardiol* 2008;52:e1-142. Available from: content.onlinejacc.org/article.aspx?articleid=1139232.
- Douglas PS, Garcia MJ, Haines DE, Lai WW, Manning WJ, Patel AR, Picard MH, Polk DM, Ragosta M, Ward RP, Weiner RB. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 appropriate use criteria for echocardiography: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Society of Echocardiography, American Heart Association, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Critical Care Medicine, Society of Cardiovascular Computed Tomography, and Society for Cardiovascular Magnetic Resonance. *J Am Soc Echocardiogr* 2011;24:229-67.
- Douglas PS, Garcia MJ, Haines DE, Lai WW, Manning WJ, Patel AR, Picard MH, Polk DM, Ragosta M, Ward RP, Weiner RB. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 appropriate use criteria for echocardiography: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Society of Echocardiography, American Heart Association, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Critical Care Medicine, Society of Cardiovascular Computed Tomography, and Society for Cardiovascular Magnetic Resonance. *J Am Soc Echocardiogr* 2011;24:229-67.

Fleisher LA, Beckman JA, Brown KA, Calkins H, Chaikof EL, Fleischmann KE, Freeman WK, Froehlich JB, Kasper EK, Kersten JR, Riegel B, Robb JF. 2009 ACCF/AHA focused update on perioperative beta blockade incorporated into the ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery: a report of the American College of Cardiology Foundation/ American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol* 2009;54:e13-118. Available from: content.onlinejacc.org/article.aspx?articleid=1140211.
- Douglas PS, Garcia MJ, Haines DE, Lai WW, Manning WJ, Patel AR, Picard MH, Polk DM, Ragosta M, Ward RP, Weiner RB. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 appropriate use criteria for echocardiography: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Society of Echocardiography, American Heart Association, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Critical Care Medicine, Society of Cardiovascular Computed Tomography, and Society for Cardiovascular Magnetic Resonance. *J Am Soc Echocardiogr* 2011;24:229-67.

Gibbons RJ, Abrams J, Chatterjee K, Daley J, Deedwania PC, Douglas JS, Ferguson TB Jr., Fihn SD, Fraker TD Jr., Gardin JM, O'Rourke RA, Pasternak RC, Williams SV. ACC/AHA 2002 guideline update for the management of patients with chronic stable angina: a report of the American College of Cardiology/ American Heart Association Task Force on Practice Guidelines (Committee to Update the 1999 Guidelines for the Management of Patients with Chronic Stable Angina). 2002. Available from: www.cardiosource.org/~media/Images/ACC/Science%20and%20Quality/Practice%20Guidelines/s/stable_clean.ashx.

Greenland P, Alpert JS, Beller GA, Benjamin EJ, Budoff MJ, Fayad ZA, Foster E, Hlatky MA, Hodgson JMcB, Kushner FG, Lauer MS, Shaw LJ, Smith SC, Jr., Taylor AJ, Weintraub WS, Wenger NK. 2010 ACCF/AHA guideline for assessment of cardiovascular risk in asymptomatic adults: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol* 2010;56:e50-103. Available from: content.onlinejacc.org/article.aspx?articleid=1143997.
- Douglas PS, Garcia MJ, Haines DE, Lai WW, Manning WJ, Patel AR, Picard MH, Polk DM, Ragosta M, Ward RP, Weiner RB. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 appropriate use criteria for echocardiography: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Society of Echocardiography, American Heart Association, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Critical Care Medicine, Society of Cardiovascular Computed Tomography, and Society for Cardiovascular Magnetic Resonance. *J Am Soc Echocardiogr* 2011;24:229-67.

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the American Society of Echocardiography

As the largest global organization for cardiovascular ultrasound imaging, the American Society of Echocardiography (ASE) is the leader and advocate, setting clinical standards and guidelines with a commitment to improving the practice for better patient outcomes. ASE is devoted to ensuring patient access to excellence in the practice of Echocardiography around the world. Echocardiography provides an exceptional view of the cardiovascular system to safely and cost-effectively enhance patient care. Full text of ASE's guidelines is available at www.asecho.org/guidelines.



For more information about ASE, visit www.asecho.org. For patient-specific information on the practice of echocardiography, visit www.seemyheart.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Do not initiate medications to treat symptoms, adverse events, or side effects without determining if an existing therapy or lack of adherence is the cause, and whether a dosage reduction, discontinuation of a medication, or another medication is warranted.

New medications should not be initiated without taking into consideration patient compliance with their pre-existing medication and whether their current dose is effective at controlling/treating symptoms. Medications are often prescribed to treat symptoms that are really side effects of other medications without determining if the pre-existing medication is truly needed or could be discontinued.

2

Do not prescribe medications for patients on five or more medications, or continue medications indefinitely, without a comprehensive review of their existing medications, including over-the-counter medications and dietary supplements, to determine whether any of the medications or supplements should or can be discontinued.

Studies have shown that patients taking five or more medications often find it difficult to understand and adhere to complex medication regimens. A comprehensive review, including medical conditions, should be done at periodic intervals, at least annually, to determine if the medications are still needed and if any medications can be discontinued.

3

Do not continue medications based solely on the medication history unless the history has been verified with the patient by a medication-use expert (e.g., a pharmacist) and the need for continued therapy has been established.

The patient or caregiver should be the sole source of truth when taking the medication history. The patient or caregiver should be interviewed by someone with medication-use knowledge, ideally a pharmacist, and medications should be continued only if there is an associated patient indication. If a pharmacist is not available, then at a minimum, the healthcare worker taking the history should have access to robust drug information resources. The history should include the drug name, dose, units, frequency, and the last dose taken; and indication if available.

4

Do not prescribe patients medications at discharge that they were on prior to admission without verifying that these medications are still needed and that the discharge medications will not result in duplication, drug interactions, or adverse events.

Treatments and procedures during a hospitalization may impact a patient's ongoing need for a medication they were receiving prior to admission. Care should be taken at discharge to consider each medication taken prior to hospitalization in light of the patient's current state. Unnecessary medications should be discontinued, duplicate or overlapping therapies should be changed, and the specific changes should be clearly communicated to the patient. The Joint Commission recommends a thorough medication review at admission and discharge to prevent any unnecessary medications being continued.

5

Do not prescribe or administer oral liquid medications using teaspoon or tablespoon for measurement; use only milliliters (mL) when measuring with an approved dosing device (e.g., medication cup or oral syringe).

Serious medication errors, including patient deaths, have occurred because oral liquids are prescribed and/or administered using English measurement units such as the teaspoon or tablespoon. For medical professionals, best practice is using units and volume when prescribing a single-agent liquid medication, to be sure the dose is clear; but for administering, use only mL for measuring the amount. Safety organizations and agencies such as the Centers for Disease Control and Prevention (CDC) and the Institute for Safe Medication Practices (ISMP) have recommended using only the metric system units (e.g., mL) for measurement and using a measuring device that contains only metric markings. Prescribing using the metric system and dispensing with a metric measuring device will help avoid these preventable errors.

How This List Was Created

A task force made up of pharmacists from all practice settings was formed. The task force was oriented to the criteria used to establish *Choosing Wisely* lists and already established recommendations. Based on this information and on their knowledge of how medications are prescribed, dispensed, and administered, the task force developed an initial list of recommendations. Over time this list was vetted, evaluated, researched, and referenced. Through a consensus process over time the list was prioritized down to a total of five recommendations. This list was approved by the ASHP Board of Directors.

Sources

- Schiff GD, et al. Promoting more conservative prescribing. *JAMA* 2009;301:865-7.

Schiff GD, et al. Principles of conservative prescribing. *Arch Intern Med.* 2011;171:1433-40.

Shane, R and Abramowitz, PW. Choosing Wisely: Pharmacy's role in effective use of medications. *Am J Health-Syst Pharm.* 2015; 72:1529-30. doi.org/10.2146/ajhp150324.
- Maier RL, et al. Clinical consequences of polypharmacy in elderly. *Expert Opin Drug Saf.* 2014; 13: 57-65. dx.doi.org/10.1517/14740338.2013.827660

Gorard, DA. Escalating polypharmacy. *QJM* 2006; 99 (11): 797-800. doi.org/10.1093/qjmed/hcl109

Lehnbom, EC, et al. Impact of medication reconciliation and review on clinical outcomes. *Ann Pharmacother.* 2014;48:1298-1312.

Shane, R and Abramowitz, PW. Choosing Wisely: Pharmacy's role in effective use of medications. *Am J Health-Syst Pharm.* 2015; 72:1529-30. doi.org/10.2146/ajhp150324.
- ASHP statement on the role of the pharmacist in medication reconciliation: www.ashp.org/DocLibrary/BestPractices/SpecificStMedRec.aspx

Najafzadeh M, et al. Economic value of pharmacist-led medication reconciliation for reducing medication errors after hospital discharge. *Am J Manag Care* 2016;22:654-61.

Varkey, P, et al. Multidisciplinary approach to inpatient medication reconciliation in an academic setting. *Am J Health-Syst Pharm.* 2007; 64:850-5.

Lehnbom, EC, et al. Impact of medication reconciliation and review on clinical outcomes. *Ann Pharmacother.* 2014; 48:1298-1312.

The Joint Commission. 2017 National Patient Safety Goals. www.jointcommission.org/standards_information/npsgs.aspx (accessed 2017 Jan 21).
- Varkey, P, et al. Multidisciplinary approach to inpatient medication reconciliation in an academic setting. *Am J Health-Syst Pharm.* 2007; 64:850-5.

Najafzadeh M, et al. Economic value of pharmacist-led medication reconciliation for reducing medication errors after hospital discharge. *Am J Manag Care* 2016; 22:654-61.

Lehnbom, EC, et al. Impact of medication reconciliation and review on clinical outcomes. *Ann Pharmacother.* 2014; 48:1298-1312.

The Joint Commission. 2017 National Patient Safety Goals. www.jointcommission.org/standards_information/npsgs.aspx (accessed 2017 Jan 21).
- CDC. Protect initiative. Downloaded January 5, 2017 from: www.cdc.gov/medicationsafety/campaign_initiatives.html

ISMP Nan-alert 2015. Downloaded January 5, 2017 from: www.ismp.org/NAN/files/NAN-20150630.pdf

Traynor, K. Standardize units for dosing liquid oral prescription medicines, task group says. *Am J Health-Syst Pharm.* 2014; 71:1062-4. <https://doi.org/10.2146/news140045>

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About the American Society of Health-System Pharmacists

ASHP represents pharmacists who serve as patient care providers in acute and ambulatory settings.

The organization's more than 43,000 members include pharmacists, student pharmacists, and pharmacy technicians. For over 70 years, ASHP has been on the forefront of efforts to improve medication use and enhance patient safety. ASHP's vision is that medication use will be optimal, safe, and effective for all people all of the time.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.



Ten Things Physicians and Patients Should Question

1

Don't transfuse more than the minimum number of red blood cell (RBC) units necessary to relieve symptoms of anemia or to return a patient to a safe hemoglobin range (7 to 8 g/dL in stable, non-cardiac in-patients).

Transfusion of the smallest effective dose of RBCs is recommended because liberal transfusion strategies do not improve outcomes when compared to restrictive strategies. Unnecessary transfusion generates costs and exposes patients to potential adverse effects without any likelihood of benefit. Clinicians are urged to avoid the routine administration of 2 units of RBCs if 1 unit is sufficient and to use appropriate weight-based dosing of RBCs in children.

2

Don't test for thrombophilia in adult patients with venous thromboembolism (VTE) occurring in the setting of major transient risk factors (surgery, trauma or prolonged immobility).

Thrombophilia testing is costly and can result in harm to patients if the duration of anticoagulation is inappropriately prolonged or if patients are incorrectly labeled as thrombophilic. Thrombophilia testing does not change the management of VTEs occurring in the setting of major transient VTE risk factors. When VTE occurs in the setting of pregnancy or hormonal therapy, or when there is a strong family history plus a major transient risk factor, the role of thrombophilia testing is complex and patients and clinicians are advised to seek guidance from an expert in VTE.

3

Don't use inferior vena cava (IVC) filters routinely in patients with acute VTE.

IVC filters are costly, can cause harm and do not have a strong evidentiary basis. The main indication for IVC filters is patients with acute VTE and a contraindication to anticoagulation such as active bleeding or a high risk of anticoagulant-associated bleeding. Lesser indications that may be reasonable in some cases include patients experiencing pulmonary embolism (PE) despite appropriate, therapeutic anticoagulation, or patients with massive PE and poor cardiopulmonary reserve. Retrievable filters are recommended over permanent filters with removal of the filter when the risk for PE has resolved and/or when anticoagulation can be safely resumed.

4

Don't administer plasma or prothrombin complex concentrates for non-emergent reversal of vitamin K antagonists (i.e. outside of the setting of major bleeding, intracranial hemorrhage or anticipated emergent surgery).

Blood products can cause serious harm to patients, are costly and are rarely indicated in the reversal of vitamin K antagonists. In non-emergent situations, elevations in the international normalized ratio are best addressed by holding the vitamin K antagonist and/or by administering vitamin K.

5

Limit surveillance computed tomography (CT) scans in asymptomatic patients following curative-intent treatment for aggressive lymphoma.

CT surveillance in asymptomatic patients in remission from aggressive non-Hodgkin lymphoma may be harmful through a small but cumulative risk of radiation-induced malignancy. It is also costly and has not been demonstrated to improve survival. Physicians are encouraged to carefully weigh the anticipated benefits of post-treatment CT scans against the potential harm of radiation exposure. Due to a decreasing probability of relapse with the passage of time and a lack of proven benefit, CT scans in asymptomatic patients more than 2 years beyond the completion of treatment are rarely advisable.



Ten Things Physicians and Patients Should Question

6

Don't treat with an anticoagulant for more than three months in a patient with a first venous thromboembolism (VTE) occurring in the setting of a major transient risk factor.

Anticoagulation is potentially harmful and costly. Patients with a first VTE triggered by a major, transient risk factor such as surgery, trauma or an intravascular catheter are at low risk for recurrence once the risk factor has resolved and an adequate treatment regimen with anticoagulation has been completed. Evidence-based and consensus guidelines recommend three months of anticoagulation over shorter or longer periods of anticoagulation in patients with VTE in the setting of a reversible provoking factor. By ensuring a patient receives an appropriate regimen of anticoagulation, clinicians may avoid unnecessary harm, reduce health care expenses and improve quality of life. This *Choosing Wisely*® recommendation is not intended to apply to VTE associated with non-major risk factors (e.g., hormonal therapy, pregnancy, travel-associated immobility, etc.), as the risk of recurrent VTE in these groups is either intermediate or poorly defined.

7

Don't routinely transfuse patients with sickle cell disease (SCD) for chronic anemia or uncomplicated pain crisis without an appropriate clinical indication.

Patients with SCD are especially vulnerable to potential harms from unnecessary red blood cell transfusion. In particular, they experience an increased risk of alloimmunization to minor blood group antigens and a high risk of iron overload from repeated transfusions. Patients with the most severe genotypes of SCD with baseline hemoglobin (Hb) values in the 7-10 g/dl range can usually tolerate further temporary reductions in Hb without developing symptoms of anemia. Many patients with SCD receive intravenous fluids to improve hydration when hospitalized for management of pain crisis, which may contribute to a decrease in Hb by 1-2 g/dL. Routine administration of red cells in this setting should be avoided. Moreover, there is no evidence that transfusion reduces pain due to vaso-occlusive crises. For a discussion of when transfusion is indicated in SCD, readers are referred to recent evidence-based guidelines from the National Heart, Lung, and Blood Institute (NHLBI) (see reference below).

8

Don't perform baseline or routine surveillance computed tomography (CT) scans in patients with asymptomatic, early-stage chronic lymphocytic leukemia (CLL).

In patients with asymptomatic, early-stage CLL, baseline and routine surveillance CT scans do not improve survival and are not necessary to stage or prognosticate patients. CT scans expose patients to small doses of radiation, can detect incidental findings that are not clinically relevant but lead to further investigations and are costly. For asymptomatic patients with early-stage CLL, clinical staging and blood monitoring is recommended over CT scans.

9

Don't test or treat for suspected heparin-induced thrombocytopenia (HIT) in patients with a low pre-test probability of HIT.

In patients with suspected HIT, use the "4T's" score to calculate the pre-test probability of HIT. This scoring system uses the timing and degree of thrombocytopenia, the presence or absence of thrombosis, and the existence of other causes of thrombocytopenia to assess the pre-test probability of HIT. HIT can be excluded by a low pre-test probability score (4T's score of 0-3) without the need for laboratory investigation. Do not discontinue heparin or start a non-heparin anticoagulant in these low-risk patients because presumptive treatment often involves an increased risk of bleeding, and because alternative anticoagulants are costly.

10

Don't treat patients with immune thrombocytopenic purpura (ITP) in the absence of bleeding or a very low platelet count.

Treatment for ITP should be aimed at treating and preventing bleeding episodes and improving quality of life. Unnecessary treatment exposes patients to potentially serious treatment side effects and can be costly, with little expectation of clinical benefit. The decision to treat ITP should be based on an individual patient's symptoms, bleeding risk (as determined by prior bleeding episodes and risk factors for bleeding such as use of anticoagulants, advanced age, high-risk activities, etc.), social factors (distance from the hospital/travel concerns), side effects of possible treatments, upcoming procedures, and patient preferences. In the pediatric setting, treatment is usually not indicated in the absence of mucosal bleeding regardless of platelet count. In the adult setting, treatment may be indicated in the absence of bleeding if the platelet count is very low. However, ITP treatment is rarely indicated in adult patients with platelet counts greater than 30,000/microL unless they are preparing for surgery or an invasive procedure, or have a significant additional risk factor for bleeding. In patients preparing for surgery or other invasive procedures, short-term treatment may be indicated to increase the platelet count prior to the planned intervention and during the immediate post-operative period.

How This List Was Created (1–5)

The American Society of Hematology (ASH) *Choosing Wisely*® Task Force utilized a modified Delphi technique to collect suggestions from committee members and recipients of its clinically focused newsletter, the *ASH Practice Update*. Respondents were asked to consider the core values of harm, cost, strength of evidence, frequency and control. Fifty-nine of 167 ASH committee members (35%) and 2 recipients of the *ASH Practice Update* submitted 81 unique suggestions. The Task Force used a nominal group technique (NGT) to identify the top 20 items, which were scored by ASH committee and practice community members, with a 46 percent participation rate. ASH's Task Force reviewed all scores to develop a 10-item list. A professional methodologist conducted a systematic literature review on each of the 10 items; the Task Force chair served as the second reviewer. Evidence reviews and source material for the 10 items were shared with ASH's Task Force, which ranked the items according to the core values. The Task Force then identified the top 5 items plus 1 alternate. ASH member content experts provided external validation for the veracity and clarity of the items.

How this List was Created (6–10)

Suggestions for the second ASH *Choosing Wisely* list were solicited from members of the ASH Committee on Practice, the ASH Committee on Quality, the ASH *Choosing Wisely* Task Force, ASH Consult-a-Colleague volunteers and members of the ASH Practice Partnership. Six principles were used to prioritize items: avoiding harm to patients, producing evidence-based recommendations, considering both the cost and frequency of tests and treatments, making recommendations in the clinical purview of the hematologist, and considering the potential impact of recommendations. Harm avoidance was established as the campaign's preeminent guiding principle. Guided by the 6 principles, the ASH *Choosing Wisely* Task Force scored all suggestions. Modified group technique was used to select 10 semi-finalist items. Systematic reviews of the literature were then completed for each of the 10 semi-finalist items. Guided by the 6 core principles outlined above, and by the systematic reviews of the evidence, the ASH *Choosing Wisely* Task Force selected 5 recommendations for inclusion in ASH's second *Choosing Wisely* Campaign.

ASH's disclosure and conflict of interest policy can be found at www.hematology.org.

Sources

- Carson JL, Grossman BJ, Kleinman S, Timmouth AT, Marques MB, Fung MK, Holcomb JB, Illoh O, Kaplan LJ, Katz LM, Rao SV, Roback JD, Shander A, Tobian AA, Weinstein R, Swinton McLaughlin LG, Djulbegovic B; Clinical Transfusion Medicine Committee of the AABB. Red blood cell transfusion: a clinical practice guideline from the AABB. *Ann Intern Med*. 2012 Jul 3;157(1):49–58.
- Retter A, Wyncoll D, Pearce R, Carson D, McKechnie S, Stanworth S, Allard S, Thomas D, Walsh T; British Committee for Standards in Hematology. Guidelines on the management of anaemia and red cell transfusion in adult critically ill patients. *Br J Haematol*. 2013 Feb;160(4):445–64.
- Chong LY, Fenu E, Stansby G, Hodgkinson S. Management of venous thromboembolic diseases and the role of thrombophilia testing: summary of NICE guidance. *BMJ*. 2012 Jun 27;344:e3979.
- Baglin T, Gray E, Greaves M, Hunt BJ, Keeling D, Machin S, Mackie I, Makris M, Nokes T, Perry D, Tait RC, Walker I, Watson H; British Committee for Standards in Hematology. Clinical guidelines for testing for heritable thrombophilia. *Br J Haematol*. 2010 Apr;149(2):209–20.
- Dupras D, Bluhm J, Felty C, Hansen C, Johnson T, Lim K, Maddali S, Marshall P, Messner P, Skeik N. Venous thromboembolism diagnosis and treatment. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2013 Jan. 90 p.
- Kearon C, Akl EA, Comerota AJ, Prandoni P, Bounameaux H, Goldhaber SZ, Nelson ME, Wells PS, Gould MK, Dentali F, Crowther M, Kahn SR; American College of Chest Physicians. Antithrombotic therapy for VTE disease: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. 2012 Feb;141(2 Suppl):e419S–94S.
- National Institute for Health and Clinical Excellence (NICE). Venous thromboembolic diseases: the management of venous thromboembolic diseases and the role of thrombophilia testing. 2012 Jun:NICE clinical guideline:no.144.
- Jaff MR, McMurtry MS, Archer SL, Cushman M, Goldenberg N, Goldhaber SZ, Jenkins JS, Kline JA, Michaels AD, Thistlethwaite P, Vedantham S, White RJ, Zierler BK; American Heart Association Council on Cardiopulmonary, Critical Care, Perioperative and Resuscitation; American Heart Association Council on Peripheral Vascular Disease; American Heart Association Council on Arteriosclerosis, Thrombosis and Vascular Biology. Management of massive and submassive pulmonary embolism, iliofemoral deep vein thrombosis, and chronic thromboembolic pulmonary hypertension: a scientific statement from the American Heart Association. *Circulation*. 2011 Apr 26;123(16):1788–830.
- Holbrook A, Schulman S, Witt DM, Vandvik PO, Fish J, Kovacs MJ, Svensson PJ, Veenstra DL, Crowther M, Guyatt GH; American College of Chest Physicians. Evidence-based management of anticoagulant therapy: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. 2012 Feb;141(2 Suppl):e152S–84S.
- Scottish Intercollegiate Guidelines Network (SIGN). Antithrombotics: indications and management. Edinburgh (UK): 2012. 75 p. Report No. 129.
- Zelenetz AD, Wierda WG, Abramson JS, Advani RH, Andreadis CB, Bartlett N, Bellam N, Byrd JC, Czuczman MS, Fayad LE, Glenn MJ, Gockerman JP, Gordon LI, Harris NL, Hoppe RT, Horwitz SM, Kelsey CR, Kim YH, Krivacic S, LaCasce AS, Nademanee A, Porcu P, Press O, Pro B, Reddy N, Sokol L, Swinnen L, Tsien C, Vose JM, Yahalom J, Zafar N, Dwyer MA, Naganuma M; National Comprehensive Cancer Network. National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines in Oncology: non-Hodgkin's lymphomas: Version 1.2013. Fort Washington (PA): NCCN.2013.
- Lin TL, Kuo MC, Shih LY, Dunn P, Wang PN, Wu JH, Tang TC, Chang H, Hung YS, Lu SC. Value of surveillance computed tomography in the follow-up of diffuse large B-cell and follicular lymphomas. *Ann Hematol*. 2012 Nov;91(11):1741–5.
- Guppy AE, Tebbutt NC, Norman A, Cunningham D. The role of surveillance CT scans in patients with diffuse large B-cell non-Hodgkin's lymphoma. *Leuk Lymphoma*. 2003 Jan;44(1):123–5.
- Shenoy P, Sinha R, Tumeh JW, Lechowicz MJ, Flowers CR. Surveillance computed tomography scans for patients with lymphoma: is the risk worth the benefits? *Clin Lymphoma Myeloma Leuk*. 2010 Aug;10(4):270–7.

6

Kearon C, Akl EA, Comerota AJ, Prandoni P, Bounameaux H, Goldhaber SZ, Nelson ME, Wells PS, Gould MK, Dentali F, Crowther M, Kahn SR; American College of Chest Physicians. Antithrombotic therapy for VTE disease: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines.[Erratum appears in Chest. 2012 Dec;142(6):1698-1704]. Chest. 2012 Feb;141(2 Suppl):e419S–94S.

Chalmers E, Ganesen V, Liesner R, Maroo S, Nokes T, Saunders D, Williams M; British Committee for Standards in Haematology. Guideline on the investigation, management and prevention of venous thrombosis in children. Br J Haematol. 2011 Jul;154(2):196–207.

Monagle P, Chan AK, Goldenberg NA, Ichord RN, Journeycake JM, Nowak-Göttl U, Vesely SK; American College of Chest Physicians. Antithrombotic therapy in neonates and children: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest. 2012 Feb;141(2 Suppl):e737S–801S.

7

Evidence-based management of sickle cell disease: expert panel report, 2014. Washington (DC): National Institutes of Health, National Heart, Lung, and Blood Institute; 2014. 161 p.

Blood transfusion guideline. Dutch Institute for Healthcare Improvement CBO; 2011. 402 p.

8

Oscier D, Dearden C, Eren E, Fegan C, Follows G, Hillmen P, Illidge T, Matutes E, Milligan DW, Pettitt A, Schuh A, Wimperis J; British Committee for Standards in Haematology. Guidelines on the diagnosis, investigation and management of chronic lymphocytic leukaemia. Br J Haematol. 2012 Dec;159(5):541–64.

Eichhorst B, Hallek M, Dreyling M, Group EGW. Chronic lymphocytic leukaemia: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. Ann Oncol. 2010 May;21 Suppl 5:v162–4.

9

Watson H, Davidson S, Keeling D. Guidelines on the diagnosis and management of heparin-induced thrombocytopenia: second edition. Br J Haematol. 2012;159(5):528–40.

Cuker A, Gimotty PA, Crowther MA, Warkentin TE. Predictive value of the 4Ts scoring system for heparin-induced thrombocytopenia: a systematic review and meta-analysis. Blood. 2012;120:4160–7.

10

Neunert C, Lim W, Crowther M, Cohen A, Solberg L Jr., Crowther MA; American Society of Hematology. The American Society of Hematology 2011 evidence-based practice guideline for immune thrombocytopenia. Blood. 2011 Apr 21;117(16):4190–207.

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About the American Society of Hematology

The American Society of Hematology (ASH) is the world's largest professional society of hematologists, serving more than 14,000 clinicians and scientists from around the world who are dedicated to furthering the understanding, diagnosis, treatment and prevention of disorders affecting the blood.

For more than 50 years, the Society has led the development of hematology as a discipline by promoting research, patient care, education, training and advocacy in hematology. By providing a forum for clinicians and scientists to share the latest discoveries in the field, ASH is helping to improve care and possibly lead to cures for diseases that affect millions of people, including leukemia, lymphoma, myeloma, anemias and various bleeding and clotting disorders.

For more information, visit www.hematology.org.



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Five Things Physicians and Patients Should Question

1 Don't perform routine cancer screening for dialysis patients with limited life expectancies without signs or symptoms.

Due to high mortality among end-stage renal disease (ESRD) patients, routine cancer screening—including mammography, colonoscopy, prostate-specific antigen (PSA) and Pap smears—in dialysis patients with limited life expectancy, such as those who are not transplant candidates, is not cost effective and does not improve survival. False-positive tests can cause harm: unnecessary procedures, overtreatment, misdiagnosis and increased stress. An individualized approach to cancer screening incorporating patients' cancer risk factors, expected survival and transplant status is required.

2 Don't administer erythropoiesis-stimulating agents (ESAs) to chronic kidney disease (CKD) patients with hemoglobin levels greater than or equal to 10 g/dL without symptoms of anemia.

Administering ESAs to CKD patients with the goal of normalizing hemoglobin levels has no demonstrated survival or cardiovascular disease benefit, and may be harmful in comparison to a treatment regimen that delays ESA administration or sets relatively conservative targets (9–11 g/dL). ESAs should be prescribed to maintain hemoglobin at the lowest level that both minimizes transfusions and best meets individual patient needs.

3 Avoid nonsteroidal anti-inflammatory drugs (NSAIDs) in individuals with hypertension or heart failure or CKD of all causes, including diabetes.

The use of NSAIDs, including cyclo-oxygenase type 2 (COX-2) inhibitors, for the pharmacological treatment of musculoskeletal pain can elevate blood pressure, make antihypertensive drugs less effective, cause fluid retention and worsen kidney function in these individuals. Other agents such as acetaminophen, tramadol or short-term use of narcotic analgesics may be safer than and as effective as NSAIDs.

4 Don't place peripherally inserted central catheters (PICC) in stage III–V CKD patients without consulting nephrology.

Venous preservation is critical for stage III–V CKD patients. Arteriovenous fistulas (AVF) are the best hemodialysis access, with fewer complications and lower patient mortality, versus grafts or catheters. Excessive venous puncture damages veins, destroying potential AVF sites. PICC lines and subclavian vein puncture can cause venous thrombosis and central vein stenosis. Early nephrology consultation increases AVF use at hemodialysis initiation and may avoid unnecessary PICC lines or central/peripheral vein puncture.

5 Don't initiate chronic dialysis without ensuring a shared decision-making process between patients, their families, and their physicians.

The decision to initiate chronic dialysis should be part of an individualized, shared decision-making process between patients, their families, and their physicians. This process includes eliciting individual patient goals and preferences and providing information on prognosis and expected benefits and harms of dialysis within the context of these goals and preferences. Limited observational data suggest that survival may not differ substantially for older adults with a high burden of comorbidity who initiate chronic dialysis versus those managed conservatively.

How This List Was Created

The American Society of Nephrology (ASN) maintains a Quality and Patient Safety (QPS) Task Force that advances ASN's commitment to providing high-quality care to patients and to raising awareness of patient safety issues for all professionals administering care to kidney patients. Each of ASN's 10 advisory groups contributes expertise to the task force to ensure it addresses all areas of nephrology practice, and the society's president, public policy board and council also provide insights. The QPS task force centered its focus on five items most likely to positively impact and influence optimal patient care. The final list of five items was unanimously approved by the ASN public policy board and council. ASN's disclosure and conflict of interest policy can be found at www.asn-online.org.

Sources

- 1 U.S. Renal Data System, American Society of Nephrology, American Society of Transplantation, *Archives of Internal Medicine*, *Seminars in Dialysis*.
- 2 U.S. Food and Drug Administration, *The New England Journal of Medicine* (multiple publications).
- 3 National Kidney Foundation Kidney Disease Outcomes Quality Initiative (KDOQI) *Clinical Practice Guidelines for Chronic Kidney Disease; Chronic Kidney Disease in Adults: UK Guidelines for Identification, Management and Referral*; American Heart Association; *Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure*; *Scottish Intercollegiate Guidelines Network on Management of Chronic Heart Failure*.
- 4 *Fistula First Breakthrough Initiative – National Coalition Recommendation for the Minimal Use of PICC Lines*, American Society of Diagnostic and interventional Nephrology: *Guidelines for Venous Access in Patients with Chronic Kidney Disease*, *Seminars in Dialysis*, National Kidney Foundation *Clinical Practice Guidelines for Vascular Access*, *The Renal Network*, Inc. *PICC Line Resource Toolkit*, *Clinical and Experimental Nephrology*.
- 5 Renal Physicians' Association End-of-Life Care Guidelines, *Pediatric Nephrology*, *Clinical Journal of the American Society of Nephrology*, *Journal of Pediatrics*, *Nephrology Dialysis Transplantation*, *Archives of Internal Medicine*, *Nephrology Dialysis and Transplant*, *New England Journal of Medicine*, *Palliative Medicine*.

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the American Society of Nephrology:

The American Society of Nephrology (ASN) represents nearly 14,000 professionals committed to curing kidney disease. The *Choosing Wisely* campaign reflects ASN's commitment to the highest quality care for the millions of kidney patients worldwide. ASN provides the most highly regarded education in kidney medicine, supports key kidney research, and advocates daily for policies that improve patients' lives and equip professionals to help those with kidney disease achieve the highest quality of life.



For more information or questions, please visit www.asn-online.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't perform stress cardiac imaging or coronary angiography in patients without cardiac symptoms unless high-risk markers are present.

Asymptomatic, low-risk patients account for up to 45 percent of inappropriate stress testing. Testing should be performed only when the following findings are present: diabetes in patients older than 40 years old, peripheral arterial disease, and greater than 2 percent yearly coronary heart disease event rate.

2

Don't perform cardiac imaging for patients who are at low risk.

Chest pain patients at low risk of cardiac death and myocardial infarction (based on history, physical exam, electrocardiograms and cardiac biomarkers) do not merit stress radionuclide myocardial perfusion imaging or stress echocardiography as an initial testing strategy if they have a normal electrocardiogram (without baseline ST-abnormalities, left ventricular hypertrophy, pre-excitation, bundle branch block, intra-ventricular conduction delay, paced rhythm or on digoxin therapy) and are able to exercise.

3

Don't perform radionuclide imaging as part of routine follow-up in asymptomatic patients.

Performing stress radionuclide imaging in patients without symptoms on a serial or scheduled pattern (e.g., every one to two years or at a heart procedure anniversary) rarely results in any meaningful change in patient management. This practice may lead to unnecessary invasive procedures and excess radiation exposure without any proven impact on patients' outcomes. An exception to this rule would be for patients more than five years after a bypass operation.

4

Don't perform cardiac imaging as a pre-operative assessment in patients scheduled to undergo low- or intermediate-risk non-cardiac surgery.

Non-invasive testing is not useful for patients undergoing low-risk non-cardiac surgery or with no cardiac symptoms or clinical risk factors undergoing intermediate-risk non-cardiac surgery. These types of testing do not change the patient's clinical management or outcomes and will result in increased costs. Therefore, it is not appropriate to perform cardiac imaging procedures for non-cardiac surgery risk assessment in patients with no cardiac symptoms, clinical risk factors or who have moderate to good functional capacity.

5

Use methods to reduce radiation exposure in cardiac imaging, whenever possible, including not performing such tests when limited benefits are likely.

The key step to reduce or eliminate radiation exposure is appropriate selection of any test or procedure for a specific person, in keeping with medical society recommendations, such as appropriate use criteria. Health care providers should incorporate new methodologies in cardiac imaging to reduce patient exposure to radiation while maintaining high-quality test results.

How This List Was Created

The American Society of Nuclear Cardiology (ASNC) appointed a writing group of content experts to identify five areas in which to make recommendations. Areas were selected for the evidence-based data available to direct provider decision-making and the potential for improving patient selection and care by eliminating inappropriate testing. Specific recommendations were drafted for each subject area, accompanied by peer-reviewed literature citations. These recommendations were reviewed by the ASNC Quality Assurance Committee and Board of Directors prior to submission to the Choosing Wisely campaign. ASNC's disclosure and conflict of interest policy can be found at www.asnc.org.

Sources

- 1 Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. *J Am Coll Cardiol* 2009;53:2201-29.

Hendel RC, Abbott BG, Bateman TM, et al. Role of radionuclide myocardial perfusion imaging for asymptomatic individuals. *J Nucl Cardiol*. 2011;18:3-15.
- 2 Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. *J Am Coll Cardiol* 2009;53:2201-29.

Taylor AJ, Cerqueira M, Hodgson JM, Mark D, Min J, O'Gara P, Rubin GD. ACCF/SCCT/ACR/AHA/ASE/ASNC/SCAI/SCMR 2010 appropriate use criteria for cardiac computed tomography: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the Society of Cardiovascular Computed Tomography, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the American Society of Nuclear Cardiology, the Society for Cardiovascular Angiography and Interventions, and the Society for Cardiovascular Magnetic Resonance. *J Am Coll Cardiol* 2010;56:1864-94.

Anderson JL, Adams CD, Antman EM, Bridges CR, Califf RM, Casey DE Jr, Chavey WE II, Fesmire FM, Hochman JS, Levin TN, Lincoff AM, Peterson ED, Theroux P, Wenger NK, Wright RS. ACC/AHA 2007 guidelines for the management of patients with unstable angina/non-ST-elevation myocardial infarction: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines for the Management of Patients with Unstable Angina/Non-ST-Elevation Myocardial Infarction): developed in collaboration with the American College of Emergency Physicians, American College of Physicians, Society for Academic Emergency Medicine, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. *J Am Coll Cardiol* 2007;50:e1-157.
- 3 Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. *J Am Coll Cardiol* 2009;53:2201-29.
- 4 Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. *J Am Coll Cardiol* 2009;53:2201-29.

Fleisher LA, Beckman JA, Brown KA, Calkins H, Chaikof EL, Fleischmann KE, Freeman WK, Froehlich JB, Kasper EK, Kersten JR, Riegel B, Robb JF. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery: a report of the American College of Cardiology/American Heart Association Task force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines on Perioperative Cardiovascular Evaluation for Noncardiac Surgery). *J Am Coll Cardiol* 2007;50:e159-242.
- 5 Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. *J Am Coll Cardiol* 2009;53:2201-29.

Taylor AJ, Cerqueira M, Hodgson JM, Mark D, Min J, O'Gara P, Rubin GD. ACCF/SCCT/ACR/AHA/ASE/ASNC/SCAI/SCMR 2010 appropriate use criteria for cardiac computed tomography: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the Society of Cardiovascular Computed Tomography, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the American Society of Nuclear Cardiology, the Society for Cardiovascular Angiography and Interventions, and the Society for Cardiovascular Magnetic Resonance. *J Am Coll Cardiol* 2010;56:1864-94.

Cerqueira MD, Allman KC, Ficaró EP, Hansen CL, Nichols KJ, Thompson RC, Van Decker WA, Yakovlevitch M. ASNC information statement: Recommendations for reducing radiation exposure in myocardial perfusion imaging. *J Nucl Cardiol* 2010;17:709-18.

Douglas PS, Carr JJ, Cerqueira MD, Cummings JE, Gerber TC, Mukherjee D, Taylor AJ. Developing an action plan for patient radiation safety in adult cardiovascular medicine: proceedings from the Duke University Clinical Research Institute/American College of Cardiology Foundation/American Heart Association Think Tank held on February 28, 2011. *J Am Coll Cardiol* 2012;59:In Press. (Published online March 22, 2012.)

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the American Society of Nuclear Cardiology:

The American Society of Nuclear Cardiology (ASNC) is the voice of more than 4,500 physicians, technologists and scientists dedicated to the science and practice of nuclear cardiology. Since 1993, ASNC has been establishing the standard for excellence in cardiovascular imaging through the development of clinical guidelines, professional education and research development.



For more information or questions, please visit www.asnc.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Avoid using a fluoroquinolone antibiotic for the first-line treatment of uncomplicated urinary tract infections (UTIs) in women.

For women with uncomplicated UTIs (defined as premenopausal, non-pregnant women with no known urologic abnormalities or comorbidities), fluoroquinolone antibiotics should not be considered first-line treatment. Although fluoroquinolones are efficacious in three-day regimens, they have a higher risk of ecological adverse events, such as increasing multidrug resistant organisms. Thus, fluoroquinolones should only be used for the treatment of acute UTIs for women who should not be prescribed nitrofurantoin, trimethoprim-sulfamethoxazole or fosfomycin.

2

Don't perform cystoscopy, urodynamics or diagnostic renal and bladder ultrasound in the initial work-up of an uncomplicated overactive bladder (OAB) patient.

The initial evaluation of an uncomplicated patient presenting with symptoms should include history, physical examination and urinalysis. In some cases, urine culture, post-void residual urine assessment and bladder diaries may be helpful. More invasive testing should be reserved for complex patients, patients who have failed initial therapies (i.e., behavioral therapies and medications), or patients who have abnormal findings on their initial evaluation.

3

Don't exclude pessaries as a treatment option for pelvic organ prolapse.

Nonsurgical treatment options for pelvic organ prolapse include pessaries, which are removable devices that are placed into the vagina to support the prolapsed organs (i.e., uterus, vagina, bladder and/or rectum). A pessary trial can be offered to almost all women with pelvic organ prolapse. Exceptions include women with an active vaginal infection and those who would be noncompliant with follow-up.

4

Avoid using synthetic or biologic grafts in primary rectocele repairs.

Posterior vaginal repair of rectocele is performed for women with symptoms of a posterior vaginal wall bulge or difficulty with defecation. The repair involves suturing the posterior vaginal wall and perineal tissue. The addition of synthetic or biologic grafts to this repair does not improve patient outcomes.

5

Avoid removing ovaries at hysterectomy in pre-menopausal women with normal cancer risk.

For women with an average risk of ovarian cancer (defined as women who do not have a document germline mutation or who do not have a strong family history suspicious for a germline mutation) who are undergoing a hysterectomy for benign conditions, the decision to perform bilateral salpingo-oophorectomy (BSO) should be individualized after appropriate informed consent, including a careful analysis of personal risk factors. There is evidence from observational studies that surgical menopause may negatively impact cardiovascular health and all-cause mortality. Ovarian conservation before menopause is particularly important in patients with a personal or strong family history of cardiovascular disease or stroke.

How This List Was Created

The Clinical Practice Committee of the American Urogynecologic Society (AUGS) reviewed clinical evidence to identify possible topics along with suggestions for possible topics from the AUGS Board of Directors. By consensus, the Clinical Practice Committee selected the top five most overused tests within specified parameters. Additional input was sought from the AUGS Board of Directors and incorporated. The final list was reviewed and approved by the AUGS Board of Directors.

AUGS' listing of board and committee members and conflict of interest policy can be found at www.augs.org/about.

Sources

- 1 Gupta K, Hooton TM, Naber KG, Wullt B, Colgan R, Miller LG, Moran GJ, Nicolle LE, Raz R, Schaeffer AJ, Soper DE; Infectious Diseases Society of America; European Society for Microbiology and Infectious Diseases. International clinical practice guidelines for the treatment of acute uncomplicated cystitis and pyelonephritis in women: 2010 update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. *Clin Infect Dis*. 2011 Mar 1;52(5):e103-20.

Hooton TM. Clinical practice. Uncomplicated urinary tract infection. *N Engl J Med*. 2012 Mar 15;366(11):1028-37.
- 2 Gormley EA, Lightner DJ, Burgio KL, Chai TC, Clemens JQ, Culkin DJ, Das AK, Foster HE Jr, Scarpero HM, Tessier CD, Vasavada SP; American Urological Association; Society of Urodynamics, Female Pelvic Medicine & Urogenital Reconstruction. Diagnosis and treatment of overactive bladder (non neurogenic) in adults: AUA/SUFU guideline. *J Urol*. 2012 Dec 1;188(6 Suppl):2455-63.
- 3 Culligan PJ. Nonsurgical management of pelvic organ prolapse. *Obstet Gynecol*. 2012 Apr;119(4):852-60.

ACOG Practice Bulletin No. 85: Pelvic organ prolapse. *Obstet Gynecol*. 2007 Sep;110(3):717-29.

Bugge C, Adams EJ, Gopinath D, Reid F. Pessaries (mechanical devices) for pelvic organ prolapse in women. *Cochrane Database Syst Rev*. 2013 Feb 28;2:CD004010.
- 4 Maher C, Feiner B, Baessler K, Schmid C. Surgical management of pelvic organ prolapse in women. *Cochrane Database Syst Rev*. 2013 Apr 30;4:CD004014.

Paraiso MF, Barber MD, Muir TW, Walters MD. Rectocele repair: a randomized trial of three surgical techniques including graft augmentation. *Am J Obstet Gynecol*. 2006 Dec;195(6):1762-71.

Sung VW, Rardin CR, Raker CA, LaSala CA, Myers DL. Porcine subintestinal submucosal graft augmentation for rectocele repair: a randomized controlled trial. *Obstet Gynecol*. 2012 Jan;119(1):125-33.
- 5 Berek JS, Chalas E, Edelson M, Moore DH, Burke WM, Cliby WA, Berchuck A; Society of Gynecologic Oncologists Clinical Practice Committee. Prophylactic and risk-reducing bilateral salpingo-oophorectomy: recommendations based on risk of ovarian cancer. *Obstet Gynecol*. 2010 Sep;116(3):733-43.

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About the American Urogynecologic Society

The American Urogynecologic Society (AUGS) is proud to partner with the *Choosing Wisely*[®] campaign. Founded in 1979, AUGS is the premier non-profit organization representing more than 1,800 members including practicing physicians, nurse practitioners, physical therapists, nurses and health care professionals, as well as researchers from many disciplines, all dedicated to treating female pelvic floor disorders. As the leader in female pelvic medicine and reconstructive surgery, AUGS promotes the highest quality patient care through excellence in education, research and advocacy. Participation in *Choosing Wisely*[®] complements AUGS' commitment to quality improvement, and improving patient care practices and outcomes.



For more information or questions, please visit www.augs.org.

For more information or to see other lists of Five Things Clinicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

A routine bone scan is unnecessary in men with low-risk prostate cancer.

Low-risk patients (defined by using commonly accepted categories such as American Urological Association and National Comprehensive Cancer Network guidelines) are unlikely to have disease identified by bone scan. Accordingly, bone scans are generally unnecessary in patients with newly diagnosed prostate cancer who have a PSA <10.0 ng/mL and a Gleason score less than 7 unless the patient's history or clinical examination suggests bony involvement. Progression to the bone is much more common in advanced local disease or in high-grade disease that is characterized by fast and aggressive growth into surrounding areas such as bones or lymph nodes.

2

Don't prescribe testosterone to men with erectile dysfunction who have normal testosterone levels.

While testosterone treatment is shown to increase sexual interest, there appears to be no significant influence on erectile function, at least not in men with normal testosterone levels. The information available in studies to date is insufficient to fully evaluate testosterone's efficacy in the treatment of men with erectile dysfunction who have normal testosterone levels.

3

Don't order creatinine or upper-tract imaging for patients with benign prostatic hyperplasia (BPH).

When an initial evaluation shows only the presence of lower urinary tract symptoms (LUTS), if the symptoms are not significantly bothersome to the patient or if the patient doesn't desire treatment, no further evaluation is recommended. Such patients are unlikely to experience significant health problems in the future due to their condition and can be seen again if necessary. [While the patient can often tell the provider if the symptoms are bothersome enough that he desires additional therapy, another possible option is to use a validated questionnaire to assess symptoms. For example, if the patient completes the International Prostate Symptom Scale (IPSS) and has a symptom score of 8 or greater, this is considered to be "clinically" bothersome.]

4

Don't treat an elevated PSA with antibiotics for patients not experiencing other symptoms.

It had previously been suggested that a course of antibiotics might lead to a decrease in an initially raised PSA and reduce the need for prostate biopsy; however, there is a lack of clinical studies to show that antibiotics actually decrease PSA levels. It should also be noted that a decrease in PSA does not indicate an absence of prostate cancer. There is no information available on the implications of deferring a biopsy following a decrease in PSA.

5

Don't routinely perform ultrasound on boys with cryptorchidism.

Ultrasound has been found to have poor diagnostic performance in the localization of testes that cannot be felt through physical examination. Studies have shown that the probability of locating testes was small when using ultrasound, and there was still a significant chance that testes were present even after a negative ultrasound result. Additionally, ultrasound results are complicated by the presence of surrounding tissue and bowel gas present in the abdomen.

Five More Things Physicians and Patients Should Question

6

Don't prescribe antimicrobials to patients using indwelling or intermittent catheterization of the bladder unless there are signs and symptoms of urinary tract infection.

Antibiotics in the absence of signs and symptoms (which may include fever; altered mental status or malaise with no other cause; flank or pelvic pain; flank or suprapubic tenderness; hematuria; dysuria, urinary urgency or frequency; and, in spinal cord injury patients, increased spasticity, autonomic dysreflexia or sense of unease) is not efficacious and risks inducing resistance to antimicrobials. This applies to both indwelling and intermittent catheterization of the bladder. The major exception is patients needing perioperative antimicrobials. Additionally, initial placement of a suprapubic tube requires a skin puncture or incision and therefore antibiotics should be considered.

7

Don't obtain computed tomography scan of the pelvis for asymptomatic men with low-risk clinically localized prostate cancer.

Computed tomography scan of the pelvis is very unlikely to provide actionable information in men with low-risk prostate cancer (one commonly accepted definition of low-risk prostate cancer is Gleason score less than 7, PSA less than 20.0 ng/mL, and tumor stage of T2 or less). Magnetic resonance imaging of the pelvis may be useful in some men considering active surveillance.

8

Don't remove synthetic vaginal mesh in asymptomatic patients.

There is no clear benefit to mesh removal in the absence of symptoms, and mesh removal in this circumstance exposes the patient to potential complications such as bladder injury, rectal injury and fistula formation.

9

Offer PSA screening for detecting prostate cancer only after engaging in shared decision making.

Shared decision making (between health care provider and patient and, in some cases, family members) is an excellent strategy for making health care decisions when there is more than one medically reasonable option. Since both screening and not screening may be reasonable options, depending on the particular situation, shared decision making is recommended.

10

Don't diagnose microhematuria solely on the results of a urine dipstick (macroscopic urinalysis).

Microhematuria is defined only on urine microscopy: three or more red blood cells per high-powered field on microscopy of a properly collected urinary specimen. Urine dipsticks positive for hemoglobin should be confirmed with urine microscopy, as false positive dipsticks are common. Performing radiographic and cystoscopic evaluation is unnecessary in the absence of microscopically confirmed microhematuria.

Five More Things Physicians and Patients Should Question

11

Don't treat low-risk clinically localized prostate cancer (e.g., Gleason score is less than 7, PSA less than 10.0 ng/mL, and tumor stage T2 or less) without discussing active surveillance as part of the shared decision-making process.

The ultimate choice of treatment should be based on shared decision making and individualized to the patient's disease characteristics, his overall health, and his personal preferences. The disparity between prostate cancer incidence and mortality implies that many men may not benefit from definitive treatment of localized disease. For men with newly diagnosed low-risk prostate cancer, an active surveillance program represents a valid option that should be discussed. Active surveillance provides a monitored approach that can spare some men the potential risks of definitive treatment while selectively providing effective treatment for more aggressive cancers that warrant intervention.

12

Don't treat uncomplicated cystitis in women with fluoroquinolones if other oral antibiotic treatment options exist.

Due to serious potential side effects associated with the use of fluoroquinolone antibiotics, these drugs should not be prescribed as first line therapy for uncomplicated cystitis in women. Their use should be reserved for situations where recommended first line antibiotic therapies, such as nitrofurantoin or sulfa-trimethoprim, are contraindicated.

13

Don't continue opioid analgesia beyond the immediate postoperative period; prescribe the lowest effective dose and number of doses required to address the expected pain.

The use of opioid analgesia for pain is often appropriate in surgical patient care. However due to the emergence of opioid use disorder as a public health epidemic, the appropriate use of opioid therapy must begin with adherence to minimum prescribing in terms of dose, duration and quantity.

14

Don't obtain urine cytology or urine markers as a part of the routine evaluation of the asymptomatic patient with microhematuria.

Insufficient evidence exists for the use of urine cytology and urine markers in the routine evaluation of the asymptomatic patient with microhematuria, including bladder tumor antigen (BTA) assays, nuclear matrix protein (NMP) assays, and fluorescent in situ hybridization (FISH) assays to detect chromosomal alterations. The psychological stress and unnecessary diagnostic procedures that could result from a false positive test outweigh the potential benefits to these patients.

15

Don't routinely use computed tomography (CT) to screen pediatric patients with suspected nephrolithiasis.

Given the link between radiation exposure from computed tomography (CT) in children and increased cancer risk, imaging test selection should adhere to the principle of ALARA (as low as reasonably achievable) to minimize radiation exposure. Ultrasonography is sufficiently sensitive and specific as an initial imaging test in pediatric patients with suspected urolithiasis. When ultrasound results are negative or indeterminate despite strong clinical suspicion or when proceeding with perioperative planning, CT using a low-dose protocol is an appropriate next step.

How This List Was Created (1–5)

The American Urological Association (AUA) established a committee to review evidence from the association's guidelines and identify potential topics for nomination to the AUA's *Choosing Wisely* list. The committee reviewed a number of recommendations and through a consensus process identified the five tests or procedures that should be questioned. These recommendations were reviewed and approved by the AUA Board of Directors.

How This List Was Created (6–10)

Following its previous successful participation in *Choosing Wisely* in 2013, the American Urological Association (AUA) established a new committee in 2014 to develop a second list of recommendations. The group sought input from the AUA membership in addition to drafting potential suggestions after studying evidence from the association's evidence-based clinical practice guidelines and other clinical documents. The committee reviewed all recommendations and narrowed them to a list of fifteen possibilities. Again, the committee sought AUA member input by asking members to vote for their top five selections from the list of candidate recommendations. After the votes were tallied, the list of five recommendations was determined. These recommendations were reviewed and approved by the AUA Board of Directors in February 2015.

How This List Was Created (11–15)

To continue its successful participation in *Choosing Wisely*, the American Urological Association (AUA) established a new committee in 2016 to develop a third list of recommendations. The group sought input from the AUA membership in addition to drafting potential suggestions after studying evidence from the association's evidence-based clinical practice guidelines and other clinical documents. The committee reviewed all recommendations and narrowed them to a list of twelve possibilities. Again, the committee sought AUA member input by asking members to vote for their top five selections from the list of candidate recommendations. After the votes were tallied, the list of five recommendations was determined. These recommendations were reviewed and approved by the AUA Board of Directors in March 2017.

AUA's disclosure and conflict of interest policy can be found at www.aunet.org.

Sources

- 1 Sanda MG, Chen RC, Crispino T, Freedland S, Greene K, Klotz LH, Makarov DV, Nelson JB, Reston J, Rodrigues G, Sandler HM, Taplin ME, Cadeddu JA. Clinically Localized Prostate Cancer: AUA/ASTRO/SUO Guideline [INTERNET]. [Linthicum (MD)]: American Urological Association /American Society for Radiation Oncology/Society of Urologic Oncology; 2017 April [cited 2017 May 4]. Available from: www.aunet.org/guidelines/clinically-localized-prostate-cancer-new-{aua/astro/suo-guideline-2017}
- 2 American Urological Association. Management of Erectile Dysfunction Clinical Practice Guideline. Updated 2006. [Internet]. Linthicum (MD):American Urological Association; 2005 [cited 2012 Oct 16]. Available from: [http://www.aunet.org/guidelines/erectile-dysfunction-\(2005-reviewed-and-validity-confirmed-2011\)](http://www.aunet.org/guidelines/erectile-dysfunction-(2005-reviewed-and-validity-confirmed-2011))
- 3 American Urological Association. Management of the Benign Prostatic Hyperplasia Clinical Practice Guideline. [Internet]. Linthicum (MD):American Urological Association; 2010[cited 2012 Oct 16]. Available from: [http://www.aunet.org/guidelines/benign-prostatic-hyperplasia-\(2010-reviewed-and-validity-confirmed-2014\)](http://www.aunet.org/guidelines/benign-prostatic-hyperplasia-(2010-reviewed-and-validity-confirmed-2014))
- 4 Heldwein FL, Teloken PE, Hartmann AA, et al. Antibiotics and observation have a similar impact on asymptomatic patients with a raised PSA. *BJU Internat* 2011.
- 5 Stopliglia RM, Ferreira U, Selva MM, et al. Prostate specific antigen and prostate cancer diagnosis: antibiotic versus placebo prospective randomized clinical trial. *J Urol* 2010.
- 6 Evaluation and Treatment of Cryptorchidism: American Urological Association Guideline. 2014 [Internet]. Linthicum (MD):AUA;2014[cited 2016 Apr 20]. Available from: [http://www.aunet.org/guidelines/cryptorchidism-\(2013-amended-2015\)](http://www.aunet.org/guidelines/cryptorchidism-(2013-amended-2015))
- 7 Infectious Diseases Society of America. Diagnosis, prevention, and treatment of Catheter-Associated Urinary Tract Infection in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America [Internet]. Arlington (VA): Infectious Diseases Society of America; 2010 [cited 2014 Nov 4]. Available from: <https://academic.oup.com/cid/article-lookup/doi/10.1086/650482>
- 8 Sanda MG, Chen RC, Crispino T, Freedland S, Greene K, Klotz LH, Makarov DV, Nelson JB, Reston J, Rodrigues G, Sandler HM, Taplin ME, Cadeddu JA. Clinically Localized Prostate Cancer: AUA/ASTRO/SUO Guideline [INTERNET]. [Linthicum (MD)]: American Urological Association /American Society for Radiation Oncology/Society of Urologic Oncology; 2017 April [cited 2017 May 4]. Available from: www.aunet.org/guidelines/clinically-localized-prostate-cancer-new-{aua/astro/suo-guideline-2017}
- 9 American Urological Association. American Urological Association Position Statement on the Use of Vaginal Mesh for the Repair of Pelvic Organ Prolapse, 2011. [Internet]. Linthicum (MD): 2011 [cited 2014 Nov 4]. <http://www.aunet.org/guidelines/use-of-vaginal-mesh-for-the-repair-of-pelvic-organ-prolapse>
- 10 American Urological Association. Early Detection of Prostate Cancer: American Urological Association Guideline, 2013. [Internet]. Linthicum (MD): 2013 [cited 2014 Nov 4]. Available from: <http://www.aunet.org/education/guidelines/prostate-cancer-detection.cfm>
- 10 American Urological Association. Diagnosis, Evaluation and Follow-Up of Asymptomatic Microhematuria (AMH) In Adults: American Urological Association Guideline, 2012. [Internet]. Linthicum (MD): 2012 [cited 2014 Nov 4]. Available from: [http://www.aunet.org/guidelines/asymptomatic-microhematuria-\(2012-reviewed-and-validity-confirmed-2016\)](http://www.aunet.org/guidelines/asymptomatic-microhematuria-(2012-reviewed-and-validity-confirmed-2016))

11

Sanda MG, Chen RC, Crispino T, Freedland S, Greene K, Klotz LH, Makarov DV, Nelson JB, Reston J, Rodrigues G, Sandler HM, Taplin ME, Cadeddu JA. Clinically Localized Prostate Cancer: AUA/ASTRO/SUO Guideline [INTERNET]. [Linthicum (MD)]: American Urological Association /American Society for Radiation Oncology/Society of Urologic Oncology; 2017 April [cited 2017 May 4]. Available from: [www.auanet.org/guidelines/clinically-localized-prostate-cancer-new-\(aua/astro/suo-guideline-2017\)](http://www.auanet.org/guidelines/clinically-localized-prostate-cancer-new-(aua/astro/suo-guideline-2017)).

12

FDA Drug Safety Communication: FDA advises restricting fluoroquinolone antibiotic use for certain uncomplicated infections; warns about disabling side effects that can occur together, July 26 2016; www.fda.gov/Drugs/DrugSafety/ucm500143.htm

International Clinical Practice Guidelines for the Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women: A 2010 Update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. *Clin Infect Dis* (2011) 52 (5): e103-e120. DOI: doi.org/10.1093/cid/ciq257; www.idsociety.org/uploadedFiles/IDSA/Guidelines-Patient_Care/PDF_Library/Uncomp%20UTI.pdf

13

Dowell D, Haegerich TM, Chou R. CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016. *MMWR Recomm Rep* 2016;65(No. RR-1):1–49. DOI: [dx.doi.org/10.15585/mmwr.rr6501e1](https://doi.org/10.15585/mmwr.rr6501e1); www.cdc.gov/mmwr/volumes/65/rr/rr6501e1.htm.

14

Diagnosis, Evaluation and Follow-Up of Asymptomatic Microhematuria (AMH) in Adults: American Urological Association Guideline, 2012 [http://www.auanet.org/guidelines/asymptomatic-microhematuria-\(2012-reviewed-and-validity-confirmed-2016\)](http://www.auanet.org/guidelines/asymptomatic-microhematuria-(2012-reviewed-and-validity-confirmed-2016))

15

Clinical Effectiveness Protocols for Imaging in the Management of Ureteral Calculous Disease: American Urological Association Technology Assessment, 2012; *J Urol*; April 2013;189(4):1203-1213; DOI: [dx.doi.org/10.1016/j.juro.2012.10.031](https://doi.org/10.1016/j.juro.2012.10.031); [www.jurology.com/article/S0022-5347\(12\)05259-7/fulltext](http://www.jurology.com/article/S0022-5347(12)05259-7/fulltext)

Assimos, Dean et al. Surgical Management of Stones: American Urological Association/Endourological Society Guideline, 2016; *J Urol* 196(4):1153-60. DOI: [dx.doi.org/10.1016/j.juro.2016.05.090](https://doi.org/10.1016/j.juro.2016.05.090); [www.jurology.com/article/S0022-5347\(16\)30531-6/abstract](http://www.jurology.com/article/S0022-5347(16)30531-6/abstract); [http://www.auanet.org/guidelines/surgical-management-of-stones-\(aua/endourological-society-guideline-2016\);](http://www.auanet.org/guidelines/surgical-management-of-stones-(aua/endourological-society-guideline-2016);) www.guideline.gov/summaries/summary/50408.

About the ABIM Foundation

The mission of the ABIM Foundation is to advance medical professionalism to improve the health care system. We achieve this by collaborating with physicians and physician leaders, medical trainees, health care delivery systems, payers, policymakers, consumer organizations and patients to foster a shared understanding of professionalism and how they can adopt the tenets of professionalism in practice.



To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the American Urological Association

Founded in 1902 and headquartered near Baltimore, Maryland, the American Urological Association is a leading advocate for the specialty of urology, and has more than 20,000 members throughout the world. The AUA is a premier urologic association, providing invaluable support to the urologic community as it fosters the highest standards of urologic care through education, research and formulation of health policy.



For information, visit www.auanet.org.

For more information or to see other lists of Things Providers and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1 Don't perform surgery to remove a breast lump for suspicious findings unless needle biopsy cannot be done.

- Needle biopsy is large bore core biopsy or vacuum-assisted large bore needle for histology or fine needle aspiration for cytology.
- Needle biopsy may be directed by breast imaging (ultrasound, mammographic, magnetic resonance imaging) or by direct palpation.
- Studies show that confirmation of breast cancer diagnosis prior to any surgery allows for complete multidisciplinary treatment counseling, reduces the overall number of surgical procedures needed for treatment, improves the cosmetic results of surgery and avoids mastectomy resulting from multiple surgical procedures.
- Use of needle biopsy also makes surgery altogether unnecessary for the majority of image-detected breast lesions that require biopsy but prove to be benign.
- Needle biopsy is generally less costly than open surgical biopsy.
- Some breast lesions require surgical biopsy because of a location in the breast that precludes image localization. This may apply to 10–15% of breast lesions. Surgeons performing surgical breast biopsy without preceding needle biopsy should document the reason for no needle biopsy.

2 Don't initiate surveillance testing after cancer treatment without providing the patient a survivorship care plan.

- Inappropriate or overused testing after cancer treatment is common, but provides no value in surveillance for recurrence and often leads to other unnecessary tests, potential morbidity, anxiety, uncertainty and higher cost.
- A survivorship care plan provides the patient and their primary providers an evidence-based road map for surveillance testing and supportive care.
- The Institute of Medicine identified the need for a survivorship care plan as a key factor to help cancer patients transition to long-term surveillance care, avoid unnecessary services and seek appropriate rehabilitative care and emotional support.
- A survivorship care plan includes a summary of the type and stage of the cancer, treatment received, the plan for type and frequency of surveillance testing and information on resources for rehabilitative and supportive care.
- Templates for survivorship care plans are available from organizations including the Livestrong Foundation, the National Coalition for Cancer Survivorship and the American Society of Clinical Oncology.
 - LiveStrong Care Plan: www.livestrongcareplan.org
 - JourneyForward: www.journeyforward.org
 - American Society of Clinical Oncology: www.cancer.net/survivorship/asco-cancer-treatment-summaries

Don't use surgery as the initial treatment without considering presurgical (neoadjuvant) systemic and/or radiation for cancer types and stage where it is effective at improving local cancer control, quality of life or survival.

- In many cancer types, presurgical chemotherapy, hormone/endocrine therapy and/or radiation therapy followed by surgery is better than surgery as the first treatment. This often shrinks the cancer, allowing more limited surgery that maintains organ function, reduces the chances of cancer recurrence and spread and improves the quality of life.
- For example, presurgical therapy may make mastectomy unnecessary with breast cancer, a colostomy unnecessary with rectal cancer, voice-sparing surgery possible with laryngeal cancer and amputation unnecessary with extremity soft tissue sarcoma.
- When used appropriately, there is no evidence that the cancer spreads during presurgical therapy and that cancer survival is the same or better as with initial surgery.
- Despite its known advantages, many people are not provided the advantages of presurgical therapy.
- Disease sites where this should be considered include:
 - Clinical Stage IIB and IIIA Non Small Cell Lung Cancer
 - Clinical T2-4a; Any N positive esophageal cancer
 - Clinical T3 and T4 rectal cancer
 - Clinical T2, T3 or Stage III breast cancer
 - Head and Neck cancer
 - Resectable pancreas cancer
 - Extremity soft tissue sarcomas where resection may affect functional outcomes

Don't perform major abdominal surgery or thoracic surgery without a pathway or standard protocol for postoperative pain control and pneumonia prevention.

- Uncontrolled pain and pneumonia after major abdominal and thoracic surgery are factors that lead to other serious complications and prolonged hospitalization.
- Coordinated care efforts and established care pathways to control pain and prevent pneumonia reduce the frequency of complications and reduce length of hospital stay and should be in place.
- Fewer pulmonary complications occur when adequate analgesia is provided making postoperative pain protocol and pulmonary plan as essential elements of care.
 - Facilities that conduct flow analyses in patients with lung cancer have improved quality care.
- Institutions or hospitals in collaboration with the surgeons and other medical staff should develop these pathways, standard protocol or procedures and assure their implementation.
 - Improvement efforts need to address documentation and standardization of process of care.

Don't initiate cancer treatment without defining the extent of the cancer (through clinical staging) and discussing with the patient the intent of treatment.

- Treatment intent may be diagnostic, curative, maintenance or palliative.
- Many patients, especially those with advanced or metastatic cancer, do not have a full understanding of the intent of cancer treatment – they identify that treatment may be curative when in fact it is given only with palliative intent. They often do not understand the costs, risks and potential side effects of the treatment.
- Palliative therapy may provide relief of symptoms or short-term prolongation of survival, but often can cause substantial toxic effects and can interfere with the patient's quality of life.
- This directive should be applied to all phases of cancer treatment from initial therapy to treatment for recurrent and metastatic cancer.
- Clinical staging should be performed and documented using information from history and physical examination, relevant biopsy and appropriate imaging based on the type and stage (extent) of the cancer.

How This List Was Created

The American College of Surgeons concluded in its review of this opportunity that it was optimal to submit a separate list of interventions related to cancer from the American College of Surgeons Commission on Cancer. The Commission on Cancer appointed a multidisciplinary task force that met in person in September 2012 and subsequently by conference call and electronic communications.

Recommendations for candidate interventions were solicited from panel members and other leaders from the Commission on Cancer. These panel members were provided a written charge to identify measures that would support the Commission's standards for accreditation in use in more than 1,500 cancer programs across the U.S. In addition, panel members were provided with a full description of the *Choosing Wisely*[®] campaign and the interventions previously recommended by other organizations both for cancer and all other disorders.

Following initial submission of the candidate interventions, the panel discussed each intervention specifically evaluating the significance of the intervention, the potential scope of variation in care affected by the intervention, and the potential numbers of persons affected by this. The group also discussed the impact on short-term and long-term cost to be gained by implementation of each intervention. The panel voted on each intervention to select the final list of recommended interventions. The panel members then reviewed and refined the wording of each intervention and completed the bulleted supporting documentation and literature citations. The final list of interventions was then approved by the panel and submitted to the leadership of the American College of Surgeons for final approval. The Commission on Cancer's disclosure and conflict of interest policy can be found at www.facs.org.

Commission on Cancer Panel Members

Stephen Edge, MD, FACS, Chair, Roswell Park Cancer Institute, Buffalo, NY
David Bentrem, MD, FACS, Northwestern Memorial Hospital, Chicago, IL
Daniel Kollmorgen, MD, FACS, University of Iowa, Des Moines, IA
Daniel McKellar, MD, FACS, Wayne Healthcare, Greenville, OH
Christopher Pezzi, MD, FACS, Abington Memorial Hospital, Abington, PA
Lee Wilke, MD, FACS, University of Wisconsin Health System, Madison, WI
David Winchester, MD, FACS, Medical Director, Cancer Programs, American College of Surgeons

Sources

- Friese CR, Neville BA, Edge SB, Hassett MJ, Earle CC. Breast biopsy patterns and outcomes in Surveillance, Epidemiology and End Results Medicare data. *Cancer*. 2009 Feb 15;115(4):716-24.

Williams RT, Yao K, Stewart AD, Winchester DJ, Turk M, Gorchow A, Jaskowiak N, Winchester DP. Needle versus excisional biopsy for noninvasive and invasive breast cancer: report from the National Cancer Data Base, 2003 – 2008. *Ann Surg Oncol*. 2011 Dec;18(13):3802-10.

James TA, Mace JL, Virnig BA, Geller BM. Preoperative needle biopsy improves the quality of breast cancer surgery. *J Am Coll Surg*. 2012;215(4):562-68.

Burkhardt JH, Sunshine JH. Core-Needle and surgical breast biopsy: comparison of three methods of assessing cost. *Radiology*. 1999;212:181-8.
- Hewitt M, Greenfield S, Stovall E. From cancer patient to cancer survivor: lost in transition. Washington: National Academies Press; 2005, 506 p.

Hahn EE, Ganz PA. Survivorship programs and care plans in practice: variations on a theme. *J Oncol Practice*. 2011;7(2):70-5.

Ligibel JA, Denlinger CS. New NCCN guidelines for survivorship care. *J Natl Compr Canc Netw*. 2013;11(5 Suppl):640-4.

Cowens-Alvarado R, Sharpe K, Pratt-Champman M, Willis A, Gansler T, Ganz PA, Edge SB, McCabe MS, Stein K. Advancing survivorship care through the National Cancer Survivorship Resources Center: developing American Cancer Society guidelines for primary care providers. *CA Cancer J Clin*. 2013;63(3):147-50.

Khatcheressian JL, Hurley P, Bantug E, Esserman LJ, Grunfeld E, Halberg F, Hantel A, Henry NL, Muss HB, Smith TJ, Vogel VG, Wolff AC, Somerfield MR, Davidson NE; American Society of Clinical Oncology. Breast cancer follow-up and management after primary treatment: American Society of Clinical Oncology Clinical Practice Guideline Update. *J Clin Oncol*. 2013 Mar 1;31(7):961-5.

Desch CE, Benson AB, Somerfield MR. Colorectal cancer surveillance: 2005 update of an American Society of Clinical Oncology practice guideline. *J Clin Oncol*. 2005;33:8512-19.
- Ligibel JA, Denlinger CS. New NCCN Guidelines for Survivorship Care. *J Natl Compr Canc Netw* 2013;11(5 Suppl):640-4.

Cowens-Alvarado R, Sharpe K, Pratt-Champman M, Willis A, Gansler T, Ganz PA, Edge SB, McCabe MS, Stein K. Advancing survivorship care through the National Cancer Survivorship Resource Center: developing American Cancer Society guidelines for primary care providers. *CA Cancer J Clin* 2013 May;63(3):147-50.

Khatcheressian JL, Hurley P, Bantug E, Esserman LJ, Grunfeld E, Halberg F, Hantel A, Henry NL, Muss HB, Smith TJ, Vogel VG, Wolff AC, Somerfield MR, Davidson NE; American Society of Clinical Oncology. Breast cancer follow-up and management after primary treatment: American Society of Clinical Oncology clinical practice guideline update. *J Clin Oncol*. 2013 Mar;31(7):961-5.

Desch CE, Benson AB, Somerfield MR. Colorectal cancer surveillance: 2005 update of an American Society of Clinical Oncology practice guideline. *J Clin Oncol*. 2005;33:8512-9.

Kaufmann M, von Minckwitz G, Mamounas EP, Cameron D, Carey LA, Cristofanilli M, Denkert C, Eiermann W, Gnani M, Harris JR, Karn T, Liedtke C, Mauri D, Rouzier R, Ruckhaeberle E, Semiglazov V, Symmans WF, Tutt A, Pusztai L. Recommendations from an international consensus conference on the current status and future of neoadjuvant systemic therapy in primary breast cancer. *Ann Surg Oncol*. 2012 May;19(5):1508-16.

4

Thompson DA, Makary MA, Dorman T, Pronovost PJ. Clinical and economic outcomes of hospital acquired pneumonia in intra-abdominal surgery patients. *Ann Surg.* 2006 Apr;243(4):547-52.

Katlic MR, Facktor MA, Berry SA, McKinley KE, Bothe A Jr., Steele GD Jr. ProvenCare lung cancer: a multi-institutional improvement collaborative. *CA Cancer J Clin.* Nov-Dec;61(6):382-96.

Cassivi SD, Allen MS, Vanderwaerdt GD, Ewoldt LL, Cordes ME, Wigle DA, Nichols FC, Pailorero PC, Deschamps C. Patient-centered quality indicators for pulmonary resection. *Ann Thorac Surg.* 2008 Sep;86(3):927-32.

Office of quality and performance. Timeliness of lung cancer care in veterans with lung cancer. Washington (DC): Veterans Health Administration. 2008 Apr 4,

Quality of colorectal cancer care in the VA 2003-2006: national and VISN results of Office of Quality and Performance special study. Washington (DC): Veteran Health Affairs 2009. 10 p.

Delaney CP, Zutshi M, Senagore AJ, Remzi FH, Hammel J, Fazio VW. Prospective, randomized, controlled trial between a pathway of controlled rehabilitation with early ambulation and diet and traditional postoperative care after laparotomy and intestinal resection. *Dis Colon Rectum.* 2003 Jul;46(7):851-9.

Senagore AJ, Delaney CP, Mekhail N, Dugan A, Fazio VW. Randomized clinical trial comparing epidural anesthesia and patient-controlled analgesia after laparoscopic segmental colectomy. *Br J Surg.* 2003 Oct;90(10):1195-9.

Lewis KS, Whipple JK, Michael KA, Quebbeman EJ. Effect of analgesic treatment on the physiological consequences of acute pain. *Am J Hosp Pharm.* 1994 Jun 15;51(12):1539-54.

5

Weeks JC, Satalano PJ, Cronin A, Finkelman MD, Mack JW, Keating NL, Schrag D. Patients' expectations about effects of chemotherapy for advanced cancer. *N Engl J Med.* 2012 Oct 25;367(17):1616-25.

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About the Commission on Cancer

The Commission on Cancer (CoC) is a consortium of 50 professional organizations dedicated to improving survival and quality of life for cancer patients through standard-setting, prevention, research, education and the monitoring of comprehensive quality care.



Established by the American College of Surgeons in 1922, the multidisciplinary CoC establishes standards to ensure quality, multidisciplinary and comprehensive cancer care delivery in health care settings; conducts surveys in health care settings to assess compliance with those standards; collects standardized data from CoC-accredited health care settings to measure cancer care quality; uses data to monitor treatment patterns and outcomes and enhance cancer control and clinical surveillance activities, and develops effective educational interventions to improve cancer prevention, early detection, cancer care delivery and outcomes in health care settings. For more information, visit www.facs.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't order diagnostic tests at regular intervals (such as every day), but rather in response to specific clinical questions.

Many diagnostic studies (including chest radiographs, arterial blood gases, blood chemistries and counts and electrocardiograms) are ordered at regular intervals (e.g., daily). Compared with a practice of ordering tests only to help answer clinical questions, or when doing so will affect management, the routine ordering of tests increases health care costs, does not benefit patients and may in fact harm them. Potential harms include anemia due to unnecessary phlebotomy, which may necessitate risky and costly transfusion, and the aggressive work-up of incidental and non-pathological results found on routine studies.

2

Don't transfuse red blood cells in hemodynamically stable, non-bleeding ICU patients with a hemoglobin concentration greater than 7 g/dL.

Most red blood cell transfusions in the ICU are for benign anemia rather than acute bleeding that causes hemodynamic compromise. For all patient populations in which it has been studied, transfusing red blood cells at a threshold of 7 g/dL is associated with similar or improved survival, fewer complications and reduced costs compared to higher transfusion triggers. More aggressive transfusion may also limit the availability of a scarce resource. It is possible that different thresholds may be appropriate in patients with acute coronary syndromes, although most observational studies suggest harms of aggressive transfusion even among such patients.

3

Don't use parenteral nutrition in adequately nourished critically ill patients within the first seven days of an ICU stay.

For patients who are adequately nourished prior to ICU admission, parenteral nutrition initiated within the first seven days of an ICU stay has been associated with harm, or at best no benefit, in terms of survival and length of stay in the ICU. Early parenteral nutrition is also associated with unnecessary costs. These findings are true even among patients who cannot tolerate enteral nutrition. Evidence is mixed regarding the effects of early parenteral nutrition on nosocomial infections. For patients who are severely malnourished directly prior to their ICU admission, there may be benefits to earlier parenteral nutrition.

4

Don't deeply sedate mechanically ventilated patients without a specific indication and without daily attempts to lighten sedation.

Many mechanically ventilated ICU patients are deeply sedated as a routine practice despite evidence that using less sedation reduces the duration of mechanical ventilation and ICU and hospital length of stay. Several protocol-based approaches can safely limit deep sedation, including the explicit titration of sedation to the lightest effective level, the preferential administration of analgesic medications prior to initiating anxiolytics and the performance of daily interruptions of sedation in appropriately selected patients receiving continuous sedative infusions. Although combining these approaches may not improve outcomes compared to one approach alone, each has been shown to improve patient outcomes compared with approaches that provide deeper sedation for ventilated patients.

5

Don't continue life support for patients at high risk for death or severely impaired functional recovery without offering patients and their families the alternative of care focused entirely on comfort.

Patients and their families often value the avoidance of prolonged dependence on life support. However, many of these patients receive aggressive life-sustaining therapies, in part due to clinicians' failures to elicit patients' values and goals, and to provide patient-centered recommendations. Routinely engaging high-risk patients and their surrogate decision makers in discussions about the option of foregoing life-sustaining therapies may promote patients' and families' values, improve the quality of dying and reduce family distress and bereavement. Even among patients pursuing life-sustaining therapy, initiating palliative care simultaneously with ongoing disease-focused therapy may be beneficial.

How This List Was Created

This document was prepared as an initiative of the Critical Care Societies Collaborative, which includes the American Association of Critical-Care Nurses, the American College of Chest Physicians, the American Thoracic Society and the Society of Critical Care Medicine. Each of these four societies was invited to nominate up to three members to join the taskforce. The final taskforce included 10 members representing all four societies and the disciplines of internal medicine, surgery, anesthesiology, emergency medicine and critical care nursing. Taskforce members initially proposed 58 items for consideration. The taskforce evaluated each item on five criteria (evidence, prevalence, cost, relevance, innovation), and agreed to narrow the list to 16 items. The taskforce debated the conceptual merits of these 16, and selected nine in which to pursue in-depth evidence reviews and consultations with external content experts. Taskforce members then independently scored each item on a scale from 1-9, rating each item on its overall impact as well as on each of the five criteria. The five items with the best mean overall scores were retained in the "penultimate" list. The taskforce then reviewed and edited the wording of items on the penultimate list, and submitted it to the four societies' executive committees. The executive committees sought feedback from additional experts in the field, debated the items and provided written comments to the taskforce. The taskforce deliberated and incorporated these suggestions where appropriate to create the final list, resolving any conflicts through discussion. All four societies endorsed the final list.

Members of the taskforce were: Scott D. Halpern, MD, PhD (Chair), Deborah Becker, PhD, RN, J. Randall Curtis, MD, MPH, Robert Fowler, MD, Robert Hyzy, MD, Jeremy M. Kahn, MD, MSc, Lewis Kaplan, MD, Nishi Rawat, MD, Curtis Sessler, MD and Hannah Wunsch, MD, MSc.

The disclosure and conflict of interest policies for the American Association of Critical Care Nurses, the American College of Chest Physicians, the American Thoracic Society and the Society of Critical Care Medicine can be found at www.accn.org, www.chestnet.org, www.thoracic.org and www.sccm.org respectively.

Sources

1. Flabouris A, Bishop G, Williams L, Cunningham M. Routine blood test ordering for patients in intensive care. *Anaesth Intensive Care*. 2000;28(5):562-5.
Ganapathy A, Adhikari NKJ, Spiegelman J, Scales DC. Routine chest x-rays in intensive care units: A systematic review and meta-analysis. *Crit Care*. 2012;16(2):R68.
May TA, Clancy C, Critchfield J, Ebeling F, Enriquez A, Gallagher C, Genevro J, Kloof J, Lewis P, Smith R, Ng VL. Reducing unnecessary inpatient laboratory testing in a teaching hospital. *Am J Clin Pathol*. 2006;126(2):200-6.
2. Corwin HL, Gettinger A, Pearl RG, Fink MP, Levy MM, Abraham E, MacIntyre NR, Shabot MM, Duh MS, Shapiro MJ. The CRIT Study: anemia and blood transfusion in the critically ill – current clinical practice in the United States. *Crit Care Med*. 2004;32(1):39-52.
Carson JL, Terrin ML, Noveck H, Sanders DW, Chaitman BR, Rhoads GG, Nemo G, Draget K, Beaupre L, Hildebrand K, Macaulay W, Lewis C, Cook DR, Dobbin G, Zakriya KJ, Apple FS, Horney RA, Magaziner J, FOCUS Investigators. Liberal or restrictive transfusion in high-risk patients after hip surgery. *N Engl J Med*. 2011;365(26):2453-62.
Hajjar LA, Vincent JL, Galas F, Nakamura RE, Silva CM, Santos MH, Fukushima J, Kalil Filho R, Sierra DB, Lopes NH, Mauad T, Roquim AC, Sundin MR, Leão WC, Almeida JP, Pomerantzeff PM, Dallan LO, Jatene FB, Stoff NA, Auler JO Jr. Transfusion requirements after cardiac surgery: the TRACS randomized controlled trial. *JAMA-JAMA*. 2010;304(14):1559-67.
Hebert PC, Wells G, Blajchman MA, Marshall J, Martin C, Pagliarello G, Tweeddale M, Schweitzer I, Yetsis E. A multicenter, randomized, controlled clinical trial of transfusion requirements in critical care. *N Engl J Med*. 1999;340(6):409-17.
Villanueva C, Colomo A, Bosch A, Concepción M, Hernandez-Gea V, Aracil C, Graupera I, Poca M, Alvarez-Urturi C, Gordillo J, Guarner-Argente C, Santaló C, Muñoz E, Guarner C. Transfusion strategies for acute upper gastrointestinal bleeding. *N Engl J Med*. 2013;368:11-21.
Chatterjee S, Wetterslev J, Sharma A, Lichstein E, Mukherjee D. Association of blood transfusion with increased mortality in myocardial infarction. *JAMA*. 2013;309:132-39.
3. Casaer MP, Mesotten D, Hermans G, Wouters PJ, Schetz M, Meyfroidt G, Van Cromphaut S, Ingels C, Meersseman P, Muller J, Vlasselaers D, Debaveye Y, Desmet L, Dubois J, Van Assche A, Vanderheyden S, Wilmer A, Van den Berghe G. Early versus late parenteral nutrition in critically ill adults. *N Engl J Med*. 2011;365:506-17.
Heidegger CP, Berger MM, Graf S, Zingg W, Darmon P, Costanza MC, Thibault R, Pichard C. Optimisation of energy provision with supplemental parenteral nutrition in critically ill patients: a randomised controlled clinical trial. *Lancet*. 2013;381(9864):385-93.
Martindale RG, McClave SA, Vanek VW, McCarthy M, Roberts P, Taylor B, Ochoa JB, Napolitano L, Cresci G; American College of Critical Care Medicine; A.S.P.E.N. Board of Directors. Guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient: Society of Critical Care Medicine and American Society for Parenteral and Enteral Nutrition: Executive Summary. *Crit Care Med*. 2009;37(5):1757-61.
Singer P, Berger MM, Van den Berghe G, Biolo G, Calder P, Forbes A, Griffiths R, Kreyman G, Leverve X, Pichard C, ESPEN. ESPEN guidelines on parenteral nutrition: intensive care. *Clin Nutr*. 2009;28(4):387-400.
Buzby GP. Overview of randomized clinical trials of total parenteral nutrition for malnourished surgical patients. *World JSurg* 1993;17:173-7.
4. Brook AD, Ahrens TS, Schaffir R, Prentice D, Sherman G, Shannon W, Kolfel MH. Effect of a nursing-implemented sedation protocol on the duration of mechanical ventilation. *Crit Care Med*. 1999;27:2609-15.
Girard TD, Kress JP, Fuchs BD, Thomason JW, Schweickert WD, Pun BT, Taichman DB, Dunn JG, Pohlman AS, Kinniry PA, Jackson JC, Canonico AE, Light RW, Shintani AK, Thompson JL, Gordon SM, Hall JB, Dittus RS, Bernard GR, Ely EW. Efficacy and safety of a paired sedation and ventilator weaning protocol for mechanically ventilated patients in intensive care (Awakening and Breathing Controlled trial): a randomized controlled trial. *Lancet*. 2008;371(9607):126-34.
Jacobi J, Fraser GL, Coursin DB, Riker RR, Fontaine D, Wittbrodt ET, Chalfin DB, Masica MF, Bjerke HS, Coplin WM, Crippen DW, Fuchs BD, Kelleher RM, Marik PE, Nasraway SA Jr, Murray MJ, Peruzzi WT, Lumb PD; Task Force of the American College of Critical Care Medicine (ACCM) of the Society of Critical Care Medicine (SCCM), American Society of Health-System Pharmacists (ASHP), American College of Chest Physicians. Clinical practice guidelines for the sustained use of sedatives and analgesics in the critically ill adult. *Crit Care Med*. 2002;30(1):119-41.
Kress JP, Pohlman AS, O'Connor MF, Hall JB. Daily interruption of sedative infusions in critically ill patients undergoing mechanical ventilation. *N Engl J Med*. 2000;342:1471-7.
Mehta S, Barry L, Cook D, Fergusson D, Steinberg M, Granton J, Herridge M, Fergusson N, Devlin J, Tanios M, Dodek P, Fowler R, Burns K, Jacka M, Olafson K, Skrobik Y, Hébert P, Sabri E, Meade M; SLEAP Investigators; Canadian Critical Care Trials Group. Daily sedation interruption in mechanically ventilated critically ill patients cared for with a sedation protocol: a randomized controlled trial. *JAMA*. 2012;308(19):1985-92.
5. Fields MJ, Cassel CK. Approaching death, improving care at the end of life. Washington, D.C.: National Academy Press; 1997. 437 p.
Angus DC, Barnato AE, Linde-Zwirble WT, Weissfeld LA, Watson RS, Rickert T, Rubenfeld GD; Robert Wood Johnson Foundation ICU End-Of-Life Peer Group. Use of intensive care at the end of life in the United States: an epidemiologic study. *Crit Care Med*. 2004;32(3):638-43.
Curtis JR, Engelberg RA, Wenrich MD, Shannon SE, Treece PD, Rubenfeld GD. Missed opportunities during family conferences about end-of-life care in the intensive care unit. *Amer J Respir Crit Care Med*. 2005;171:844-9.
Gries CJ, Engelberg RA, Kross EK, Zatzick D, Nielsen EL, Downey L, Curtis JR. Predictors of symptoms of posttraumatic stress and depression in family members after patient death in the ICU. *Chest*. 2010;137(2):280-7.

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About the Collaborative Societies

The Critical Care Societies Collaborative (CCSC) was established in 2000 as a partnership among the four major professional and scientific societies whose members care for America's critically ill and injured. These societies are: the American Association of Critical-Care Nurses (AACN), the American College of Chest Physicians (ACCP), the American Thoracic Society (ATS) and the Society of Critical Care Medicine (SCCM). The CCSC leverages its collective and multi-professional expertise through communication, education, research and advocacy efforts. The CCSC speaks with a unified voice representing more than 150,000 critical care professionals to bring important issues to the forefront in public policy and in the health care arena.

To learn more about the American Association of Critical-Care Nurses, the American College of Chest Physicians, the American Thoracic Society and the Society of Critical Care Medicine, please visit www.accn.org, www.chestnet.org, www.thoracic.org and www.sccm.org respectively.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Avoid routine multiple daily self-glucose monitoring in adults with stable type 2 diabetes on agents that do not cause hypoglycemia.

Once target control is achieved and the results of self-monitoring become quite predictable, there is little gained in most individuals from repeatedly confirming. There are many exceptions, such as for acute illness, when new medications are added, when weight fluctuates significantly, when A1c targets drift off course and in individuals who need monitoring to maintain targets. Self-monitoring is beneficial as long as one is learning and adjusting therapy based on the result of the monitoring.

2

Don't routinely measure 1,25-dihydroxyvitamin D unless the patient has hypercalcemia or decreased kidney function.

Many practitioners become confused when ordering a vitamin D test. Because 1,25-dihydroxyvitamin D is the active form of vitamin D, many practitioners think that measuring 1,25-dihydroxyvitamin D is an accurate means to estimate vitamin D stores and test for vitamin D deficiency, which is incorrect. Current Endocrine Society guidelines recommend screening for vitamin D deficiency in individuals at risk for deficiency.

Serum levels of 1,25-dihydroxyvitamin D have little or no relationship to vitamin D stores but rather are regulated primarily by parathyroid hormone levels, which in turn are regulated by calcium and/or vitamin D. In vitamin D deficiency, 1,25-dihydroxyvitamin D levels go up, not down.

Unregulated production of 1,25-dihydroxyvitamin D (i.e., sarcoidosis, granulomatous diseases) is an uncommon cause of hypercalcemia; this should be suspected if blood calcium levels are high and parathyroid hormone levels are low and confirmed by measurement of 1,25-dihydroxyvitamin D. The enzyme that activates vitamin D is produced in the kidney, so blood levels of 1,25-dihydroxyvitamin D are sometimes of interest in patients on dialysis or with end-stage kidney disease. There are few other circumstances, if any, where 1,25-dihydroxyvitamin D testing would be helpful.

Serum 25-hydroxyvitamin D levels may be overused, but when trying to assess vitamin D stores or diagnose vitamin D deficiency (or toxicity), 25-hydroxyvitamin D is the correct test.

3

Don't routinely order a thyroid ultrasound in patients with abnormal thyroid function tests if there is no palpable abnormality of the thyroid gland.

Thyroid ultrasound is used to identify and characterize thyroid nodules. Thyroid ultrasound is not part of the routine evaluation of hypothyroidism unless the patient also has a large goiter or a lumpy thyroid. Incidentally discovered thyroid nodules are common. Overzealous use of ultrasound will frequently identify nodules that are unrelated to the abnormal thyroid function. This may divert the clinical evaluation to assess the nodules, rather than the thyroid dysfunction. Thyrotoxic patients with nodules may also benefit from imaging. For these patients, a thyroid scan, not an ultrasound, can be used to assess the possibility of focal autonomy in a thyroid nodule. In some centers assessment of thyroid artery blood flow by doppler may be used to help distinguish Graves' disease from a destructive thyroiditis.

4

Don't order a total or free T3 level when assessing levothyroxine (T4) dose in hypothyroid patients.

T4 is converted into T3 at the cellular level in virtually all organs. Intracellular T3 levels regulate pituitary secretion and blood levels of TSH, as well as the effects of thyroid hormone in multiple organs. However, T3 levels in blood are not reliable indicators of intracellular T3 concentration. Compared to patients with intact thyroid glands, patients taking T4 may have higher blood T4 and lower blood T3 levels. There is controversy as to whether a normal TSH reflects adequate intracellular T3 levels in all organs. However, even in patients taking both levothyroxine and liothyronine, there are no data suggesting that the blood level of total or free T3 correlates with a patient's clinical response. Therefore, in most patients a normal TSH indicates a correct dose of T4.

5

Don't prescribe testosterone therapy unless there is biochemical evidence of testosterone deficiency.

Many of the symptoms attributed to male hypogonadism are commonly seen in normal male aging or in the presence of comorbid conditions. Testosterone therapy has the potential for serious side effects and represents a significant expense. It is therefore important to confirm the clinical suspicion of hypogonadism with biochemical testing. Current guidelines recommend the use of a total testosterone level obtained in the morning. A low level should be confirmed on a different day, again measuring the total testosterone. In some situations, a free or bioavailable testosterone may be of additional value.

How This List Was Created

Members of The Endocrine Society (Society) along with representatives of the American Association of Clinical Endocrinologists (AACE) formed a joint task force to identify tests or procedures which should only be used in specific circumstances. The task force identified several items for possible inclusion. Subsequent discussions compared the evidence supporting each item, the value of the recommendation to practitioners and the potential for cost savings. Members of the Society's Clinical Affairs Core Committee and AACE leadership also reviewed the initial list. Using the above criteria, the task force voted for their top five recommendations from the original list. The Society's Council and AACE's Board of Directors approved the final list for submission to the *Choosing Wisely*[®] campaign.

The Endocrine Society disclosure and conflict of interest policies can be found at www.endocrine.org.

*The American Association of Clinical Endocrinologists withdrew from the *Choosing Wisely*[®] campaign on May 26, 2015.

Sources

- Davidson MB, Castellanos M, Kain D, Duran P. The effect of self monitoring of blood glucose concentrations on glycated hemoglobin levels in diabetic patients not taking insulin: a blinded, randomized trial. *Am J Med.* 2005;118:422–5.
Farmer A, Wade A, Goyder E, Yudkin P, French D, Craven A, Holman Rury, Kinmonth AL, Neil A. Impact of self monitoring of blood glucose in the management of patients with non-insulin treated diabetes: open parallel group randomized trial. *BMJ.* 2007;335:132–40.
O'Kane MJ, Bunting B, Copeland M, Coates VE; ESMON study group. Efficacy of self monitoring of blood glucose in patients with newly diagnosed type 2 diabetes (ESMON study): randomized controlled trial. *BMJ.* 2008;336:1174–7.
- Bikle D, Adams J, Christakos S. Primer on the metabolic bone diseases and disorders of mineral metabolism. Washington: American Society for Bone and Mineral Research. c2008. Chapter 28. Vitamin D: production, metabolism, mechanism of action, and clinical requirements. P. 141–9.
Holick MF. Vitamin D deficiency. *N Engl J Med.* 2007;357:266–81.
Holick MF, Binkley NC, Bischoff-Ferrari HA, Gordon CM, Hanley DA, Heaney RP, Murad MH, Weaver CM; Endocrine Society. Evaluation, treatment, and prevention of vitamin D deficiency: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab.* 2011 Jul;96(7):1911–30.
- Bahn RS, Burch HB, Cooper DS, Garber JR, Greenlee MC, Klein I, Laurberg P, McDougall IR, Montori VM, Rivkees SA, Ross DS, Sosa JA, Stan MN; American Thyroid Association; American Association of Clinical Endocrinologists. Hyperthyroidism and other causes of thyrotoxicosis: management guidelines of the American Thyroid Association and American Association of Clinical Endocrinologists. *Thyroid.* 2011;21:593–646.
Garber JR, Cobin RH, Gharib H, Hennessey JV, Klein I, Mechanick JI, Pessah-Pollack R, Singer PA, Woeber KA. Clinical practice guidelines for hypothyroidism in adults: cosponsored by the American Association of Clinical Endocrinologists and the American Thyroid Association. *Endocr Pract.* 2012; Sep 11:1–207.
- Garber JR, Cobin RH, Gharib H, Hennessey JV, Klein I, Mechanick JI, Pessah-Pollack R, Singer PA, Woeber KA. Clinical practice guidelines for hypothyroidism in adults: cosponsored by the American Association of Clinical Endocrinologists and the American Thyroid Association. *Endocr Pract.* 2012; Sep 11:1–207.
- Bhasin S, Cunningham GR, Hayes FJ, Matsumoto AM, Snyder PJ, Swerdloff RS, Montori VM. Testosterone therapy in adult men with androgen deficiency syndromes: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab.* 2006 Jun;91(6):1995–2010.
Wu FCW, Tajar A, Beynon JM, Pye SR, Silman AJ, Finn JD, O'Neill TW, Bartfai G, Casanueva FF, Forti G, Giwercman A, Han TS, Kula K, Lean ME, Pendleton N, Punab M, Boonen S, Vanderschueren D, Labrie F, Huhtaniemi IT; EMAS Group. Identification of late-onset hypogonadism in middle-aged and elderly men. *N Engl J Med.* 2010 Jul 8;363(2):123–35.

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About The Endocrine Society

- Founded in 1916, The Endocrine Society is the world's oldest, largest, and most active organization devoted to research on hormones and the clinical practice of endocrinology. The Society is an international body with more than 16,000 members from over 100 countries, and represents the full range of disciplines associated with endocrinologists: clinicians, researchers, educators, fellows and students, industry professionals and health professionals who are involved in the field of endocrinology. Our members are dedicated to the research and treatment of the full range of endocrine disorders: diabetes, reproduction, infertility, osteoporosis, thyroid disease, obesity/lipids, growth hormone, pituitary tumors and adrenal insufficiency.

Visit The Endocrine Society at www.endocrine.org.



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Five Things Physicians and Patients Should Question

1

Don't implant pacemakers for asymptomatic sinus bradycardia in the absence of other indications for pacing.

While pacemaker implantation is clearly indicated in patients with symptomatic sinus node dysfunction, there is no clear evidence that pacemaker implantation benefits asymptomatic patients with sinus bradycardia who have no other reasons for pacing nor need for cardiac resynchronization. Although pacemaker implantation is a relatively low-risk surgical procedure, like any operation, there is both risk and cost. Furthermore, persistent inappropriate right ventricular pacing may have harmful effects on heart function. Current professional society clinical guidelines recommend against (Class III, contraindicated) pacemaker implantation in these patients where the risks outweigh the benefits.

2

Don't implant an implantable cardioverter-defibrillator (ICD) for the primary prevention of sudden cardiac death in patients with New York Heart Association (NYHA) Functional Class IV who are not candidates for either cardiac transplantation, a left ventricular assist device as destination therapy or cardiac resynchronization therapy (CRT).

Because patients with severe (New York Heart Association functional class IV) congestive heart failure who are not eligible for advanced therapies such as ventricular assist devices, cardiac resynchronization or cardiac transplantation have extremely high mortality, they were not included in the primary prevention trials of ICD therapy. As such, current clinical professional society guidelines recommend against (Class III, contraindicated) implantation of an ICD in such patients.

3

Don't implant an ICD for the primary prevention of sudden cardiac death in patients unlikely to survive at least one year due to non-cardiac comorbidity.

Because the explicit goal of primary prevention of sudden death with an ICD is the prevention of death due to life-threatening ventricular arrhythmias in patients with an otherwise reasonable expectation of survival, current clinical professional society guidelines recommend against (Class III, contraindicated) implantation of an ICD when there is no reasonable expectation of survival from a non-cardiac illness for at least one year.

4

Don't ablate the atrioventricular node in patients with atrial fibrillation when both symptoms and heart rate are acceptably controlled by well-tolerated medical therapy.

Atrioventricular node ablation and pacemaker implantation may provide benefit in some patients when rate and related symptoms cannot be controlled by medication therapy (Class IIa, indicated) or when there is concern for possible tachycardia-induced cardiomyopathy (Class IIb, may be considered). However, according to current professional society clinical guidelines, the risks of AV node ablation outweigh the benefits among patients with no symptoms and who have appropriate rate control with well-tolerated medical therapy.

5

Don't use Vaughan-Williams Class Ic antiarrhythmic drugs as a first-line agent for the maintenance of sinus rhythm in patients with ischemic heart disease who have experienced prior myocardial infarction.

Class Ic antiarrhythmic agents (i.e., flecainide and encainide,) have been demonstrated to increase mortality in patients treated with these agents after myocardial infarction, and as a result, current clinical professional society guidelines recommend against (Class III, contraindicated) the use of these agents (and propafenone, because it is also a Class Ic agent) in patients with known coronary artery disease with left ventricular dysfunction or concern for possible ischemic myocardium at risk.

How This List Was Created

The Heart Rhythm Society (HRS) asked its standing [Quality Improvement Subcommittee](#), comprised of twelve experienced physicians and allied professionals, to recommend five procedures that should not be performed or should be performed more rarely and only in specific circumstances. The recommendations were identified based on existing appropriate use criteria and guidelines. The HRS [Health Policy Committee](#) then reviewed the five recommendations before sending the list to the HRS [Board of Trustees](#) for final review and approval.

HRS's disclosure and conflict of interest policy can be found at <http://www.hrsonline.org/About-HRS/Heart-Rhythm-Society-Governance/Disclosure-Policy#axzz2ILTZwIkZ>.

Sources

- 1 Epstein AE, DiMarco JP, Ellenbogen KA, Estes NA 3rd, Freedman RA, Gettes LS, Gillinov AM, Gregoratos G, Hammill SC, Hayes DL, Hlatky MA, Newby LK, Page RL, Schoenfeld MH, Silka MJ, Stevenson LW, Sweeney MO, Smith SC Jr, Jacobs AK, Adams CD, Anderson JL, Buller CE, Creager MA, Ettinger SM, Faxon DP, Halperin JL, Hiratzka LF, Hunt SA, Krumholz HM, Kushner FG, Lytle BW, Nishimura RA, Ornato JP, Page RL, Riegel B, Tarkington LG, Yancy CW; American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the ACC/AHA/NASPE 2002 Guideline Update for Implantation of Cardiac Pacemakers and Antiarrhythmia Devices); American Association for Thoracic Surgery; Society of Thoracic Surgeons. ACC/AHA/HRS 2008 guidelines for device-based therapy of cardiac rhythm abnormalities: a report of the American College of Cardiology/American Heart Association Task Force on practice guidelines (writing committee to revise the ACC/AHA/NASPE 2002 guideline update for implantation of cardiac pacemakers and antiarrhythmia devices) developed in collaboration with the American Association for Thoracic Surgery and Society of Thoracic Surgeons. *J Am Coll Cardiol*. 2008 May 27;51(21):e1–62.
- 2 Epstein AE, DiMarco JP, Ellenbogen KA, Estes NA 3rd, Freedman RA, Gettes LS, Gillinov AM, Gregoratos G, Hammill SC, Hayes DL, Hlatky MA, Newby LK, Page RL, Schoenfeld MH, Silka MJ, Stevenson LW, Sweeney MO, Smith SC Jr, Jacobs AK, Adams CD, Anderson JL, Buller CE, Creager MA, Ettinger SM, Faxon DP, Halperin JL, Hiratzka LF, Hunt SA, Krumholz HM, Kushner FG, Lytle BW, Nishimura RA, Ornato JP, Page RL, Riegel B, Tarkington LG, Yancy CW; American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the ACC/AHA/NASPE 2002 Guideline Update for Implantation of Cardiac Pacemakers and Antiarrhythmia Devices); American Association for Thoracic Surgery; Society of Thoracic Surgeons. ACC/AHA/HRS 2008 guidelines for device-based therapy of cardiac rhythm abnormalities: a report of the American College of Cardiology/American Heart Association Task Force on practice guidelines (writing committee to revise the ACC/AHA/NASPE 2002 guideline update for implantation of cardiac pacemakers and antiarrhythmia devices) developed in collaboration with the American Association for Thoracic Surgery and Society of Thoracic Surgeons. *J Am Coll Cardiol*. 2008 May 27;51(21):e1–62.
- 3 Epstein AE, DiMarco JP, Ellenbogen KA, Estes NA 3rd, Freedman RA, Gettes LS, Gillinov AM, Gregoratos G, Hammill SC, Hayes DL, Hlatky MA, Newby LK, Page RL, Schoenfeld MH, Silka MJ, Stevenson LW, Sweeney MO, Smith SC Jr, Jacobs AK, Adams CD, Anderson JL, Buller CE, Creager MA, Ettinger SM, Faxon DP, Halperin JL, Hiratzka LF, Hunt SA, Krumholz HM, Kushner FG, Lytle BW, Nishimura RA, Ornato JP, Page RL, Riegel B, Tarkington LG, Yancy CW; American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the ACC/AHA/NASPE 2002 Guideline Update for Implantation of Cardiac Pacemakers and Antiarrhythmia Devices); American Association for Thoracic Surgery; Society of Thoracic Surgeons. ACC/AHA/HRS 2008 guidelines for device-based therapy of cardiac rhythm abnormalities: a report of the American College of Cardiology/American Heart Association Task Force on practice guidelines (writing committee to revise the ACC/AHA/NASPE 2002 guideline update for implantation of cardiac pacemakers and antiarrhythmia devices) developed in collaboration with the American Association for Thoracic Surgery and Society of Thoracic Surgeons. *J Am Coll Cardiol*. 2008 May 27;51(21):e1–62.
- 4 Fuster V, Rydén LE, Cannom DS, Crijns HJ, Curtis AB, Ellenbogen KA, Halperin JL, Kay GN, Le Huezey JY, Lowe JE, Olsson SB, Prystowsky EN, Tamargo JL, Wann LS, Smith SC Jr, Priori SG, Estes NA 3rd, Ezekowitz MD, Jackman WM, January CT, Lowe JE, Page RL, Slotwiner DJ, Stevenson WG, Tracy CM, Jacobs AK, Anderson JL, Albert N, Buller CE, Creager MA, Ettinger SM, Guyton RA, Halperin JL, Hochman JS, Kushner FG, Ohman EM, Stevenson WG, Tarkington LG, Yancy CW; American College of Cardiology Foundation/American Heart Association Task Force. 2011 ACCF/AHA/HRS focused updates incorporated into the ACC/AHA/ESC 2006 guidelines for the management of patients with atrial fibrillation: a report of the American College of Cardiology Foundation/American Heart Association Task Force on practice guidelines. *Circulation*. 2011 Mar 15;123(10):e269–367.
- 5 The Cardiac Arrhythmia Suppression Trial (CAST) Investigators. Preliminary report: effect of encainide and flecainide on mortality in a randomized trial of arrhythmia suppression after myocardial infarction. The Cardiac Arrhythmia Suppression Trial (CAST) Investigators. *N Engl J Med*. 1989 Aug 10;321(6):406–12.
Fuster V, Rydén LE, Cannom DS, Crijns HJ, Curtis AB, Ellenbogen KA, Halperin JL, Kay GN, Le Huezey JY, Lowe JE, Olsson SB, Prystowsky EN, Tamargo JL, Wann LS, Smith SC Jr, Priori SG, Estes NA 3rd, Ezekowitz MD, Jackman WM, January CT, Lowe JE, Page RL, Slotwiner DJ, Stevenson WG, Tracy CM, Jacobs AK, Anderson JL, Albert N, Buller CE, Creager MA, Ettinger SM, Guyton RA, Halperin JL, Hochman JS, Kushner FG, Ohman EM, Stevenson WG, Tarkington LG, Yancy CW; American College of Cardiology Foundation/American Heart Association Task Force. 2011 ACCF/AHA/HRS focused updates incorporated into the ACC/AHA/ESC 2006 guidelines for the management of patients with atrial fibrillation: a report of the American College of Cardiology Foundation/American Heart Association Task Force on practice guidelines. *Circulation*. 2011 Mar 15;123(10):e269–367.

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About the Heart Rhythm Society

The Heart Rhythm Society is the international leader in science, education and advocacy for cardiac arrhythmia professionals and patients, and the primary information resource on heart rhythm disorders. Its mission is to improve the care of patients by promoting research, education and optimal health care policies and standards. Representing more than 5,800 heart rhythm professionals in more than 70 countries around the world, HRS is pleased to partner in the *Choosing Wisely*[®] campaign to help ensure that people living with heart rhythm disorders receive optimal care and improved quality of life. The Society also is a leader of the “Apples and Oranges” Sudden Cardiac Arrest Awareness Campaign aimed at sharing the differences between SCA and heart attack and the “AFib Feels Like” Awareness Campaign aimed at helping people understand the symptoms, risks and treatment options for Atrial Fibrillation, the most common heart rhythm disorder. For more information, follow HRS on [Twitter](#), [Facebook](#) or [LinkedIn](#).



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question¹

1

Avoid unnecessary CD4 tests.

A CD4 count is not required in conjunction with every viral load test. Viral load testing is a better indicator of a patient's response to therapy. CD4 monitoring is not necessary for patients who have stable viral suppression. For the first two years after treatment initiation, the CD4 count should be monitored every three to six months. After two years, if the viral load is undetectable, the CD4 count should be measured yearly if it is 300–500 cells/mm³. If it is consistently above >500 cells/mm³ then further monitoring is optional.

2

Don't order complex lymphocyte panels when ordering CD4 counts.

Order only CD4 counts and percentages rather than ordering other lymphocyte panels. For example, CD8 testing, including the CD4/CD8 ratio, adds cost without providing useful information. More complex lymphocyte panels are unnecessary and increase costs even more.

3

Avoid quarterly viral load testing of patients who have durable viral suppression, unless clinically indicated.

Viral load testing should be conducted before initiation of treatment, two to eight weeks after initiation or modification of therapy, and then every three to four months to confirm continuous viral suppression. In clinically stable patients who have durable virological suppression for more than two years, clinicians may extend the interval to six months.²

4

Don't routinely order testing for glucose-6-phosphate dehydrogenase (G6PD) deficiency for patients who are not predisposed due to race/ethnicity.

G6PD deficiency testing is recommended upon entry into care or before starting therapy with an oxidant drug only in HIV-infected patients who are predisposed to this genetic disorder that can cause hemolytic anemia. G6PD most frequently occurs in populations of African, Asian and Mediterranean descent and is most likely to affect HIV-infected patients with one of these racial or ethnic backgrounds.

5

Don't routinely test for CMV IgG in HIV-infected patients who have a high likelihood of being infected with CMV.

Cytomegalovirus (CMV) IgG testing is recommended only in patients who are at lower risk for CMV to detect latent CMV infection. CMV IgG testing is not necessary in patients at higher risk for CMV, including men who have sex with men and injection drug users, because they can be assumed to be CMV positive. Testing for CMV antibody in low-risk populations is recommended to foster patient counseling in avoidance of CMV infection through practicing safe sex and to avoid transfusion except with CMV-negative blood products. Patients at lower risk for CMV infection, e.g., patients who are heterosexual and have not injected drugs, should be tested for latent CMV infection with an anti-CMV IgG upon initiation of care.

¹ These recommendations do not supersede grant reporting requirements.

² Note: Some patients may still require a face to face visit every three to four months to make certain that other comorbid conditions are stable, and to assess if there are other social changes that might have surfaced which could impact HIV medication adherence. Multidisciplinary practices can consider interim visits with other non-prescribing practitioner team members to support treatment adherence.

How This List Was Created

An expert work group composed of four members of HIVMA's Board of Directors directed the development of HIVMA's *Choosing Wisely*® list of "Five Things Physicians and Patients Should Question." The work group was provided with the ABIM Foundation guidelines on recommendation development, and identified a preliminary list of inappropriate and overused clinical practices. A list of five items was drafted and then vetted by the full HIVMA Board of Directors to develop a finalized list of consensus recommendations.

HIVMA's disclosure and conflict of interest policy can be found at www.hivma.org

Sources

- Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. Available at <http://www.aidsinfo.nih.gov/ContentFiles/AdultandAdolescentGL.pdf>. 2015 Apr. 288 p.

Ahn JY, Boettiger D, Law M, Kumarasamy N, Yuniastuti E, Chaiwarith R, Lee MP, Sim BL, Oka S, Wong W, Kamarulzaman A, Kantipong P, Phanuphak P, Ng OT, Kiertiburanakul S, Zhang F, Pujari S, Ditangco R, Ratanasuwana W, Merati TP, Saphonn V, Sohn AH, Choi JY; TREAT Asia HIV Observational Databases (TAHOD). Implementation and operational research: effects of CD4 monitoring frequency on clinical endpoints in clinically stable HIV-infected patients with viral suppression. *J Acquir Immune Defic Syndr*. 2015 Jul 1;69(3):e85-92.
- Aberg JA, Gallant JE, Ghanem KG, Emmanuel P, Zingman BS, Horberg MA; Infectious Diseases Society of America. Primary care guidelines for the management of persons infected with HIV: 2013 update by the HIV Medicine Association of the Infectious Diseases Society of America. *Clin Infect Dis*. 2014 Jan;58(1):1-10.

Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. Available at <http://www.aidsinfo.nih.gov/ContentFiles/AdultandAdolescentGL.pdf>. 2015 Apr. 288 p.
- Aberg JA, Gallant JE, Ghanem KG, Emmanuel P, Zingman BS, Horberg MA; Infectious Diseases Society of America. Primary care guidelines for the management of persons infected with HIV: 2013 update by the HIV Medicine Association of the Infectious Diseases Society of America. *Clin Infect Dis*. 2014 Jan;58(1):1-10.

Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. Available at <http://www.aidsinfo.nih.gov/ContentFiles/AdultandAdolescentGL.pdf>. 2015 Apr. 288 p.
- Aberg JA, Gallant JE, Ghanem KG, Emmanuel P, Zingman BS, Horberg MA; Infectious Diseases Society of America. Primary care guidelines for the management of persons infected with HIV: 2013 update by the HIV Medicine Association of the Infectious Diseases Society of America. *Clin Infect Dis*. 2014 Jan;58(1):1-10.

Prchal JT, Gregg XT. Red cell enzymes. *American Society of Hematology*. 2015 Aug 11;(1):19-23.
- Aberg JA, Gallant JE, Ghanem KG, Emmanuel P, Zingman BS, Horberg MA; Infectious Diseases Society of America. Primary care guidelines for the management of persons infected with HIV: 2013 update by the HIV Medicine Association of the Infectious Diseases Society of America. *Clin Infect Dis*. 2014 Jan;58(1):1-10.

Panel on Opportunistic Infections in HIV-Infected Adults and Adolescents. Guidelines for prevention and treatment of opportunistic infections in HIV-infected adults and adolescents: recommendations from the Centers for Disease Control and Prevention, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America; 2015 Apr. 414 p. Available at http://aidsinfo.nih.gov/contentfiles/lvguidelines/adult_oi.pdf.

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About the HIV Medicine Association

The HIV Medicine Association (HIVMA) is an organization of nearly 5,000 medical professionals who practice HIV medicine. Housed within the Infectious Diseases Society of America (IDSA), HIVMA represents the interests of HIV health care providers and researchers and their patients by promoting quality in HIV care and by advocating for policies that ensure a comprehensive and humane response to the HIV/AIDS pandemic informed by science and social justice. HIVMA is pleased to partner with the *Choosing Wisely*® campaign to raise awareness of inappropriate, wasteful clinical actions that harm patients and lead to wasteful health costs. Consistent with the mission of *Choosing Wisely*®, HIVMA is committed to evidence-based medicine and continually develops and updates clinical practice guidelines that inform the use of high-quality, truly necessary medicine.

For more information on HIV medical specialists and HIVMA, please visit the HIVMA website, www.hivma.org.



For more information or to see other lists of Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1 Don't treat asymptomatic bacteremia with antibiotics.

Inappropriate use of antibiotics to treat asymptomatic bacteremia (ASB), or a significant number of bacteria in the urine that occurs without symptoms such as burning or frequent urination, is a major contributor to antibiotic overuse in patients. With the exception of pregnant patients, patients undergoing prostate surgery or other invasive urological surgery, and kidney or kidney pancreas organ transplant patients within the first year of receiving the transplant, use of antibiotics to treat ASB is not clinically beneficial and does not improve morbidity or mortality. The presence of a urinary catheter increases the risk of bacteremia, however, antibiotic use does not decrease the incidence of symptomatic catheter-associated urinary tract infection (CAUTI), and unless there are symptoms referable to the urinary tract or symptoms with no identifiable cause, catheter-associated asymptomatic bacteremia (CA-ASB) does not require screening and antibiotic therapy. The overtreatment of ASB with antibiotics is not only costly, but can lead to *C. difficile* infection and the emergence of resistant pathogens, raising issues of patient safety and quality.

2 Avoid prescribing antibiotics for upper respiratory infections.

The majority of acute upper respiratory infections (URIs) are viral in etiology and the use of antibiotic treatment is ineffective, inappropriate and potentially harmful. However, proven infection by Group A Streptococcal disease (Strep throat) and pertussis (whooping cough) should be treated with antibiotic therapy. Symptomatic treatment for URIs should be directed to maximize relief of the most prominent symptom(s). It is important that health care providers have a dialogue with their patients and provide education about the consequences of misusing antibiotics in viral infections, which may lead to increased costs, antimicrobial resistance and adverse effects.

3 Don't use antibiotic therapy for stasis dermatitis of lower extremities.

Stasis dermatitis is commonly treated with antibiotic therapy, which may be a result of misdiagnosis or lack of awareness of the pathophysiology of the disease. The standard of care for the treatment of stasis dermatitis affecting lower extremities is a combination of leg elevation and compression. Elevation of the affected area accelerates improvements by promoting gravity drainage of edema and inflammatory substances. The routine use of oral antibiotics does not improve healing rates and may result in unnecessary hospitalization, increased health care costs and potential for patient harm.

4 Avoid testing for a *Clostridium difficile* infection in the absence of diarrhea.

Testing for *C. difficile* or its toxins should be performed only on diarrheal (unformed) stool, unless ileus due to *C. difficile* is suspected. Because *C. difficile* carriage is increased in patients on antimicrobial therapy, and patients in the hospital, only diarrheal stools warrant testing. In the absence of diarrhea, the presence of *C. difficile* indicates carriage and should not be treated and therefore, not tested.

5 Avoid prophylactic antibiotics for the treatment of mitral valve prolapse.

Antibiotic prophylaxis is no longer indicated in patients with mitral valve prolapse for prevention of infective endocarditis. The risk of antibiotic-associated adverse effects exceeds the benefit (if any) from prophylactic antibiotic therapy. Limited use of prophylaxis will likely reduce the unwanted selection of antibiotic-resistant strains and their unintended consequences such as *C. difficile*-associated colitis.

How This List Was Created

The Infectious Diseases Society of America's (IDSA) Quality Improvement Committee (QIC) directed the development of IDSA's *Choosing Wisely*[®] list of Five Things Physicians and Patients Should Question. The Committee identified a preliminary list of inappropriate and overused clinical practices. A list of five items was drafted and then vetted by the QIC and revisions were made according to a workgroup consensus. The finalized list was then submitted for approval to the IDSA Board of Directors.

IDSA's disclosure and conflict of interest policy can be found at www.idsociety.org/Index.aspx.

Sources

1. Trautner B, Kelly PA, Petersen N, Hysong S, Kell H, Liao KS, Patterson JE, Naik AN. A hospital-site controlled intervention using audit and feedback to implement guidelines concerning inappropriate treatment of catheter-associated asymptomatic bacteriuria. *Implement Sci*. 2011 Apr 22;6:41.
Nicolle LE, Bradley S, Colgan R, Rice JC, Schaeffer A, Hooton TM. Infectious Diseases Society of America, American Society of Nephrology, American Geriatric Society. Infectious Diseases Society of America guidelines for the diagnosis and treatment of asymptomatic bacteriuria in adults. *Clin Infect Dis*. 2005 Mar 1;40(5):643-54.
Gross PA, Patel B. Reducing antibiotic overuse: a call for a national performance measure for not treating asymptomatic bacteriuria. *Clin Infect Dis*. 2007 Nov 15; 45(10):1335-7.
2. Chow AW, Benninger MS, Brook I, Brozek JL, Goldstein EJ, Hicks LA, Pankey GA, Seleznick M, Volturo G, Wald ER, File TM Jr. IDSA clinical practice guideline for acute bacterial rhinosinusitis in children and adults. *Clin Infect Dis*. 2012 Apr;54(8):e72-112.
Zoorod R, Sidani MA, Fremont RD, Kihlberg C. Antibiotic use in acute upper respiratory tract infections. *Am Fam Physician*. 2012 Nov 1;86(9):817-22.
Adult appropriate antibiotic use summary: physician information sheet (adults) [Internet]. Atlanta (GA): The Centers for Disease Control and Prevention; 2012 May 1 [updated 2012 Jun 25; cited 2015 Jan 28]. Available from: <http://www.cdc.gov/getsmart/campaign-materials/info-sheets/adult-approp-summary.html>.
3. Stevens DL, Bisno AL, Chambers HF, Dellinger EP, Goldstein EJ, Gorbach SL, Hirschmann JV, Kaplan SL, Montoya JG, Wade JC. Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the infectious diseases society of America. *Clin Infect Dis*. 2014 Jul 15;59(2):147-59.
Collins L, Seraj S. Diagnosis and treatment of venous ulcers. *Am Fam Physician*. 2010 Apr 15;81(8):989-96.
4. Cohen SH, Gerding DN, Johnson S, Kelly CP, Loo VG, McDonald LC, Pepin J, Wilcox MH; Society for Healthcare Epidemiology of America; Infectious Diseases Society of America. Clinical practice guidelines for Clostridium difficile infection in adults: 2010 update by the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA). *Infect Control Hosp Epidemiol*. 2010 May;31(5):431-55.
Surawicz, Christina M, Brandt LJ, Binion DG, Ananthakrishnan AN, Curry SR, Gilligan PH, McFarland LV, Mellow M, Zuckerbraun BS. Guidelines for diagnosis, treatment, and prevention of Clostridium difficile infections. *Am J Gastroenterol*. 2013 Apr;108(4):478-98.
5. Nishimura RA, Carabello BA, Faxon DP, Freed MD, Lytle BW, O'Gara PT, O'Rourke RA, Shah PM. ACC/AHA 2008 Guideline update on valvular heart disease: focused update on infective endocarditis: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines endorsed by the Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. *J Am Coll Cardiol*. 2008 Aug 19;52(8):676-85.
Gopalakrishnan PP, Shukla SK, Tak T. Infective endocarditis rationale for revised guidelines for antibiotic prophylaxis. *Clin Med Res*. 2009 Sep;7(3):63-8.

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About the Infectious Diseases Society of America

The Infectious Diseases Society of America (IDSA) is proud to partner with the *Choosing Wisely*[®] campaign to raise awareness of inappropriate, wasteful clinical actions that harm patients and lead to costly health care. Supporting the aims of *Choosing Wisely*, IDSA is committed to evidence-based medicine and develops clinical practice guidelines that inform the use of high-quality, truly necessary medicine. Founded in 1963, IDSA represents more than 10,000 infectious diseases physicians and scientists devoted to patient care, prevention, population health, education and research in the area of infectious disease (ID). Our members care for patients of all ages with serious infections, including meningitis, pandemic influenza, pneumonia, tuberculosis, surgical infections, immunocompromised cancer or transplant patients who have life-threatening infections caused by uncommon or drug-resistant microorganisms, HIV and AIDS patients, and new and emerging infections, such as Middle East respiratory syndrome (MERS), and Ebola.

For more information on infectious diseases specialists and IDSA, please visit the IDSA website, www.idsociety.org.



For more information or to see other lists of Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1 Don't recommend advanced imaging (e.g., MRI) of the spine within the first six weeks in patients with non-specific acute low back pain in the absence of red flags.

In the absence of red flags, advanced imaging within the first six weeks has not been found to improve outcomes, but does increase costs. Red flags include, but are not limited to: trauma history, unintentional weight loss, immunosuppression, history of cancer, intravenous drug use, steroid use, osteoporosis, age > 50, focal neurologic deficit and progression of symptoms.

2 Don't perform elective spinal injections without imaging guidance, unless contraindicated.

Elective spinal injections, such as epidural steroid injections, should be performed under imaging guidance using fluoroscopy or CT with contrast enhancement (unless contraindicated) to ensure correct placement of the needle and to maximize diagnostic accuracy and therapeutic efficacy. Failure to use appropriate imaging may result in inappropriate placement of the medication, thereby decreasing the efficacy of the procedure and increasing the need for additional care.

3 Don't use Bone Morphogenetic Protein (rhBMP) for routine anterior cervical spine fusion surgery.

Bone Morphogenetic Protein is a compound which stimulates bone formation and healing. Life-threatening complications have been reported in the routine use of recombinant human rhBMP in anterior cervical spine fusion surgery, due to swelling of the soft tissues. This may lead to difficulty swallowing or pressure on the airway.

4 Don't use electromyography (EMG) and nerve conduction studies (NCS) to determine the cause of axial lumbar, thoracic or cervical spine pain.

Electromyography and nerve conduction studies are measures of nerve and muscle function. They may be indicated when there is concern for a neurologic injury or disorder, such as the presence of leg or arm pain, numbness or weakness associated with compression of a spinal nerve. As spinal nerve injury is not a cause of neck, mid back or low back pain, EMG/NCS have not been found to be helpful in diagnosing the underlying causes of axial lumbar, thoracic and cervical spine pain.

5 Don't recommend bed rest for more than 48 hours when treating low back pain.

In patients with low back pain, bed rest exceeding 48 hours in duration has not been shown to be of benefit.

How This List Was Created

The North American Spine Society (NASS) appointed a multidisciplinary task force to identify five areas in which to make recommendations. Based on the scientific evidence, existing clinical practice recommendations and expert opinion, the task force collaboratively identified a draft list of nine recommendations that was subsequently submitted to the NASS Board of Directors for review and ranking. After further refinement, the final list was reviewed and approved by the NASS Board of Directors.

NASS' disclosure and conflict of interest policy can be found at: www.spine.org/Pages/PracticePolicy/EthicsProfConduct/NASSDisclosurePolicy.aspx.

Sources

- 1 Chou R, Qaseem A, Snow V, Casey D, Cross JT Jr, Shekelle P, Owens DK; Clinical Efficacy Assessment Subcommittee of the American College of Physicians; American College of Physicians; American Pain Society Low Back Pain Guidelines Panel. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. *Ann Intern Med*. 2007 Oct 2;147(7):478-91.
Forseen S, Corey A. Clinical decision support and acute low back pain: evidence-based order sets. *J Am Coll Radiol*. 2012 Oct;9(10):704-12.
- 2 NASS Evidence-Based Guideline: North American Spine Society (NASS). Diagnosis and treatment of degenerative lumbar spinal stenosis. Burr Ridge (IL): North American Spine Society (NASS); 2011. 104 p.
- 3 U.S. Food & Drug Administration. FDA public health notification: life-threatening complications associated with recombinant human bone morphogenetic protein in cervical spine fusion [Internet]. Silver Spring (MD):U.S. Food and Drug Administration; 2008 Jul 1 [updated 2013 Mar 21; cited 2013 Jul 19]. Available from: <http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/PublicHealthNotifications/ucm062000.htm>.
Woo EJ. Recombinant human bone morphogenetic protein 2: adverse events reported to the Manufacturer and User Facility Device Experience database. *Spine J*. 2012 Oct;12(10):894-9.
- 4 Sandoval AE. Electrodiagnostics for low back pain. *Phys Med Rehabil Clin N Am*. 2010 Nov; 21(4):767-76.
NASS Evidence-Based Guideline: North American Spine Society (NASS). Diagnosis and treatment of degenerative lumbar spinal stenosis. Burr Ridge (IL): North American Spine Society (NASS); 2011. 104 p.
- 5 Dahm KT, Brurberg KG, Jamtvedt G, Hagen KB. Advice to rest in bed versus advice to stay active for acute low-back pain and sciatica. *Cochrane Database Syst Rev*. 2010 Jun 16;(6):CD007612.
North American Spine Society. Acute low back pain [Internet]. Blue Ridge (IL): North American Spine Society; 2009. [cited 2012 November 7]. Available from: <http://www.knowyourback.org/Pages/SpinalConditions/LowBackPain/Acute.aspx>.

THIS CHOOSING WISELY DOCUMENT DOES NOT REPRESENT A "STANDARD OF CARE," nor is it intended as a fixed treatment protocol. It is anticipated that there will be patients who will require less or more treatment than the average. It is also acknowledged that in atypical cases, treatment falling outside this recommendation list will sometimes be necessary. This document should not be seen as prescribing the type, frequency or duration of intervention. Treatment should be based on the individual patient's need and physician's professional judgment. This document is designed to function as a guide and should not be used as the sole reason for denial of treatment and services. This document is not intended to expand or restrict a health care provider's scope of practice or to supersede applicable ethical standards or provisions of law, but to encourage discussion of these issues between physician and patient, encourage active patient participation in health care decision-making, and foster greater mutual understanding.

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About the North American Spine Society

NASS is a multidisciplinary medical organization dedicated to fostering the highest quality, evidence-based and ethical spine care by promoting education, research and advocacy. NASS is comprised of more than 7,500 members from several disciplines including orthopedic surgery, neurosurgery, physiatry, neurology, radiology, anesthesiology, research, physical therapy and other spine care professionals.

For more information, visit www.spine.org and find NASS on: Facebook www.facebook.com/NASS.Spine and Twitter www.twitter.com/NASSspine.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.



Five Things Physicians and Patients Should Question

1

Don't perform stress cardiovascular magnetic resonance (CMR) in the initial evaluation of chest pain patients with low pretest probability of coronary artery disease.

There are lower cost stress tests available for the initial evaluation of low-risk chest pain patients, particularly when they have a normal electrocardiogram and can exercise. Stress CMR can be valuable in evaluating intermediate-risk patients with abnormal electrocardiograms or who cannot exercise, or when initial test results are equivocal.

2

Don't perform stress CMR as a pre-operative assessment in patients scheduled to undergo low-risk, non-cardiac surgery.

Stress testing has not been shown to be useful in patients undergoing low-risk surgery. Therefore, stress CMR in these patients will not improve outcomes and will increase cost.

3

Don't perform stress CMR in patients with acute chest pain and high probability of coronary artery disease.

Stress testing can increase risk and delay therapy in patients with acute chest pain and markers of high risk, such as ST segment elevation and/or positive cardiac enzymes. After initial evaluation and therapy, non-stress CMR may aid in diagnosing ischemic or non-ischemic myocardial injury.

4

Don't perform coronary CMR in symptomatic patients with a history of coronary stents.

Coronary stents cause artifacts on CMR that preclude accurate evaluation. Therefore, coronary CMR in these patients will not be diagnostic.

5

Don't perform coronary CMR in the initial evaluation of asymptomatic patients.

Coronary CMR has not been well established for the evaluation of coronary atherosclerosis. Coronary CMR is primarily indicated for detecting and characterizing anomalous coronary arteries.

How This List Was Created

The Society for Cardiovascular Magnetic Resonance (SCMR) has developed the following list of tests involving cardiovascular magnetic resonance imaging (CMR) thought to be overused or misused. This list was developed by a subcommittee of the SCMR and reviewed and approved by the SCMR Board of Trustees. The list was based primarily on appropriateness guidelines for CMR, published by both the American College of Cardiology and the American College of Radiology, with the goal of limiting the inappropriate use of expensive imaging testing in low-risk patients or where it is unlikely to add to clinical management.

SCMR's disclosure and conflict of interest policy can be found at www.scmr.org.

Sources

- Hendel RC, Patel MR, Kramer CM, Poon M, Hendel RC, Carr JC, Gerstad NA, Gillam LD, Hodgson JM, Kim RJ, Kramer CM, Lesser JR, Martin ET, Messer JV, Redberg RF, Rubin GD, Rumsfeld JS, Taylor AJ, Weigold WG, Woodard PK, Brindis RG, Hendel RC, Douglas PS, Peterson ED, Wolk MJ, Allen JM, Patel MR. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. *J Am Coll Cardiol*. 2006 Oct 3;48(7):1475–97.

American College of Radiology; Society of Cardiovascular Computed Tomography; Society for Cardiovascular Magnetic Resonance; American Society of Nuclear Cardiology; North American Society for Cardiac Imaging; Society for Cardiovascular Angiography and Interventions; Society of Interventional Radiology. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. *J Am Coll Radiol*. 2006 Oct;3(10):751–71.

Gibbons RJ, Balady GJ, Bricker JT, Chaitman BR, Fletcher GF, Froelicher VF, Mark DB, McCallister BD, Mooss AN, O'Reilly MG, Winters WL, Gibbons RJ, Antman EM, Alpert JS, Faxon DP, Fuster V, Gregoratos G, Hiratzka LF, Jacobs AK, Russell RO, Smith SC. ACC/AHA 2002 guideline update for exercise testing: summary article. *J Am Coll Cardiol*. 2002 Oct 16;40(8):1531–40.

Gibbons RJ, Abrams J, Chatterjee K, Daley J, Deedwania PC, Douglas JS, Ferguson TB Jr, Fihn SD, Fraker TD Jr, Gardin JM, O'Rourke RA, Pasternak RC, Williams SV, Gibbons RJ, Alpert JS, Antman EM, Hiratzka LF, Fuster V, Faxon DP, Gregoratos G, Jacobs AK, Smith SC Jr. ACC/AHA 2002 guideline update for the management of patients with chronic stable angina-summary article. *Circulation*. 2003 Jan 7;107(1):149–58.
- Hendel RC, Patel MR, Kramer CM, Poon M, Hendel RC, Carr JC, Gerstad NA, Gillam LD, Hodgson JM, Kim RJ, Kramer CM, Lesser JR, Martin ET, Messer JV, Redberg RF, Rubin GD, Rumsfeld JS, Taylor AJ, Weigold WG, Woodard PK, Brindis RG, Hendel RC, Douglas PS, Peterson ED, Wolk MJ, Allen JM, Patel MR. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. *J Am Coll Cardiol*. 2006 Oct 3;48(7):1475–97.

American College of Radiology; Society of Cardiovascular Computed Tomography; Society for Cardiovascular Magnetic Resonance; American Society of Nuclear Cardiology; North American Society for Cardiac Imaging; Society for Cardiovascular Angiography and Interventions; Society of Interventional Radiology. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. *J Am Coll Radiol*. 2006 Oct;3(10):751–71.

Fleisher LA, Beckman JA, Brown KA, Calkins H, Chaikof EL, Fleischmann KE, Freeman WK, Froehlich JB, Kasper EK, Kersten JR, Riegel B, Robb JF, Smith SC Jr, Jacobs AK, Adams CD, Anderson JL, Antman EM, Buller CE, Creager MA, Ettinger SM, Faxon DP, Fuster V, Halperin JL, Hiratzka LF, Hunt SA, Lytle BW, Nishimura R, Ornato JP, Page RL, Riegel B, Tarkington LG, Yancy CW. ACC/AHA 2007 Guidelines on Perioperative Cardiovascular Evaluation and Care for Noncardiac Surgery. *J Am Coll Cardiol*. 2007 Oct 23;50(17):1707–32.
- Hendel RC, Patel MR, Kramer CM, Poon M, Hendel RC, Carr JC, Gerstad NA, Gillam LD, Hodgson JM, Kim RJ, Kramer CM, Lesser JR, Martin ET, Messer JV, Redberg RF, Rubin GD, Rumsfeld JS, Taylor AJ, Weigold WG, Woodard PK, Brindis RG, Hendel RC, Douglas PS, Peterson ED, Wolk MJ, Allen JM, Patel MR. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. *J Am Coll Cardiol*. 2006 Oct 3;48(7):1475–97.

American College of Radiology; Society of Cardiovascular Computed Tomography; Society for Cardiovascular Magnetic Resonance; American Society of Nuclear Cardiology; North American Society for Cardiac Imaging; Society for Cardiovascular Angiography and Interventions; Society of Interventional Radiology. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. *J Am Coll Radiol*. 2006 Oct;3(10):751–71.

Anderson JL, Adams CD, Antman EM, Bridges CR, Califf RM, Casey DE Jr, Chavey WE 2nd, Fesmire FM, Hochman JS, Levin TN, Lincoff AM, Peterson ED, Theroux P, Wenger NK, Wright RS, Smith SC Jr. 2011 ACCF/AHA Focused Update Incorporated Into the ACC/AHA 2007 Guidelines for the Management of Patients With Unstable Angina/Non-ST-Elevation Myocardial Infarction. *Circulation*. 2011 May 10;123(18):e426–579.
- Hendel RC, Patel MR, Kramer CM, Poon M, Hendel RC, Carr JC, Gerstad NA, Gillam LD, Hodgson JM, Kim RJ, Kramer CM, Lesser JR, Martin ET, Messer JV, Redberg RF, Rubin GD, Rumsfeld JS, Taylor AJ, Weigold WG, Woodard PK, Brindis RG, Hendel RC, Douglas PS, Peterson ED, Wolk MJ, Allen JM, Patel MR. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. *J Am Coll Cardiol*. 2006 Oct 3;48(7):1475–97.

American College of Radiology; Society of Cardiovascular Computed Tomography; Society for Cardiovascular Magnetic Resonance; American Society of Nuclear Cardiology; North American Society for Cardiac Imaging; Society for Cardiovascular Angiography and Interventions; Society of Interventional Radiology. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. *J Am Coll Radiol*. 2006 Oct;3(10):751–71.

Pennell DJ, Sechtem UP, Higgins CB, Manning WJ, Pohost GM, Rademakers FE, van Rossum AC, Shaw LJ, Yucel EK. Clinical indications for cardiovascular magnetic resonance (CMR): Consensus Panel report. *J Cardiovasc Magn Reson*. 2004;6(4):727–65.
- Hendel RC, Patel MR, Kramer CM, Poon M, Hendel RC, Carr JC, Gerstad NA, Gillam LD, Hodgson JM, Kim RJ, Kramer CM, Lesser JR, Martin ET, Messer JV, Redberg RF, Rubin GD, Rumsfeld JS, Taylor AJ, Weigold WG, Woodard PK, Brindis RG, Hendel RC, Douglas PS, Peterson ED, Wolk MJ, Allen JM, Patel MR. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. *J Am Coll Cardiol*. 2006 Oct 3;48(7):1475–97.

American College of Radiology; Society of Cardiovascular Computed Tomography; Society for Cardiovascular Magnetic Resonance; American Society of Nuclear Cardiology; North American Society for Cardiac Imaging; Society for Cardiovascular Angiography and Interventions; Society of Interventional Radiology. ACCF/ACR/SCCT/SCMR/ASNC/NASCI/SCAI/SIR 2006 appropriateness criteria for cardiac computed tomography and cardiac magnetic resonance imaging. *J Am Coll Radiol*. 2006 Oct;3(10):751–71.

Pennell DJ, Sechtem UP, Higgins CB, Manning WJ, Pohost GM, Rademakers FE, van Rossum AC, Shaw LJ, Yucel EK. Clinical indications for cardiovascular magnetic resonance (CMR): Consensus Panel report. *J Cardiovasc Magn Reson*. 2004;6(4):727–65.

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About the Society for Cardiovascular Magnetic Resonance

Founded in 1994, the Society for Cardiovascular Magnetic Resonance (SCMR) is a professional association whose vision is to be the leading international representative and advocate for all physicians, scientists and technologists working in cardiovascular magnetic resonance imaging (CMR) to improve patient outcomes through excellence in education, training, standards, research and development. SCMR's membership includes professionals from around the globe.

Among the primary activities of SCMR are its annual scientific sessions and other courses, the open access online *Journal of Cardiovascular Magnetic Resonance* (www.jcmr-online.com) and the Society website (www.scmr.org).



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.



Five Things Physicians and Patients Should Question

1

Avoid performing routine stress testing after percutaneous coronary intervention (PCI) without specific clinical indications.

In patients who have undergone successful revascularization with PCI and are now symptom free, routine screening via stress testing can lead to the performance of additional procedures with little clinical benefit. Therefore, testing should generally be limited to patients with changes in clinical status (for example: new symptoms or decreasing exercise tolerance).

2

Avoid coronary angiography in post-coronary artery bypass graft (CABG) and post-PCI patients who are asymptomatic, or who have normal or mildly abnormal stress tests and stable symptoms not limiting quality of life.

In the majority of patients who have been completely revascularized with PCI or CABG and are now symptom free, routine coronary angiography is unlikely to identify additional blockages that, if treated, will lead to treatments that will improve quality of life. Therefore, angiography should be limited to patients with changes in clinical status (for example: new symptoms or decreasing exercise tolerance, or significant abnormalities on clinically indicated stress testing).

3

Avoid coronary angiography for risk assessment in patients with stable ischemic heart disease (SIHD) who are unwilling to undergo revascularization or who are not candidates for revascularization based on comorbidities or individual preferences.

Physicians should discuss the goal of angiography with patients before it is performed, including the possible role of revascularization with bypass surgery or coronary intervention. For patients unwilling or unable to undergo revascularization, the need for angiography is less compelling.

4

Avoid coronary angiography to assess risk in asymptomatic patients with no evidence of ischemia or other abnormalities on adequate non-invasive testing.

Asymptomatic patients who have no evidence of ischemia or other abnormalities (for example: arrhythmias) on adequate non-invasive testing are at very low risk for cardiac events. In these patients, coronary angiography is unlikely to add appreciable prognostic value.

5

Avoid PCI in stable, asymptomatic patients with normal or only mildly abnormal adequate stress test results.

For patients with stable ischemic heart disease, in the absence of symptoms, there is limited clinical benefit to PCI unless performed on a lesion with demonstrable hemodynamic significance (FFR <0.8) or causing a significant amount of ischemia as assessed by non-invasive stress testing. Rare exceptions would be a significant left main coronary artery lesion or a >90% proximal lesion in a major coronary artery.

How This List Was Created

Members of the SCAI Quality Improvement Committee reviewed the appropriate use criteria for catheterization and percutaneous coronary revascularization and the guidelines for stable ischemic heart disease and percutaneous coronary revascularization. The Committee extracted this list from these documents, which have been developed by the Society for Cardiovascular Angiography and Interventions, American College of Cardiology Foundation, American Heart Association and other professional societies over the past four years.

Appropriate use criteria grade clinical scenarios as appropriate, uncertain (or sometimes appropriate), or inappropriate (or rarely appropriate) for catheterization or coronary intervention. Guidelines describe circumstances when catheterization or coronary interventions are recommended (Class I), are probably recommended (Class IIa), may be reasonable (Class IIb), or are not recommended (Class III). The items in this *Choosing Wisely*[®] list were selected from among the scenarios rated as inappropriate (or rarely appropriate) by the appropriate use criteria or as Class III (not recommended) by the guidelines. These items were selected (rather than making new items for *Choosing Wisely*[®]) because these appropriate use criteria and guidelines have been carefully vetted, adjudicated and agreed upon by myriad experts from many societies.

The proposed *Choosing Wisely*[®] items were critiqued by the SCAI Quality Improvement Committee and several authors of documents cited in this list. They were approved by the SCAI Executive Committee. The Committees would like to emphasize that the science of guidelines and appropriate use criteria should be complementary to the art of clinical judgment for best care of the individual patient.

SCAI's disclosure and conflict of interest policy can be found at www.scai.org.

Sources

- 1 Levine GN, Bates ER, Blankenship JC, Bailey SR, Bittl JA, Cercek B, Chambers CE, Ellis SG, Guyton RA, Hollenberg SM, Khot UN, Lange RA, Mauri L, Mehran R, Moussa ID, Mukherjee D, Nallamothu BK, Ting HH. 2011 ACCF/AHA/SCAI guideline for percutaneous coronary intervention: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines and the Society for Cardiovascular Angiography and Interventions. *J Am Coll Cardiol*. 2011;58:e44–122.
- 2 Wolk MJ, Bailey SR, Doherty JU, Douglas PS, Hendel RC, Kramer CM, Min JK, Patel MR, Rosenbaum L, Shaw LJ, Stainback RF, Allen JM. ACCF/AHA/ASE/ASNC/HFSA/HRS/SCAI/SCCT/SCMR/STS 2013 multimodality appropriate use criteria for the detection and risk assessment of stable ischemic heart disease: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Heart Association, American Society of Echocardiography, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and Society of Thoracic Surgeons. *J Am Coll Cardiol*. 2014;63(4):380-406.
- 3 Patel MR, Dehmer GJ, Hirshfeld JW, Smith PK, Spertus JA. ACCF/SCAI/STS/AATS/AHA/ASNC/HFSA/SCCT 2012 appropriate use criteria for coronary revascularization focused update: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, Society for Cardiovascular Angiography and Interventions, Society of Thoracic Surgeons, American Association for Thoracic Surgery, American Heart Association, American Society of Nuclear Cardiology, and the Society of Cardiovascular Computed Tomography. *J Am Coll Cardiol*. 2012 Feb 28;59(9):857–81.
- 4 Wolk MJ, Bailey SR, Doherty JU, Douglas PS, Hendel RC, Kramer CM, Min JK, Patel MR, Rosenbaum L, Shaw LJ, Stainback RF, Allen JM. ACCF/AHA/ASE/ASNC/HFSA/HRS/SCAI/SCCT/SCMR/STS 2013 multimodality appropriate use criteria for the detection and risk assessment of stable ischemic heart disease: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Heart Association, American Society of Echocardiography, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance, and Society of Thoracic Surgeons. *J Am Coll Cardiol*. 2014;63(4):380-406.
- 5 Patel MR, Dehmer GJ, Hirshfeld JW, Smith PK, Spertus JA. ACCF/SCAI/STS/AATS/AHA/ASNC/HFSA/SCCT 2012 appropriate use criteria for coronary revascularization focused update: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, Society for Cardiovascular Angiography and Interventions, Society of Thoracic Surgeons, American Association for Thoracic Surgery, American Heart Association, American Society of Nuclear Cardiology, and the Society of Cardiovascular Computed Tomography. *J Am Coll Cardiol*. 2012 Feb 28;59(9):857–81.
- 6 Levine GN, Bates ER, Blankenship JC, Bailey SR, Bittl JA, Cercek B, Chambers CE, Ellis SG, Guyton RA, Hollenberg SM, Khot UN, Lange RA, Mauri L, Mehran R, Moussa ID, Mukherjee D, Nallamothu BK, Ting HH. 2011 ACCF/AHA/SCAI guideline for percutaneous coronary intervention: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines and the Society for Cardiovascular Angiography and Interventions. *J Am Coll Cardiol*. 2011;58:e44–122.

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the Society for Cardiovascular Angiography and Interventions

The Society for Cardiovascular Angiography and Interventions (SCAI) is the only U.S.-based professional medical society focused exclusively on adult and pediatric invasive/interventional cardiovascular care. For more than 35 years, SCAI has supported optimal patient care through education, advocacy and the advancement of quality standards. SCAI is a recognized leader in quality improvement and a proponent of efforts that help patients and their families make informed decisions about prevention, symptom recognition, testing and treatment. This is the primary goal of www.SecondsCount.org, SCAI's comprehensive website that encourages collaborative decision-making between patients and their healthcare providers. SCAI is pleased to join the *Choosing Wisely*[®] campaign and looks forward to furthering its goal of promoting conversations among patients and physicians.



For more information or questions, please visit www.scai.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Providers and Patients Should Question

1

Don't continue antibiotics beyond 72 hours in hospitalized patients unless patient has clear evidence of infection.

Antibiotics are often started when a patient is possibly infected. After three days, laboratory and radiology information is available and antibiotics should either be deescalated to a narrow-spectrum antibiotic based on culture results or discontinued if evidence of infection is no longer present. Lessening antibiotic use decreases risk of infections with *Clostridium difficile* (*C. difficile*) or antibiotic-resistant bacteria.

2

Avoid invasive devices (including central venous catheters, endotracheal tubes and urinary catheters) and, if required, use no longer than necessary. They pose a major risk for infections.

Invasive devices are often necessary for patient support; however, they are a major risk for healthcare-associated infections (HAIs). We are learning they can often be avoided and, if used, can be quickly removed with the help of clinical reminders and protocols. They should never be used for convenience.

3

Don't perform urinalysis, urine culture, blood culture or *C. difficile* testing unless patients have signs or symptoms of infection. Tests can be falsely positive leading to overdiagnosis and overtreatment.

Although important for diagnosing disease when used in patients with appropriate signs or symptoms, these tests often are positive when an infection is not present. For example, in the absence of signs or symptoms, a positive blood culture may represent contamination, a positive urine culture could represent asymptomatic bacteriuria, and a positive test for *C. difficile* could reflect colonization. There are no perfect tests for these or most infections. If these tests are used in patients with low likelihood of infection, they will result in more false positive tests than true positive results, which will lead to treating patients without infection and exposing them to risks of antibiotics without benefits of treating an infection.

4

Don't use antibiotics in patients with recent *C. difficile* without convincing evidence of need. Antibiotics pose a high risk of *C. difficile* recurrence.

C. difficile can be a life threatening illness and is generally caused by antibiotics killing normal bacteria in the intestine. Patients recovering from *C. difficile* are three times as likely to have a recurrence if they receive an antibiotic in the following month. However, unnecessary antibiotics are often used in this population – primarily for misdiagnosed urinary tract infection or pneumonia.

5

Don't continue surgical prophylactic antibiotics after the patient has left the operating room.

Prophylactic antibiotics during surgery can significantly decrease the risk of surgical site infections; however, they only have benefit if used immediately around the time of surgery. When antibiotics are used for longer than necessary, they increase the risk of infection with antibiotic-resistant bacteria and *C. difficile*.

How This List Was Created

A list of approximately 40 potential *Choosing Wisely* recommendations were collected from members of the SHEA Guidelines, Public Policy and Government Affairs, Antibiotic Stewardship, Education and Publications Committees. From those suggestions, a subgroup of the Guidelines Committee reviewed the list for duplicates and anonymously electronically ranked them. The top fifteen were sent to the SHEA Research Network for a separate ranking. Those that ranked in the top eight were reviewed by the Guidelines Committee for their appropriateness for the *Choosing Wisely* campaign, and five final recommendations were formally approved via individual member vote by the SHEA Guidelines Committee and the SHEA Board of Trustees.

For SHEA's disclosure and conflict of interest policy, please visit www.shea-online.org.

Sources

- Core Elements of hospital antibiotic stewardship programs from the Centers for Disease Control and Prevention [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2015 [updated 2015 May 7; cited 2015 Jul 21]. Available from: <http://www.cdc.gov/getsmart/healthcare/implementation/core-elements.html>

Antibiotic resistance threats in the United States, 2013 [Internet]. Atlanta (GA): Centers for Disease Control and Prevention; 2013 [cited 2015 Jul 21]. Available from: <http://www.cdc.gov/drugresistance/threat-report-2013/pdf/ar-threats-2013-508.pdf>

Elligsen M, Walker SA, Pinto R, Simor A, Mubareka S, Rachlis A, Allen V, Daneman N. Audit and feedback to reduce broad-spectrum antibiotic use among intensive care unit patients: a controlled interrupted time series analysis. *Infect Control Hosp Epidemiol*. 2012 Apr;33(4): 354-61.
- Klompas M, Anderson D, Trick W, Babcock H, Kerlin MP, Li L, Sinkowitz-Cochran R, Ely EW, Jernigan J, Magill S, Lyles R, O'Neil C, Kitch BT, Arrington E, Balas MC, Kleinman K, Bruce C, Lankiewicz J, Murphy MV, E Cox C, Lautenbach E, Sexton D, Fraser V, Weinstein RA, Platt R; CDC Prevention Epicenters. The preventability of ventilator-associated events. The CDC Prevention Epicenters Wake Up and Breathe Collaborative. *Am J Respir Crit Care Med*. 2015 Feb 1;191(3):292-301

Marschall J, Mermel LA, Fakih M, Hadaway L, Kallen A, O'Grady NP, Pettis AM, Rupp ME, Sandora T, Maragakis LL, Yokoe DS; Society for Healthcare Epidemiology of America. Strategies to prevent central line-associated bloodstream infections in acute care hospitals: 2014 update. *Infect Control Hosp Epidemiol*. 2014 Jul;35(7):753-71.

Lo E, Nicolle LE, Coffin SE, Gould C, Maragakis LL, Meddings J, Pegues DA, Pettis AM, Saint S, Yokoe DS. Strategies to prevent catheter-associated urinary tract infections in acute care hospitals: 2014 update. *Infect Control Hosp Epidemiol*. 2014 Sep;35 Suppl 2:S32-47.
- Peterson LR, Robicsek A. Does my patient have *Clostridium difficile* infection? *Ann Intern Med*. 2009 Aug 4;151(3):176-9.

Dubberke ER, Carling P, Carrico R, Donskey CJ, Loo VG, McDonald LC, Maragakis LL, Sandora TJ, Weber DJ, Yokoe DS, Gerding DN. Strategies to prevent *Clostridium difficile* infections in acute care hospitals: 2014 update. *Infect Control Hosp Epidemiol*. 2014 Sep;35 Suppl 2:S48-65.

Lo E, Nicolle LE, Coffin SE, Gould C, Maragakis LL, Meddings J, Pegues DA, Pettis AM, Saint S, Yokoe DS. Strategies to prevent catheter-associated urinary tract infections in acute care hospitals: 2014 update. *Infect Control Hosp Epidemiol*. 2014 Sep;35 Suppl 2:S32-47.

Bates DW, Goldman L, Lee TH. Contaminant blood cultures and resource utilization. The true consequences of false-positive results. *JAMA*. 1991 Jan 16;265(3):365-9.
- Shaughnessy MK, Amundson WH, Kuskowski MA, DeCarolis DD, Johnson JR, Drekonja DM. Unnecessary antimicrobial use in patients with current or recent *Clostridium difficile* infection. *Infect Control Hosp Epidemiol*. 2013 Feb;34(2):109-16.

Drekonja DM, Amundson WH, Decarolis DD, Kuskowski MA, Lederle FA, Johnson JR. Antimicrobial use and risk for recurrent *Clostridium difficile* infection. *Am J Med*. 2011 Nov;124(11):1081.e1-7.

Dubberke ER, Carling P, Carrico R, Donskey CJ, Loo VG, McDonald LC, Maragakis LL, Sandora TJ, Weber DJ, Yokoe DS, Gerding DN. Strategies to prevent *Clostridium difficile* infections in acute care hospitals: 2014 update. *Infect Control Hosp Epidemiol*. 2014 Sep;35 Suppl 2:S48-65.
- Anderson DJ, Podgorny K, Berríos-Torres SI, Bratzler DW, Dellinger EP, Greene L, Nyquist AC, Saiman L, Yokoe DS, Maragakis LL, Kaye KS. Strategies to prevent surgical site infections in acute care hospitals: 2014 update. *Infect Control Hosp Epidemiol*. 2014 Sep;35 Suppl 2:S66-88.

Bratzler DW, Dellinger EP, Olsen KM, Perl TM, Auwaerter PG, Bolon MK, Fish DN, Napolitano LM, Sawyer RG, Slain D, Steinberg JP, Weinstein RA; American Society of Health-System Pharmacists; Infectious Disease Society of America; Surgical Infection Society; Society for Healthcare Epidemiology of America. Clinical practice guidelines for antimicrobial prophylaxis in surgery. *Am J Health Syst Pharm*. 2013 Feb 1;70(3):195-283.

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About the Society for Healthcare Epidemiology of America

SHEA is a professional society representing physicians and other healthcare professionals around the world with expertise in healthcare epidemiology, infection prevention and antimicrobial stewardship. SHEA's mission is to prevent and control healthcare-associated infections, improve the use of antibiotics in healthcare settings and advance the field of healthcare epidemiology. The society promotes science and research, advocating for effective policies, providing high-quality education and training and developing appropriate guidelines and guidance in practice. SHEA upholds the value and critical contributions of healthcare epidemiology and improved antibiotic use to improve patient care and healthcare worker safety in all healthcare settings.



Visit SHEA online at www.shea-online.org, www.facebook.com/SHEApreventingHAIs and [@SHEA_Epi](https://twitter.com/SHEA_Epi).

For more information or to see other lists of Things Providers and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1 Don't do an inherited thrombophilia evaluation for women with histories of pregnancy loss, intrauterine growth restriction (IUGR), preeclampsia and abruption.

Scientific data supporting a causal association between either methylenetetrahydrofolate reductase (MTHFR) polymorphisms or other common inherited thrombophilias and adverse pregnancy outcomes, such as recurrent pregnancy loss, severe preeclampsia and IUGR, are lacking. Specific testing for antiphospholipid antibodies, when clinically indicated, should be limited to lupus anticoagulant, anticardiolipin antibodies and beta 2 glycoprotein antibodies.

2 Don't place a cerclage in women with short cervix who are pregnant with twins.

Women with a short cervical length who are pregnant with twins are at very high risk for delivering preterm, but the scientific data, including a meta-analysis of data published on this issue, shows that cerclage in this clinical situation not only is not beneficial, but may in fact be harmful, i.e., associated with an increase in preterm births.

3 Don't offer noninvasive prenatal testing (NIPT) to low-risk patients or make irreversible decisions based on the results of this screening test.

NIPT has only been adequately evaluated in singleton pregnancies at high risk for chromosomal abnormalities (maternal age >35, positive screening, sonographic findings suggestive of aneuploidy, translocation carrier at increased risk for trisomy 13, 18 or 21, or prior pregnancy with a trisomy 13, 18 or 21). Its utility in low-risk pregnancies remains unclear. False positive and false negative results occur with NIPT, particularly for trisomy 13 and 18. Any positive NIPT result should be confirmed with invasive diagnostic testing prior to a termination of pregnancy. If NIPT is performed, adequate pretest counseling must be provided to explain the benefits and limitations.

4 Don't screen for intrauterine growth restriction (IUGR) with Doppler blood flow studies.

Studies that have attempted to screen pregnancies for the subsequent occurrence of IUGR have produced inconsistent results. Furthermore, no standards have been established for the optimal definition of an abnormal test, best gestational age for the performance of the test or the technique for its performance. However, once the diagnosis of IUGR is suspected, the use of antenatal fetal surveillance, including umbilical artery Doppler flow studies, is beneficial.

5 Don't use progestogens for preterm birth prevention in uncomplicated multifetal gestations.

The use of progestogens has not been shown to reduce the incidence of preterm birth in women with uncomplicated multifetal gestations.

Five More Things Physicians and Patients Should Question

6

Don't perform routine cervical length screening for preterm birth risk assessment in asymptomatic women before 16 weeks of gestation or beyond 24 weeks of gestation.

The predictive ability of cervical length measurement prior to 16 weeks of gestation for preterm birth risk assessment is limited. It should be performed, when indicated, between 16 and 24 weeks of gestation. Routine cervical length screening for preterm birth risk assessment in asymptomatic women beyond 24 weeks of gestation has not been proven to be effective.

7

Don't perform antenatal testing on women with the diagnosis of gestational diabetes who are well controlled by diet alone and without other indications for testing.

Monitoring of glucose levels and maintaining adequate glycemic control for gestational diabetes are paramount to decreasing adverse outcomes, including stillbirth. If nutritional modification and glucose monitoring alone control maternal glycemic status such that pharmacological therapy is not required, the risk of stillbirth due to uteroplacental insufficiency is not increased. Thus, the use of routine antepartum testing (e.g. biophysical profile (BPP) or nonstress test (NST)) in the absence of other co-morbidities is not indicated.

8

Don't place women, even those at high-risk, on activity restriction to prevent preterm birth.

There are no studies documenting an improvement in outcomes in women at risk for preterm birth who are placed on activity restriction, including bed rest. There are multiple studies documenting untoward effects of routine activity restriction on the mother and family, including negative psychosocial effects. Therefore, activity restriction should not be routinely prescribed as a treatment to reduce preterm birth.

9

Don't order serum aneuploidy screening after cfDNA aneuploidy screening has already been performed.

Serum biochemistry and cell free DNA (cfDNA) are both screening tests for fetal aneuploidy. When low-risk results have been reported on either test, there is limited clinical value of also performing the other screen. While serum screening may identify some aneuploidies not detected by cfDNA, the yield is too low to justify this test if cfDNA screening has already been performed.

10

Don't perform maternal serologic studies for cytomegalovirus and toxoplasma as part of routine prenatal laboratory studies.

Routine serologic screening of pregnant women for CMV and toxoplasmosis is not recommended due to poor predictive value of these tests and potential for harm due to false positive results. Serologic screening during pregnancy for both diseases should be reserved for situations in which there is clinical or ultrasound suspicion of maternal or fetal infection.

How This List Was Created

As a national medical specialty society, the Society for Maternal-Fetal Medicine relies on the input of any number of its committees in the development of various documents. In the case of the items included in this list, the Publications Committee reviewed the literature and evidence from SMFM's published documents for possible topics. For SMFM's first set of five recommendations a sub-group of the Committee initially developed a list of 10 items that the Committee then ranked for the top five with input and suggestions by the Society's Executive Committee. For SMFM's second set of recommendations, the sub-group of the Committee developed a list of 12 items that the Committee then ranked for the top five, again soliciting input and suggestions by the Society's Executive Committee. The final list has been reviewed and approved by the Society's Risk Management Committee and Executive Committee.

SMFM's disclosure and conflict of interest policy can be found at www.smfm.org.

Sources

- Dizon-Townson D, Miller C, Sibai B, Spong CY, Thom E, Wendel G Jr, Wenstrom K, Samuels P, Cotroneo MA, Moawad A, Sorokin Y, Meis P, Miodovnik M, O'Sullivan MJ, Conway D, Wapner RJ, Gabbe SG; Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network (NICHD MFMU). The relationship of the factor V Leiden mutation and pregnancy outcomes for mother and fetus. *Obstet Gynecol*. 2005 Sep;106(3):517–24.

Silver RM, Zhao Y, Spong CY, Sibai B, Wendel G Jr, Wenstrom K, Samuels P, Caritis SN, Sorokin Y, Miodovnik M, O'Sullivan MJ, Conway D, Wapner RJ; Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units (NICHD MFMU) Network. Prothrombin gene G20210A mutation and obstetric complications. *Obstet Gynecol*. 2010 Jan;115(1):14–20.

Kupfermanc MJ, Eldor A, Steinman N, Many A, Bar-Am A, Jaffa A, Fait G, Lessing JB. Increased frequency of genetic thrombophilia in women with complications of pregnancy. *N Engl J Med*. 1999 Jan;340(1):9–13. [published erratum appears in *N Engl J Med* 1999 Jul 29;341(5):384].
- Durnwald CP, Momirova V, Rouse DJ, Caritis SN, Peaceman AM, Sciscione A, Varner MW, Malone FD, Mercer BM, Thorp JM Jr, Sorokin Y, Carpenter MW, Lo J, Ramin SM, Harper M, Spong CY; Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network (NICHD MFMU). Second trimester cervical length and risk of preterm birth in women with twin gestations treated with 17-alpha hydroxyprogesterone caproate. *J Matern Fetal Neonatal Med*. 2010 Dec;23(12):1360–4.

Berghella V, Odibo AO, To MS, Rust OA, Althuisius SM. Cerclage for short cervix on ultrasonography: meta-analysis of trials using individual patient-level data. *Obstet Gynecol*. 2005;106:181–9.
- American College of Obstetricians and Gynecologists Committee on Genetics. Noninvasive prenatal testing for fetal aneuploidy. Committee Opinion No. 545. *Obstet Gynecol*. 2012 Dec;120(6):1532–4.
- Society for Maternal-Fetal Medicine Publications Committee, Berkley E, Chauhan SP, Abuhamad A. Doppler assessment of the fetus with intrauterine growth restriction. *Am J Obstet Gynecol*. 2012 Apr;206(4):300–8.
- Society for Maternal-Fetal Medicine Publications Committee, Berghella V. Progesterone and preterm birth prevention: translating clinical trials data into clinical practice. *Am J Obstet Gynecol* 2012 May;206(5):376–86.

Combs CA, Garite T, Maurel K, Das A, Porto M; Obstetrix Collaborative Research Network. 17-hydroxyprogesterone caproate for twin pregnancy: a double-blind, randomized clinical trial. *Am J Obstet Gynecol*. 2011 Mar;204(3):221.e1–8.

Combs CA, Garite T, Maurel K, Das A, Porto M; Obstetrix Collaboration Research Network. Failure of 17-hydroxyprogesterone to reduce neonatal morbidity or prolong triplet pregnancy: a double-blind, randomized clinical trial. *Am J Obstet Gynecol*. 2010 Sep;203(3):248.e1–9.

Caritis SN, Rouse DJ, Peaceman AM, Sciscione A, Momirova V, Spong CY, Iams JD, Wapner RJ, Varner M, Carpenter M, Lo J, Thorp J, Mercer BM, Sorokin Y, Harper M, Ramin S, Anderson G; Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network (NICHD MFMU). Prevention of preterm birth in triplets using 17 alpha-hydroxyprogesterone caproate: a randomized controlled trial. *Obstet Gynecol*. 2009 Feb;113(2 Pt 1):285–92.
- Iams JD, Goldenberg RL, Meis PJ, Mercer BM, Moawad A, Das A, Thom E, McNellis D, Copper RL, Johnson F, Roberts JM. The length of the cervix and the risk of spontaneous premature delivery. National Institute of Child Health and Human Development Maternal Fetal Medicine Unit Network. *N Engl J Med*. 1996 Feb 29;334(9):567–72.

Conoscenti G, Meir YJ, D'Ottavio G, Rustico MA, Pinzano R, Fischer-Tamaro L, Stampalija T, Natale R, Maso G, Mandruzzato G. Does cervical length at 13–15 weeks' gestation predict preterm delivery in an unselected population? *Ultrasound Obstet Gynecol*. 2003 Feb;21(2):128–34.

Ozdemir I, Demirci F, Yucel O, Erkorkmaz U. Ultrasonographic cervical length measurement at 10-14 and 20-24 weeks gestation and the risk of preterm delivery. *Eur J Obstet Gynecol Reprod Biol*. 2007 Feb;130(2):176–9.

Berghella V, Talucci M, Desai A. Does transvaginal sonographic measurement of cervical length before 14 weeks predict preterm delivery in high-risk pregnancies? *Ultrasound Obstet Gynecol*. 2003 Feb;21(2):140–4.

- 7 Rosenstein MG, Cheng YW, Snowden JM, Nicholson JM, Doss AE, Caughey AB. The risk of stillbirth and infant death stratified by gestational age in women with gestational diabetes. *Am J Obstet Gynecol.* 2012;206:309.e1-7.
- 8 Society for Maternal-Fetal Medicine (SMFM), Habeber E, Sciscione A. SMFM Consult Activity Restriction in Pregnancy. *Contemp Ob Gyn.* 2014
- 9 Society for Maternal-Fetal Medicine (SMFM) Publications Committee. Society for Maternal-Fetal Medicine Consult Series #36: Prenatal aneuploidy screening using cell-free DNA. *Am J Obstet Gynecol.* 2015 Jun;212(6):711-6.
Committee Opinion No. 640: Cell-Free DNA Screening For Fetal Aneuploidy. *Obstet Gynecol.* 2015;126(3):e31-7.
- 10 Society for Maternal-Fetal Medicine (SMFM), Hughes BL, Gyamfi-Bannerman C. Society for Maternal-Fetal Medicine Consult Series #39: Diagnosis and antenatal management of congenital cytomegalovirus (CMV) infection. *Am J Obstet Gynecol.* 2016 (in press).
American College of Obstetricians and Gynecologists. Practice Bulletin #151: Cytomegalovirus, Parvovirus B19, varicella zoster, and toxoplasmosis in pregnancy. *Obstet Gynecol.* 2015 Jun;125(6):1510-25.

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About the Society for Maternal-Fetal Medicine

The Society for Maternal-Fetal Medicine (SMFM) is a society of physicians and scientists who are dedicated to the optimization of pregnancy and perinatal outcomes. SMFM was established in 1977 and is the membership organization for obstetricians/gynecologists who have additional formal education and training in maternal-fetal medicine. There are currently about 2,000 active members of SMFM. The Society hosts an annual scientific meeting in which new ideas and research in the area of maternal-fetal medicine are presented. The Society is also an advocate for improving public policy and expanding research funding and opportunities in the area of maternal-fetal medicine.



For more information about SMFM, visit www.smfm.org.

For more information or to see other lists of Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't do work up for clotting disorder (order hypercoagulable testing) for patients who develop first episode of deep vein thrombosis (DVT) in the setting of a known cause.

Lab tests to look for a clotting disorder will not alter treatment of a venous blood clot, even if an abnormality is found. DVT is a very common disorder, and recent discoveries of clotting abnormalities have led to increased testing without proven benefit.

2

Don't reimaging DVT in the absence of a clinical change.

Repeat ultrasound images to evaluate "response" of venous clot to therapy does not alter treatment.

3

Avoid cardiovascular testing for patients undergoing low-risk surgery.

Pre-operative stress testing does not alter therapy or decision-making in patients facing low-risk surgery.

4

Refrain from percutaneous or surgical revascularization of peripheral artery stenosis in patients without claudication or critical limb ischemia.

Patients without symptoms will not benefit from attempts to improve circulation. No evidence exists to support improving circulation to prevent progression of disease. There is no proven preventive benefit, only symptomatic benefit.

5

Don't screen for renal artery stenosis in patients without resistant hypertension and with normal renal function, even if known atherosclerosis is present.

Performing surgery or angioplasty to improve circulation to the kidneys has no proven preventive benefit, and shouldn't be considered unless there is evidence of symptoms, such as elevated blood pressure or decreased renal function.

How This List Was Created

The Society for Vascular Medicine (SVM) looked to the leadership of its Board of Trustees and input from its members to develop the list of five things physicians and patients should question. Suggestions from SVM members were solicited through an e-mail blast, and a second e-mail was sent to the SVM Board of Trustees seeking volunteers and suggestions.

A committee, consisting of four members of the Board of Trustees, narrowed an initial list down to seven recommendations. The full Board of Trustees voted on the recommendations using the Delphi method of choice, arriving at the five that became SVM's list as part of the *Choosing Wisely*[®] campaign.

SVM's disclosure and conflict of interest policy can be found at www.vascularmed.org.

Sources

1. Dalen JE. Should patients with venous thromboembolism be screened for thrombophilia? *Am J Med* [Internet]. 2008 Jun [cited 2012 Oct 18]; 121:6:458–463.
Baglin T, Luddington R, Brown K, Baglin C. Incidence of recurrent venous thromboembolism in relation to clinical and thrombophilic risk factors: prospective cohort study. *Lancet* [Internet]. 2003 Aug 16 [cited 2012 Oct 18];362:523–526.
Ho WK, Hankey GJ, Quinlan DJ, Eikelboom JW. Risk of recurrent venous thromboembolism in patients with common thrombophilia. *Arch Intern Med* [Internet]. 2006 Apr 10 [cited 2012 Oct 18];166:729–736.
Baglin T, Gray E, Greaves M, Hunt BJ, Keelin D, Machin S, Mackie I, Makris M, Nokes T, Perry D, Tait RC, Walker I, Watson H. Clinical guidelines for testing for heritable thrombophilia; *Br J Haematol* [Internet]. 2010 Apr [cited 2012 Oct 18];149:209–220.
2. Bates SM, Jaeschke R, Stevens SM, Goodacre S, Wells PS, Stevenson MD, Kearon C, Schunemann HJ, Crowther M, Pauker SG, Makdissi R, Guyatt GH. Diagnosis of DVT Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines Practice Guidelines. *Chest*. [Internet]. 2012 Feb [cited 2012 Oct 18];141(2)(Suppl):e351S–e418S.
3. Fleisher LA, Beckman JA, Brown KA, Calkins H, Chaikof EL, Fleischmann KE, Freeman WK, Froehlich JB, Kasper EK, Kersten JR, Riegel B, Robb JF, Smith SC Jr, Jacobs AK, Adams CD, Anderson JL, Antman EM, Buller CE, Creager MA, Ettinger SM, Faxon DP, Fuster V, Halperin JL, Hiratzka LF, Hunt SA, Lytle BW, Nishimura R, Ornato JP, Page RL, Riegel B, Tarkington LG, Yancy CW. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery. *J Am Coll Cardiol* [Internet]. 2007 Oct 23 [cited 2012 Oct 18];50:e159–241.
4. ACC/AHA 2005 practice guidelines for the management of patients with peripheral arterial disease (lower extremity, renal, mesenteric, and abdominal aortic): Executive summary. *Circ* [Internet]. 2006 Mar 21 [cited 2012 Oct 18];113:1474-1547.
5. ACC/AHA 2005 practice guidelines for the management of patients with peripheral arterial disease (lower extremity, renal, mesenteric, and abdominal aortic): Executive summary. *Circ* [Internet]. 2006 Mar 21 [cited 2012 Oct 18];113:1474-1547.

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To learn more about the ABIM Foundation, visit www.abimfoundation.org.



About the Society for Vascular Medicine

The Society for Vascular Medicine (SVM) is a nonprofit medical society comprised of physicians, surgeons, nurses, physician assistants, nurse practitioners, and vascular interventionists. For nearly 25 years, one of the goals of the Society has been to maintain high standards of clinical vascular medicine. The Society believes that optimal vascular care is best accomplished by the collegial interaction of a community of vascular professionals working with the patient. The Society recognizes the importance of individuals with diverse backgrounds in achieving ideal standards of research and clinical practice. The society believes that partnerships between patients and health care providers are crucial to improving vascular health, achieving better outcomes and lowering health care costs.

For more information, visit www.vascularmed.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1. Avoid routine venous ultrasound tests for patients with asymptomatic telangiectasia.

Routine testing could result in unnecessary saphenous vein ablation procedures. Telangiectasia treatment can be considered for cosmetic improvement unless associated with bleeding.

Telangiectasia are usually asymptomatic blemishes found on the legs but can also involve other areas such as the face and chest. They almost never cause pain and seldom bleed. They are treated primarily for cosmetic purposes by injection or laser therapy. Although occasionally associated with disorders of the larger leg veins (saphenous, perforator and deep), treating the underlying leg vein problem is seldom necessary.

Even if an incompetent saphenous vein is identified and treated by ablation or removal, the telangiectasia will still remain. Since the saphenous vein can be used as a replacement artery for blocked coronary or leg arteries, it should be preserved whenever possible.

Therefore, an ultrasound test to diagnose saphenous vein or deep venous incompetence is not required when the CEAP (a classification system based on clinical severity, etiology, anatomy and pathophysiology) is less than 2.

2. Avoid routine ultrasound and fistulogram evaluations of well-functioning dialysis accesses.

Unfortunately, angioaccess for hemodialysis fails at a high annual rate. Therefore, it is appropriate to evaluate access sites with an ultrasound test whenever they appear to be malfunctioning. However, this is only necessary if the dialysis center notices unusual function on the machine (flow rates <300 or >1000, recirc >10%), abnormal bleeding after dialysis, or other clinical indicators such as enlarging pseudoaneurysm, pain, and/or suspected graft infection.

Under some circumstances, a fistulogram may be required. However, these invasive procedures have slight risks and are more costly than ultrasound studies. Therefore, they should not be performed routinely but only when clinically indicated and usually after a confirmatory ultrasound test. Performing ultrasounds at set intervals when the function of the access is normal is not needed.

3. Don't use IVC filters as primary prevention of pulmonary emboli in the absence of an extremity clot or prior pulmonary embolus.

The inferior vena cava (IVC) filter is placed during a minimally invasive procedure which has low, but not zero, risk. Long-term placement of an IVC filter can lead to other complications such as organ injury or vessel clotting. IVC filters should not be used as primary form of prophylaxis of pulmonary embolus if no extremity clot exists, even in trauma and neurosurgery patients who cannot receive anticoagulants. Other means, especially leg compression devices, can be helpful in preventing deep vein thrombosis (DVT).

An IVC filter may be appropriate in cases with high-risk features such as acute DVT, prior DVT, history of prior pulmonary embolus or other high-risk features.

Don't use interventions (including surgical bypass, angiogram, angioplasty or stent) as a first line of treatment for most patients with intermittent claudication.

A trial of smoking cessation, risk factor modification, diet and exercise, as well as pharmacologic treatment should be attempted before most procedures. When indicated, the type of intervention (surgery or angioplasty) depends on several factors.

4

Intermittent claudication can vary due to several factors. The life-time incidence of amputation in a patient with claudication is less than 5% with appropriate risk factor modification.

Procedures for claudication are usually not limb-saving, but, rather, lifestyle-improving. However, interventions are not without risks, including worsening the patient's perfusion, and should be reserved until a trial of conservative management has been attempted. Many people will actually realize an increase in their walking distance and pain threshold with exercise therapy. In cases where the claudication limits a person's ability to carry out normal daily functions, it is appropriate to intervene.

Depending upon the characteristics of the occlusive process, and patient comorbidities, the best option for treatment may be either surgical or endovascular.

Avoid use of ultrasound for routine surveillance of carotid arteries in the asymptomatic healthy population.

The presence of a bruit alone does not warrant serial duplex ultrasounds in low-risk, asymptomatic patients, unless significant stenosis is found on the initial duplex ultrasound.

5

The presence of asymptomatic severe carotid artery disease in the general population yields a risk of neurologic events which is <2%. Even in patients who have a bruit, if no other risk factors exist, the incidence is only 2%. Age (over 65), coronary artery disease, need for coronary bypass, symptomatic lower extremity arterial occlusive disease, history of tobacco use and high cholesterol would be appropriate risk factors to prompt ultrasound in patients with a bruit. Otherwise, these ultrasounds may prompt unnecessary and more expensive and invasive tests, or even unnecessary surgery. In general population-based studies, the prevalence of severe carotid stenosis is not high enough to make bruit alone an indication for carotid screening. With these facts in mind, screening should be pursued only if a bruit is associated with other risk factors for stenosis and stroke, or if the primary care physician determines you are at increased risk for carotid artery occlusive disease.

How This List Was Created

The Society for Vascular Surgery (SVS) formed a task force to gather initial recommendations for a list of procedures that should not be performed, performed rarely or performed only under certain circumstances. These draft recommendations were then sent to the Public and Professional Outreach Committee, which refined them before presenting them to its reporting council, the Clinical Practice Council. The Council reviewed the citations and ensured all recommendations aligned with SVS Clinical Practice Guidelines before submitting them to the Executive Committee of the SVS Board of Directors for approval. You can review the society's conflict of interest and disclosure policy at vsweb.org/COIndustryPolicy.

Sources

1. Khilnani NM, Min RJ. Imaging of venous insufficiency. *Semin Intervent Radiol*. 2005 Sep;22(3):178-84.
Chiesa R, Marone EM, Limoni C, Volontè M, Petrini O. Chronic venous disorders: correlation between visible signs, symptoms, and presence of functional disease. *J Vasc Surg*. 2007 Aug;46(2):322-30.
2. Navuluri R, Regalado S. The KDOQI 2006 Vascular Access Update and Fistula First Program Synopsis. *Semin Intervent Radiol*. 2009 Jun;26(2):122-4.
Sidawy AN, Spergel LM, Besarab A, Allon M, Jennings WC, Padberg FT Jr, Murad MH, Montori VM, O'Hare AM, Calligaro KD, Macsata RA, Lumsden AB, Ascher E; Society for Vascular Surgery. The Society for Vascular Surgery: clinical practice guidelines for the surgical placement and maintenance of arteriovenous hemodialysis access. *J Vasc Surg*. 2008 Nov;48(5 Suppl):25-25S.
Update on Dialysis Intervention: surveillance of hemodialysis vascular access. *Semin Intervent Radiol*. Jun 2009; 26(2): 130-8.
3. Kearon C, Akl EA, Comerota AJ, Prandoni P, Bounameaux H, Goldhaber SZ, Nelson ME, Wells PS, Gould MK, Dentali F, Crowther M, Kahn SR; American College of Chest Physicians. Antithrombotic therapy for VTE disease: antithrombotic therapy and prevention of thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. 2012 Feb;141(2 Suppl):e419S-94S.
4. Adam DJ, Beard JD, Cleveland T, Bell J, Bradbury AW, Forbes JF, Fowkes FG, Gillespie I, Ruckley CV, Raab G, Storkey H; BASIL trial participants. Bypass versus angioplasty in severe ischaemia of the leg (BASIL): multicentre, randomised controlled trial. *Lancet*. 2005 Dec 3;366(9501):1925-34.
Norgren L, Hiatt WR, Dormandy JA, Nehler MR, Harris KA, Fowkes FG; TASC II Working Group. Inter-Society Consensus for the Management of Peripheral Arterial Disease (TASC II). *J Vasc Surg*. 2007 Jan;45 Suppl S:55-67.
5. Ricotta JJ, Aburahma A, Ascher E, Eskandari M, Faries P, Lal BK; Society for Vascular Surgery. Updated Society for Vascular Surgery guidelines for management of extracranial carotid disease. *J Vasc Surg*. 2011 Sep;54(3):e1-31.
Jacobowitz GR, Rockman CB, Gagne PJ, Adelman MA, Lamparello PJ, Landis R, Riles TS. A model for predicting occult carotid artery stenosis: screening is justified in a selected population. *J Vasc Surg*. 2003 Oct;38(4):705-9.
Qureshi AI, Janardhan V, Bennett SE, Luft AR, Hopkins LN, Guterman LR. Who should be screened for asymptomatic carotid artery stenosis? Experience from the Western New York stroke screening program. *J Neuroimaging*. 2001 Apr;11(2):105-11.

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About the Society for Vascular Surgery

The Society for Vascular Surgery advances the care and knowledge about vascular disease, which affects the veins and arteries of the body, to improve lives everywhere. It counts more than 5,000 medical professionals worldwide as members, including surgeons, physicians and nurses.

For more information about vascular health and the society, please visit the society's website, www.vascular.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.



Five Things Physicians and Patients Should Question

1

Don't use coronary artery calcium scoring for patients with known coronary artery disease (including stents and bypass grafts).

Coronary artery calcium scoring is used for evaluation of individuals without known coronary artery disease and offers limited incremental prognostic value for individuals with known coronary artery disease, such as those with stents and bypass grafts.

2

Don't order coronary artery calcium scoring for preoperative evaluation for any surgery, irrespective of patient risk.

No evidence exists to support the diagnostic or prognostic potential of coronary artery calcium scoring in individuals in the preoperative setting. This practice may add costs and confound professional guideline-based evaluations.

3

Don't order coronary artery calcium scoring for screening purposes on low risk asymptomatic individuals except for those with a family history of premature coronary artery disease.

Net reclassification of risk by coronary artery calcium scoring, when added to clinical risk scoring, is least effective in low risk individuals.

4

Don't routinely order coronary computed tomography angiography for screening asymptomatic individuals.

Coronary computed tomography angiography findings of coronary artery disease stenosis severity rarely offer incremental discrimination over coronary artery calcium scoring in asymptomatic individuals.

5

Don't use coronary computed tomography angiography in high risk* emergency department patients presenting with acute chest pain.

To date, randomized controlled trials evaluating use of coronary computed tomography angiography for individuals presenting with acute chest pain in the emergency department have been limited to low or low-intermediate risk individuals.

* Risk defined by the Thrombolysis In Myocardial Infarction (TIMI) risk score for unstable angina/acute coronary syndromes.

How This List Was Created

The Society of Cardiovascular Computed Tomography (SCCT) formed a committee panel made up of expert members of its existing Guidelines Committee and Publications and Statements Committee that would be dedicated to recommending between five and 10 questions that should be considered when ordering Coronary CT angiography and coronary artery calcium scoring. The panel reviewed and referred to SCCT's existing and published guidelines, appropriate use criteria and support statements. Once questions were chosen, the list was referred to the SCCT Board of Directors, which then reviewed the draft list, offered feedback and narrowed the questions down to the five most important consideration points through online voting. The draft was returned to the working group panel, which fleshed out the chosen recommendations and cited its supporting evidence from currently published literature. The SCCT's Board of Directors and Executive Board each then reviewed the final five items and implemented another round of edits before voting for final review and approval.

SCCT's bylaws and its disclosure and conflict of interest policy can be found at www.scct.org.

Sources

- Budoff MJ, Achenbach S, Blumenthal RS, Carr JJ, Goldin JG, Greenland P, Guerci AD, Lima JAC, Rader DJ, Rubin GD, Shaw LJ, Wiegers SE. Assessment of coronary artery disease by cardiac computed tomography: A scientific statement from the American Heart Association Committee on Cardiovascular Imaging and Intervention, Council on Cardiovascular Radiology and Intervention, and Committee on Cardiac Imaging, Council on Clinical Cardiology. [Internet]. *Circulation*. 2006 [cited 2012 Nov 9]. p. 1761–91. Available from: www.ncbi.nlm.nih.gov/pubmed/17015792.

Greenland P, Bonow RO, Brundage BH, Budoff MJ, Eisenberg MJ, Grundy SM, Lauer MS, Post WS, Raggi P, Redberg RF, Rodgers GP, Shaw LJ, Taylor AJ, Weintraub WS. ACCF/AHA 2007 clinical expert consensus document on coronary artery calcium scoring by computed tomography in global cardiovascular risk assessment and in evaluation of patients with chest pain: A report of the American College of Cardiology Foundation Clinical Expert Consensus Task Force (ACCF/AHA Writing Committee to Update the 2000 Expert Consensus Document on Electron Beam Computed Tomography) developed in collaboration with the Society of Atherosclerosis Imaging and Prevention and the Society of Cardiovascular Computed Tomography. *J Amer Coll Cardio* [Internet]. 2007 Jan 23 [cited 2012 Nov 19];49(3):378–402. Available from: www.ncbi.nlm.nih.gov/pubmed/17239724.
- Fleisher LA, Beckman JA, Brown KA, Calkins H, Chaikof E, Fleischmann KE, Freeman WK, Froehlich JB, Kasper EK, Kersten JR, Riegel B, Robb JF, Smith SC, Jacobs AC, Adams CD, Anderson JL, Antman EM, Buller CE, Creager MA, Ettinger SM, Faxon DP, Fuster V, Halperin JL, Hiratzka LF, Hunt SA, Lytle BW, Mishimura R, Ornato JP, Page RL, Tarkington LG, Yancy CW. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines on Perioperative Cardiovascular Evaluation for Noncardiac Surgery): Developed in collaboration with the American Society of Echocardiography, American Society of Nuclear Cardiology, Heart Rhythm Society, Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, Society for Vascular Medicine and Biology, and Society for Vascular Surgery. *Circulation* [Internet]. 2007 Oct 23 [cited 2012 Oct 26];116(17):e418–99. Available from: www.ncbi.nlm.nih.gov/pubmed/17901357.
- Budoff MJ, Achenbach S, Blumenthal RS, Carr JJ, Goldin JG, Greenland P, Guerci AD, Lima JAC, Rader DJ, Rubin GD, Shaw LJ, Wiegers SE. Assessment of coronary artery disease by cardiac computed tomography: A scientific statement from the American Heart Association Committee on Cardiovascular Imaging and Intervention, Council on Cardiovascular Radiology and Intervention, and Committee on Cardiac Imaging, Council on Clinical Cardiology. [Internet]. *Circulation*. 2006 [cited 2012 Nov 9]. p. 1761–91. Available from: www.ncbi.nlm.nih.gov/pubmed/17015792.

Shaw LJ, Raggi P, Schisterman E, Berman DS, Callister TQ. Prognostic value of cardiac risk factors and coronary artery calcium screening for all-cause mortality. *Radiology* [Internet]. 2003 Sep;228(3):826–33. Available from: www.ncbi.nlm.nih.gov/pubmed/12869688.
- Choi EK, Choi S, Rivera JJ, Nasir K, Chang SA, Chun EJ, Kim HK, Choi DJ, Blumenthal RS, Chang HJ. Coronary computed tomography angiography as a screening tool for the detection of occult coronary artery disease in asymptomatic individuals. *J Am Coll Cardiol* [Internet]. 2008;52:357-365. Available from: content.onlinejacc.org/article.aspx?articleid=1139078.

Taylor AJ, Cerqueira M, Hodgson JM, Mark D, Min J, O'Gara P, Rubin JD. ACCF/SCCT/ACR/AHA/ASE/ASNC/NASCI/SCAI/SCMR 2010 appropriate use criteria for cardiac computed tomography. A report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the Society of Cardiovascular Computed Tomography, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the American Society of Nuclear Cardiology, the North American Society for Cardiovascular Imaging, the Society for Cardiovascular Angiography and Interventions, and the Society for Cardiovascular Magnetic Resonance. *J Amer Coll Cardio* [Internet]. 2010 Nov 23 [cited 2012 Nov 5];56(22):1864–94. Available from: www.ncbi.nlm.nih.gov/pubmed/2108772.
- Goldstein JA, Chinnaiyan KM, Abidov A, Achenbach S, Berman DS, Hayes SW, Hoffmann U, Lesser JR, Mikati IA, O'Neil BJ, Shaw LJ, Shen MYH, Valeti US, Raff GL. The CT-STAT (Coronary Computed Tomographic Angiography for Systematic Triage of Acute Chest Pain Patients to Treatment) trial. *J Amer Coll Cardio* [Internet]. 2011 Sep 27 [cited 2012 Nov 28];58(14):1414–22. Available from: www.ncbi.nlm.nih.gov/pubmed/21939822.

Hoffmann U, Truong QA, Schoenfeld DA, Chou ET, Woodard PK, Nagurney JT, Pope JH, Hauser TH, White CS, Weiner SG, Kalanjan S, Mullins ME, Mikati I, Peacock WF, Zakrojsky P, Hayden D, Goehler A, Lee H, Gazelle GS, Wiviott SD, Fleg JL, Udelson JE. Coronary CT angiography versus standard evaluation in acute chest pain. *N Eng J Med* [Internet]. [cited 2012 Dec 7]. Available from: www.nejm.org/doi/full/10.1056/NEJMoa1201161.

Litt HI, Gatsonis C, Snyder B, Singh H, Miller CD, Entrikin DW, Leaming JM, Gavin LJ, Pacella CB, Hollander JE. CT angiography for safe discharge of patients with possible acute coronary syndromes. *N Eng J Med* [Internet]. 2012 Apr 12;366(15):1393–403. Available from: www.ncbi.nlm.nih.gov/pubmed/22449295.

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About the Society of Cardiovascular Computed Tomography

The Society of Cardiovascular Computed Tomography (SCCT) is the professional society devoted exclusively to cardiovascular computed tomography (CCT), representing physicians, scientists and technologists advocating for research, education and clinical excellence in the use of CCT. With an expanding global membership, it is acknowledged and recognized as the representative and advocate for research, education, and clinical excellence in the use of cardiovascular computed tomography. SCCT's mission includes fostering optimal clinical effectiveness of CCT through professional education, establishment of standards for quality assurance and professional training, and development of evidence-based guidelines for its use to enhance patient care and improve the quality of cardiovascular medical practice. SCCT also serves as an advocate for cardiovascular CT in all interactions with the health care industry, medical policy development and reimbursement organizations.



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Five Things Physicians and Patients Should Question

1

Don't recommend daily home finger glucose testing in patients with Type 2 diabetes mellitus not using insulin.

Self-monitoring of blood glucose (SMBG) is an integral part of patient self-management in maintaining safe and target-driven glucose control in type 1 diabetes mellitus. However, daily finger glucose testing has no benefit in patients with type 2 diabetes mellitus who are not on insulin or medications associated with hypoglycemia, and small, but significant, patient harms are associated with daily glucose testing. SMBG should be reserved for patients during the titration of their medication doses or during periods of changes in patients' diet and exercise routines.

2

For asymptomatic adults without a chronic medical condition, mental health problem, or other health concern, don't routinely perform annual general health checks that include a comprehensive physical examination and lab testing. Adults should talk with a trusted doctor about how often they should be seen to maintain an effective doctor-patient relationship, attend to preventive care, and facilitate timely recognition of new problems.

Visit intervals should be based on specific concerns, chronic conditions, or prevention strategies based on the best available evidence, tailored to age and risk. A general health check may help to foster a trusting relationship between a doctor and patient. It may also provide an opportunity for preventive counseling and screening. However, it is not always necessary to have a general health check every year. In contrast to office visits for acute illness, specific evidence-based preventive strategies, or chronic care management such as treatment of high blood pressure, annually scheduled general health checks, including the "health maintenance" visit, have not been shown to reduce morbidity, hospitalizations, or mortality, and may increase the frequency of non-evidence based testing.

3

Don't perform routine pre-operative testing before low-risk surgical procedures.

The goal of the preoperative evaluation is to identify, stratify, and reduce risk for major postoperative complications. The crucial elements of this evaluation are a careful history and physical examination. Preoperative testing for low-risk surgical procedures typically does not reclassify the risk estimate established through the history and physical examination, may result in unnecessary delays, lead to downstream risk from additional testing, and add avoidable costs. Clinicians should not routinely order testing before low-risk surgery.

4

Don't recommend cancer screening in adults with life expectancy of less than 10 years.

Screening for cancer can be lifesaving in otherwise healthy at-risk patients. While certain screening tests lead to a reduction in cancer-specific mortality, which emerges years after the test is performed, they expose patients to immediate potential harms. Patients with life expectancies of less than 10 years are unlikely to live long enough to derive the distant benefit from screening. Furthermore, these patients are more likely to experience the harms since patients with limited life expectancy are more likely to be frail and more susceptible to complications of testing and treatments. Therefore the balance of potential benefits and harms does not favor cancer screening in patients with life expectancies of less than 10 years.

5

Don't place, or leave in place, peripherally inserted central catheters for patient or provider convenience.

Peripherally inserted central catheters (or "PICCs") are commonly used devices in contemporary medical practice that are associated with costly and potentially lethal health care-acquired complications: most commonly central-line associated bloodstream infection and venous thromboembolism. Given the clinical and economic consequences of these complications, placement of PICCs should be limited to acceptable indications (e.g., long-term peripherally compatible infusions, non-peripherally compatible infusions, chemotherapy, palliative care and frequent blood draws). PICCs should be promptly removed when acceptable indications for their use ends.

How This List Was Created

An ad hoc committee of the Society of General Internal Medicine (SGIM) was impaneled, taking advantage of the clinical expertise of members from the Clinical Practice Committee and Evidence-Based Medicine Task Force within the Society. Members of the ad hoc committee were then solicited to determine possible topics for consideration. The topics chosen were selected to meet the goals of the *Choosing Wisely*[®] campaign, utilizing the unique clinical perspective of members of the Society in ambulatory general medicine as well as hospital-based practice. The final topics were selected by a vote of committee members based on the strength of the existing evidence, the unique standing members of the Society have in addressing the clinical topics selected, as well as contributions the recommendations would make in terms of patient safety, quality and economic impact. The final recommendations were approved by the governing Council of SGIM.

For SGIM's disclosure and conflict of interest policy, please visit www.sgim.org.

Sources

- American Diabetes Association. Standards of medical care in diabetes. *Diabetes Care*. 2013;36 Suppl1:S11-66.

Karter AJ, Parker MM, Moffet HH, Spence MM, Chan J, Ettner SL, Selby JV. Longitudinal study of new and prevalent use of self-monitoring of blood glucose. *Diabetes Care*. 2006;29:1757-63.

Harris MI. Frequency of blood glucose monitoring in relation to glycemic control in patients with type 2 diabetes. *Diabetes Care*. 2001;24:979-82.

Malanda UL, Welschen LMC, Riphagen II, Dekker JM, Nijpels G, Bot SDM. Self-monitoring of blood glucose in patients with type 2 diabetes mellitus who are not using insulin. *Cochrane Database of Systematic Reviews* 2012;1:1-88.

O'Kane MJ, Bunting B, Copeland M, Coates VE; ESMON study group. Efficacy of self-monitoring of blood glucose in patients with newly diagnosed type 2 diabetes (ESMON study): randomised controlled trial. *BMJ*. 2008;336:1174-7.

Peel E, Douglas M, Lawton J. Self-monitoring of blood glucose in type2 diabetes: longitudinal qualitative study of patients' perspectives. *BMJ*. 2007;335:493-8.

Cameron C, Coyle D, Ur E, Klarenback S. Cost-effectiveness of self-monitoring of blood glucose in patients with type 2 diabetes mellitus managed without insulin. *CMAJ*. 2010;182(1):28-34.
- Krogsboll LT, Jorgensen KJ, Gronhoj Larsen C, Gotzsche PC. General health checks in adults for reducing morbidity and mortality from disease: Cochrane systematic review and meta-analysis. *BMJ*. 2012;345:e7191.

Boulware LE, Marinopoulos S, Phillips KA, Hwang CW, Maynor K, Merenstein D, Wilson RF, Barnes GJ, Bass EB, Powe NR, Daumit GL. Systematic review: the value of the periodic health evaluation. *Ann Intern Med*. 2007 Feb 20;146(4):289-300.

United States Preventive Services Task Force. Guide to clinical preventative services: an assessment of the effectiveness of 169 interventions. Baltimore: Williams & Wilkins, 1989.

Canadian Task Force on the Periodic Health Examination. The periodic health examination. *CMAJ*. 1979;121(9):1193-254.
- Keay L, Lindsley K, Tielsch J, Katz J, Schein O. Routine preoperative medical testing for cataract surgery. *Cochrane Database Syst Rev*. 2012 Mar 14;3:CD007293.

Czosi-Murray C, Jones ML, McCabe C, Claxton K, Oluboyede Y, Roberts J, Nicholl JP, Rees A, Reilly CS, Young D, Fleming T. What is the value of routinely testing full blood count, electrolytes and urea, and pulmonary function tests before elective surgery in patients with no apparent clinical indication and in subgroups of patients with common comorbidities: a systematic review of the clinical and cost-effective literature. *Health Technol Assess*. 2012 Dec;16(50):1-159.

Fritsch G, Flamm M, Hepner DL, Panisch S, Seer J, Soennichsen A. Abnormal pre-operative tests, pathologic findings of medical history, and their predictive value for perioperative complications. *Acta Anaesthesiol Scand*. 2012;56(3):339-50.

Benarroch-Gampel J, Sheffield KM, Duncan CB, Brown KM, Han Y, Townsend CM Jr, Riall TS. Preoperative laboratory testing in patients undergoing elective, low-risk ambulatory surgery. *Ann Surg*. 2012 Sep;256(3):518-28.

Van Veen JJ, Spahn DR, Makris M. Routine preoperative coagulation tests: an outdated practice? *Br J Anaesth*. 2011;106:1-3.

Chung F, Yuan H, Yin L, Vairavanathan S, Wong DT. Elimination of preoperative testing in ambulatory surgery. *Anesth Analg*. 2009 Feb;108(2):467-75.

Apfelbaum JL, Connis RT and the Committee on Standards and Practice Parameters. Practice advisory for preanesthesia evaluation: an updated report by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. *Anesthesiology*. 2012 Mar;116:522-38.
- Lee SJ, Boscardin WJ, Stijacic-Cenzer I, Conell-Price J, O'Brien S, Walter LC. Time lag to benefit after screening for breast and colorectal cancer: meta-analysis of survival data from the United States, Sweden, United Kingdom, and Denmark. *BMJ*. 2012 Jan 8;345:e8441.

Moyer VA, U.S. Preventive Services Task Force. Screening for prostate cancer: U.S. Preventive Services Task Force Recommendation Statement. *Ann Intern Med*. 2012 Jul 17;157(2):120-34.

Schröder FS, Hugosson J, Roobol, MJ, Tammela TL, Ciatto S, Nelen V, Kwiatkowski M, Lujan M, Lilja H, Zappa M, Denis LJ, Recker F, Páez A, Mänttinen L, Bangma CH, Aus G, Carlsson S, Villers A, Rebillard X, van der Kwast T, Kujala PM, Blijenberg BG, Stenman UH, Huber A, Taari K, Hakama M, Moss SM, de Koning HJ, Auvinen A; ERSPC Investigators. Prostate-cancer mortality at 11 years of follow-up. *N Eng J Med*. 2012 Mar 15;366(11):981-90.

Whitlock EP, Lin JS, Liles E, Beil TL, Fu R. Screening for colon cancer: a targeted updated systematic review for the U.S. Preventive Services Task Force. *Ann Intern Med*. 2008 Nov 4;149(9):638-58.

Walter LC and Covinsky KE. Cancer screening in elderly patients: a framework for individualized decision making. *JAMA*. 2001 Jun 6;285(21):2750-6.
- Chopra V, Anand S, Krein SL, Chenoweth C, Saint S. Bloodstream infection, venous thrombosis, and peripherally inserted central catheters: reappraising the evidence. *Am J Med*. 2012;125(8):733-74.

Chopra V, Anand S, Hickner A, Buist M, Rogers MA, Saint S, Flanders SA. Risk of venous thromboembolism associated with peripherally inserted central catheters: a systematic review and meta-analysis. *Lancet*. 2013 May 17; pii: S0140-6736(13)60592-9. ePub ahead of print.

Safdar N, Maki DG. Risk of catheter-related bloodstream infection with peripherally inserted central venous catheters used in hospitalized patients. *Chest*. 2005;128(2):489-95.

Tejedor SC, Tong D, Stein J, Payne C, Dressler D, Xue W, Steinberg JP. Temporary central venous catheter utilization patterns in a large tertiary care center: tracking the "Idle central venous catheter". *Infect Control Hosp Epidemiol*. 2012 Jan;33(1):50-57.

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About the Society of General Internal Medicine

The membership of the Society of General Internal Medicine (SGIM) consists of academic general internal medicine faculty practicing, teaching and conducting research in outpatient settings as well as in our nation's teaching hospitals. As leading teachers of the next generation of physicians, we are committed to moving the practice of medicine to a more evidence-based approach. We are deeply committed to using science to improve our knowledge-base so that our patients can receive the best treatments, the optimal prevention care and the highest quality of life. We believe that the *Choosing Wisely* campaign mirrors these same commitments to the evidence-based practice of medicine for the benefit of our patients.



To learn more about the SGIM, visit www.sgim.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.



Five Things Physicians and Patients Should Question

1

Don't screen low risk women with CA-125 or ultrasound for ovarian cancer.

CA-125 and ultrasound in low risk, asymptomatic women have not led to diagnosis of ovarian cancer in earlier stages of disease or reduced ovarian cancer mortality. False positive results of either test can lead to unnecessary procedures, which have risks of complication.

2

Don't perform Pap tests for surveillance of women with a history of endometrial cancer.

Pap testing of the top of the vagina in women treated for endometrial cancer does not improve detection of local recurrence. False positive Pap smears in this group can lead to unnecessary procedures such as colposcopy and biopsy.

3

Don't perform colposcopy in patients treated for cervical cancer with Pap tests of low-grade squamous intraepithelial lesion (LGSIL) or less.

Colposcopy for low-grade abnormalities in this group does not detect recurrence unless there is a visible lesion and is not cost effective.

4

Avoid routine imaging for cancer surveillance in women with gynecologic cancer, specifically ovarian, endometrial, cervical, vulvar and vaginal cancer.

Imaging in the absence of symptoms or rising tumor markers has shown low yield in detecting recurrence or impacting overall survival.

5

Don't delay basic level palliative care for women with advanced or relapsed gynecologic cancer, and when appropriate, refer to specialty level palliative medicine.

There is now an evidence-based consensus among physicians who care for cancer patients that palliative care improves symptom burden and quality of life. Palliative care empowers patients and physicians to work together to set appropriate goals for care and outcomes. Palliative care can and should be delivered in parallel with cancer directed therapies in appropriate patients.

How This List Was Created

The Society of Gynecologic Oncology (SGO) created a “Cost of Care” workgroup in response to the ABIM Foundation’s *Choosing Wisely*® campaign. Workgroup members are comprised of the Society’s clinical practice committee that is made up of gynecologic oncologists, medical oncologists, nurse practitioners, pharmacists and other allied health providers. A literature review was conducted to identify areas of overutilization or unproven clinical benefit and areas of underutilization in the presence of evidence-based guidelines. The workgroup then evaluated these data and presented a list of five topics to the membership of the clinical practice committee and then to the SGO Board of Directors for approval. The five selected interventions were agreed upon as the most important components for women with gynecologic malignancies and their providers to consider.

SGO’s disclosure and conflict of interest policy can be found at www.sgo.org.

Sources

- Barton MB, Lin K. Screening for ovarian cancer: Evidence update for the U.S. Preventive Services Task Force reaffirmation recommendation statement [Internet]. Rockville (MD); 2012 Apr. Agency for Healthcare Research and Quality; AHRQ Publication No. 12-05165–EF3. Available from: <http://www.uspreventiveservicestaskforce.org/uspstf12/ovarian/ovarcancers.htm>.

Buys SS, Partridge E, Black A, Johnson CC, Lamerato L, Isaacs C, Reding DJ, Greenlee RT, Yokochi LA, Kessel B, Crawford ED, Church TR, Andriole GL, Weissfeld JL, Fouad MN, Chia D, O’Brien B, Ragard LR, Clapp JD, Rathmell JM, Riley TL, Hartge P, Pinsky PF, Zhu CS, Izmirlian G, Kramer BS, Miller AB, Xu JL, Prorok PC, Gohagan JK, Berg CD; PLCO Project Team. Effect of screening on ovarian cancer mortality: the Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Randomized Controlled Trial. *JAMA*. 2011 Jun 8;305(22):2295–303.

American College of Obstetricians and Gynecologists Committee on Gynecologic Practice. The role of the obstetrician-gynecologist in the early detection of epithelial ovarian cancer. Committee Opinion No. 477. *Obstet Gynecol*. 2011 Mar;117(3):742–6.
- Salani R, Backes FJ, Fung MF, Holschneider CH, Parker LP, Bristow RE, Goff BA. Posttreatment surveillance and diagnosis of recurrence in women with gynecologic malignancies: Society of Gynecologic Oncologists recommendations. *Am J Obstet Gynecol*. 2011;204:466–78.

Salani R, Nagel CI, Drennen E, Bristow RE. Recurrence patterns and surveillance for patients with early stage endometrial cancer. *Gynecol Oncol*. 2011;123:205–7.

Bristow RE, Purinton SC, Santillan A, Diaz-Montes TP, Gardner GJ, Giuntoli RL, 2nd. Cost-effectiveness of routine vaginal cytology for endometrial cancer surveillance. *Gynecol Oncol*. 2006; 103:709–13.
- Rimel BJ, Ferda A, Erwin J, Dewdney SB, Seamon L, Gao F, DeSimone C, Cotney KK, Huh W, Massad LS. Cervicovaginal cytology in the detection of recurrence after cervical cancer treatment. *Obstet Gynecol*. 2011;118:548–53.

Tergas A HL, Guntupalli SR, Huh WK, Massad LS, Fader AN, Rimel BJ. A cost analysis of colposcopy following abnormal cytology in posttreatment surveillance for cervical cancer. *Gynecol Oncol*. 2013.
- Sartori E, Pasinetti B, Carrara L, Gambino A, Odicino F, Pecorelli S. Pattern of failure and value of follow up procedures in endometrial and cervical cancer patients. *Gynecol Oncol*. 2007;107:S241–7.

Berchuck A, Anspach C, Evans AC, Soper JT, Rodriguez GC, Dodge R, Robboy S, Clarke-Pearson DL. Postsurgical surveillance of patients with FIGO stage I/II endometrial adenocarcinoma. *Gynecol Oncol*. 1995;59:20–4.

Bhosale P, Peungjesada S, Wei W, Levenback CF, Schmeler K, Rohren E, Macapinlac HA, Iyer RB. Clinical utility of positron emission tomography/computed tomography in the evaluation of suspected recurrent ovarian cancer in the setting of normal CA125 levels. *Int J Gynecol Cancer*. 2010;20:936–44.

Havrilesky LJ, Wong TZ, Alvarez Secord A, Berchuck A, Clarke-Pearson DL, Jones E. The role of PET scanning in the detection of recurrent cervical cancer. *Gynecol Oncol*. 2003;90:186–90.

Rimel BJ, Ferda A, Erwin J, Dewdney SB, Seamon L, Gao F, DeSimone C, Cotney KK, Huh W, Massad LS. Cervicovaginal cytology in the detection of recurrence after cervical cancer treatment. *Obstet Gynecol*. 2011;118:548–53.
- Smith TJ, Temin S, Alesi ER, Abernethy AP, Balboni TA, Basch EM, Ferrell BR, Loscalzo M, Meier DE, Paice JA, Peppercorn JM, Somerfield M, Stovall E, Von Roenn JH. American Society of Clinical Oncology provisional clinical opinion: the integration of palliative care into standard oncology care. *J Clin Oncol*. 2012 Mar 10;30 (8):880–7.

Rezk Y, Timmins PF, Smith HS. Review article: palliative care in gynecologic oncology. *Am J Hosp Palliat Care*. 2011 Aug;28(5):356–74.

Lewin SN, Buttin BM, Powell MA, Gibb RK, Rader JS, Mutch DG, Herzog TJ. Resource utilization for ovarian cancer patients at the end of life: how much is too much? *Gynecol Oncol*. 2005 Nov;99(2):261–6.

Delgado-Guay MO, Parson HA, Li Z, Palmer LJ, Bruera E. Symptom distress, intervention and outcomes of intensive care unit cancer patients referred to a palliative care consult team. *Cancer*. 2009;115:37–445.

Temel JS, Greer JA, Muzikansky A, Gallagher ER, Admane S, Jackson VA, Dahlin CM, Blinderman CD, Jacobsen J, Pirl WF, Billings JA, Lynch TJ. Early palliative care for patients with metastatic non-small-cell lung cancer. *N Engl J Med* 2010;363:733–42.

Elsayem A, Swint K, Fisch MJ, Palmer JL, Reddy S, Walker P, Zhukovsky D, Knight P, Bruera E. Palliative care inpatient services in a comprehensive cancer center: clinical and financial outcomes. *J Clin Oncol*. 2004 May 14;22(10):2008–14.

Fauci J, Schneider K, Walters C, Boone J, Whitworth J, Killian E, Straughn JM Jr. The utilization of palliative care in gynecologic oncology patients near the end of life. *Gynecol Oncol*. 2012;127:175–9.

Albanese TH, Radwany SM, Mason H, Gayomali C, Dieter K. Assessing the financial impact of an inpatient acute palliative care unit in a tertiary care teaching hospital. *J Palliat Med*. 2013;16:289–94.

Quill TE, Abernethy AP. Generalist plus specialist palliative care-creating a more sustainable model. *N Engl J Med*. 2013;368:1173–75.

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About the Society of Gynecologic Oncology

The Society of Gynecologic Oncology (SGO) is a 501(c) 6 national medical specialty organization of physicians and allied health care professionals who are trained in the comprehensive management of women with malignancies of the reproductive tract. The Society’s membership, totaling more than 1,600, is primarily comprised of gynecologic oncologists, as well as other related medical specialists including medical oncologists, radiation oncologists, nurses, social workers and pathologists. SGO members provide multidisciplinary cancer treatment including chemotherapy, radiation therapy, surgery and supportive care.



For more information, please visit www.sgo.org.

About the Foundation for Gynecologic Oncology

The Foundation for Gynecologic Oncology is a 501(c) 3 organization that ensures that SGO meets the needs and provides the resources for members and the women’s cancer care community.

For more information, please visit www.sgo.org/foundation.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1 **Don't place, or leave in place, urinary catheters for incontinence or convenience or monitoring of output for non-critically ill patients (acceptable indications: critical illness, obstruction, hospice, perioperatively for <2 days for urologic procedures; use weights instead to monitor diuresis).**

Catheter Associated Urinary Tract Infections (CAUTIs) are the most frequently occurring health care acquired infection (HAI). Use of urinary catheters for incontinence or convenience without proper indication or specified optimal duration of use increases the likelihood of infection and is commonly associated with greater morbidity, mortality and health care costs. Published guidelines suggest that hospitals and long-term care facilities should develop, maintain and promulgate policies and procedures for recommended catheter insertion indications, insertion and maintenance techniques, discontinuation strategies and replacement indications.

2 **Don't prescribe medications for stress ulcer prophylaxis to medical inpatients unless at high risk for GI complications.**

According to published guidelines, medications for stress ulcer prophylaxis are not recommended for adult patients in non-ICU settings. Histamine-2 receptor antagonists (H2RAs) and proton-pump inhibitors (PPIs), commonly used to treat stress ulcers, are associated with adverse drug events and increased medication costs, and commonly enhance susceptibility to community-acquired nosocomial pneumonia and Clostridium difficile. Adherence to therapeutic guidelines will aid health care providers in reducing treatment of patients without clinically important risk factors for gastrointestinal bleeding.

3 **Avoid transfusions of red blood cells for arbitrary hemoglobin or hematocrit thresholds and in the absence of symptoms of active coronary disease, heart failure or stroke.**

The AABB recommends adhering to a restrictive transfusion strategy (7 to 8 g/dL) in hospitalized, stable patients. The AABB suggests that transfusion decisions be influenced by symptoms as well as hemoglobin concentration. According to a National Institutes of Health Consensus Conference, no single criterion should be used as an indication for red cell component therapy. Instead, multiple factors related to the patient's clinical status and oxygen delivery should be considered.

4 **Don't order continuous telemetry monitoring outside of the ICU without using a protocol that governs continuation.**

Telemetric monitoring is of limited utility or measurable benefit in low risk cardiac chest pain patients with normal electrocardiogram. Published guidelines provide clear indications for the use of telemetric monitoring in patients which are contingent upon frequency, severity, duration and conditions under which the symptoms occur. Inappropriate use of telemetric monitoring is likely to increase cost of care and produce false positives potentially resulting in errors in patient management.

5 **Don't perform repetitive CBC and chemistry testing in the face of clinical and lab stability.**

Hospitalized patients frequently have considerable volumes of blood drawn (phlebotomy) for diagnostic testing during short periods of time. Phlebotomy is highly associated with changes in hemoglobin and hematocrit levels for patients and can contribute to anemia. This anemia, in turn, may have significant consequences, especially for patients with cardiorespiratory diseases. Additionally, reducing the frequency of daily unnecessary phlebotomy can result in significant cost savings for hospitals.

How This List Was Created

The Society of Hospital Medicine (SHM) created a *Choosing Wisely*[®] subcommittee comprised of representatives of the Hospital Quality and Patient Safety committee and included diverse representation of academic, community and adult hospitalists. SHM committee members submitted 150 recommendations for consideration, which were discussed for frequency of occurrence, the uniqueness of the tests and treatments and whether the cost burden for a specific test or treatment proved to be significant, narrowing the list to 65 items. The *Choosing Wisely* subcommittee ranked these items and a survey was sent to all SHM members to arrive at 11 recommendations, of which the final five were determined utilizing the Delphi method. SHM's Board approved the final recommendations.

SHM's disclosure and conflict of interest policy can be found at www.hospitalmedicine.org/industry.

Sources

- Hooton TM, Bradley SF, Cardena DD, Colgan R, Geerlings SR, Rice JC, Saint S, Schaeffer AJ, Tambayh PA, Tenke P, Nicolle LE. Diagnosis, Prevention, and Treatment of Catheter-Associated Urinary Tract Infection in Adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America *Clin Infect Dis* [Internet]. 2010 [cited 2012 Sep 4];50(5): 625-663.

Saint S, Meddings JA, Calfee D, Kowalski CP, Krien SL. Catheter-associated Urinary Tract Infection and the Medicare Rule Changes. *Ann Intern Med* [Internet]. 2009 Jun 16 [cited 2012 Sep 4];150(12): 877-884.

Centers for Medicare & Medicaid Services, Joint Commission. Standards for hospital care, surgical care improvement project (SCIP), SCIP-Inf-9; Performance Measure Name: Urinary catheter removed on Postoperative Day 1 (POD 1) or Postoperative Day 2 (POD 2) with day of surgery being day zero. 2013. 2013 Joint Commission National Hospital Inpatient Quality Measures Specification Manual, version 4.11.
- American Society of Health System Pharmacists. ASHP Therapeutic Guidelines on Stress Ulcer Prophylaxis ASHP therapeutic guidelines on stress ulcer prophylaxis: ASHP commission on therapeutics and approved by the ASHP Board of Directors on November 14, 1998. *Am J Health Syst Pharm* [Internet]. 1999 Feb 1 [cited 2012 Sep 4];56: 347-379.
- Carson JL, Grossman BJ, Kleinman S, Tinmouth AT, Marques MB, Fung MK, Holcomb JB, Illoh O, Kaplan LJ, Katz LM, Rao SV, Roback JD, Shander A, Tobian AA, Weinstein R, Swinton McLaughlin LG, Djulbegovic B; Clinical Transfusion Medicine Committee of the AABB. Red blood cell transfusion: A clinical practice guideline from the AABB. *Ann Intern Med* [Internet]. 2012 Jul 3 [cited 2012 Sep 4];157(1):49-58.

Consensus conference. Perioperative red blood cell transfusion. *JAMA*. 1988 Nov 11; 260(18):2700-3.

Advancing Transfusion and Cellular Therapies Worldwide. AABB name change. [Internet]. 2012 [Cited 2012 Oct 15]. Available from: www.aabb.org/about/who/Pages/namechange.aspx.
- Drew BJ, Califf RM, Funk M, Kaufman ES, Krucoff MW, Laks MW, Macfarlane PW, Sommargren C, Swiryn S, Van Hare GF. Practice standards for electrocardiographic monitoring in hospital settings: an American Heart Association scientific statement from the Councils on Cardiovascular Nursing, Clinical Cardiology, and Cardiovascular Disease in the Young; endorsed by the International Society of Computerized Electrocardiology and the American Association of Critical-Care Nurses. *Circ*. [Internet]. 2004 [cited 2012 Sep 4];110:2721-2746.

Crawford MH, Bernstein SJ, Deedwania PC, DiMarco JP, Ferrick KJ, Garson A Jr, Green LA, Greene HL, Silka MJ, Stone PH, Tracy CM, Gibbons RJ, Alpert JS, Eagle KA, Gardner TJ, Gregoratos G, Russell RO, Ryan TJ, Smith SC. ACC/AHA guidelines for ambulatory electrocardiography: Executive summary and recommendations a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Revise the Guidelines for Ambulatory Electrocardiography) developed in collaboration with the North American Society for Pacing and Electrophysiology. *Circ* [Internet]. 1999 Aug 24 [cited 2012 Sep 4];100(8):886-93.

Snider A, Papaleo M, Beldner S, Park C, Katechis D, Galinkin D, Fein A. Is telemetry monitoring necessary in low-risk suspected acute chest pain syndromes? *Chest* [Internet]. 2002 Aug [cited 2012 Sep 4];122(2):517-523.

Henriques-Forsythe MN, Ivonye CC, Jamched U, Kamuguisha LKK, Onwuanyi AE. Is telemetry overused? Is it as helpful as thought? *Cleve Clin J Med* [Internet]. 2009 Jun [cited 2012 Sep 4];368-372.

Adams HP Jr, del Zoppo G, Alberts MJ, Bhatt DL, Brass L, Furlan A, Grubb RL, Higashida RT, Jauch EC, Kidwell C, Lyden PD, Morgenstern LB, Qureshi AI, Rosenwasser RH, Scott PA, Wijdicks EFM, American Heart Association, American Stroke Association Stroke Council, Clinical Cardiology Council. Guidelines for the early management of adults with ischemic stroke: a guideline from the American Heart Association/American Stroke Association Stroke Council, Clinical Cardiology Council, Cardiovascular Radiology and Intervention Council, and the Atherosclerotic Peripheral Vascular Disease and Quality of Care Outcomes in Research Interdisciplinary Working Groups: the American Academy of Neurology affirms the value of this guideline as an educational tool for neurologists. *Stroke* [Internet]. 2007 May [cited 2012 Sep 4];38(5):1655-711.
- Salisbury AC, Reid KJ, Alexander KP, Masoudi FA, Lai SM, Chan PS, Bach RG, Wang TY, Spertus JA, Kosiborod M. Diagnostic blood loss from phlebotomy and hospital-acquired anemia during Acute Myocardial Infarction. *Arch Intern Med* [Internet]. 2011 Oct 10 [cited 2012 Sep 4];171(18):1646-1653.

Thavendiranathan P, Bagai A, Ebidia A, Detsky AS, Choudhry NK. Do blood tests cause anemia in hospitalized patients?: The effect of diagnostic phlebotomy on hemoglobin and hematocrit levels. *J Gen Intern Med* [Internet]. 2005 June [cited 2012 Sep 4];20(6):520-524.

Stuebing EA, Miner TJ. Surgical vampires and rising health care expenditure: reducing the cost of daily phlebotomy. *Arch Surg* [Internet]. 2011 May [cited 2012 Sep 4];146(5):524-7.

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About the Society of Hospital Medicine

Representing the fastest growing specialty in modern healthcare, the Society of Hospital Medicine (SHM) is the leading medical society for more than 34,000 hospitalists and their patients. SHM is dedicated

to promoting the highest quality care for all hospitalized patients and overall excellence in the practice of hospital medicine through quality improvement, education, advocacy and research. Over the past decade, studies have shown that hospitalists can contribute to decreased patient lengths of stay, reductions in hospital costs and readmission rates, and increased patient satisfaction.

For more information about SHM and hospital medicine, visit www.hospitalmedicine.org.



For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1

Don't order chest radiographs in children with uncomplicated asthma or bronchiolitis.

National guidelines articulate a reliance on physical examination and patient history for diagnosis of asthma and bronchiolitis in the pediatric population. Multiple studies have established limited clinical utility of chest radiographs for patients with asthma or bronchiolitis. Omission of the use of chest radiography will reduce costs, but not compromise diagnostic accuracy and care.

2

Don't routinely use bronchodilators in children with bronchiolitis.

Published guidelines do not advocate the routine use of bronchodilators in patients with bronchiolitis. Comprehensive reviews of the literature have demonstrated that the use of bronchodilators in children admitted to the hospital with bronchiolitis has no effect on any important outcomes. There is limited demonstration of clear impact of bronchodilator therapy upon the course of disease. Additionally, providers should consider the potential impact of adverse events upon the patient.

3

Don't use systemic corticosteroids in children under 2 years of age with an uncomplicated lower respiratory tract infection.

Published guidelines recommend that corticosteroid medications not be used routinely in the management of bronchiolitis. Furthermore, additional studies in patients with other viral lower respiratory tract infections have failed to demonstrate any benefits.

4

Don't treat gastroesophageal reflux in infants routinely with acid suppression therapy.

Antireflux therapy has been demonstrated to have no effect in reducing the symptoms of gastroesophageal reflux disease (GERD) in children. Concerns regarding the use of proton-pump inhibitor therapy in infants include an inability to definitively diagnose pediatric patients according to the established criteria of GERD, lack of documented efficacy of acid suppression therapy in infants and the potential adverse effects associated with acid suppression therapy.

5

Don't use continuous pulse oximetry routinely in children with acute respiratory illness unless they are on supplemental oxygen.

The utility of continuous pulse oximetry in pediatric patients with acute respiratory illness is not well established. Use of continuous pulse oximetry has been previously associated with increased admission rates and increased length of stay. The clinical benefit of pulse oximetry is not validated or well documented.

How This List Was Created

A Delphi panel of pediatric hospital medicine physicians with wide geographic representation was convened by the Society of Hospital Medicine (SHM). The panel developed an initial list of 20 items with input from colleagues at each of the panelists' home institutions, which was then discussed and reduced to 11 items via consensus of the panel. A comprehensive literature review was undertaken for these 11 items, while they were concurrently circulated on the electronic listservs of SHM's Pediatric Committee and the American Academy of Pediatrics' Section on Hospital Medicine. The collated comments along with the results of the evidence review were then presented to the members of the panel.

Two rounds of Delphi voting took place via electronic submission of votes by the panel. Validity and feasibility of each item was assessed by the Delphi panel on a nine-point scale for each of the 11 items and the mean of each item was obtained. The aggregate score of the means of validity and feasibility decided the final five items. These recommendations were then submitted to the SHM Board for review and approval.

SHM's disclosure and conflict of interest policy can be found at www.hospitalmedicine.org/industry.

Sources

- American Academy of Pediatrics, Diagnosis and Management of Bronchiolitis, Subcommittee on Diagnosis and Management of Bronchiolitis, Pediatrics. 2006 Oct;118(4):1774-93.

National Heart, Lung and Blood Institute, National Asthma Education and Prevention Program. Expert panel report 3: Guidelines for the diagnosis and management of asthma. Bethesda (MD): National Institutes of Health; 2007 Aug. 417 p. Report No.: 07-4051.

Dawson KP, Long A, Kennedy J, Mogridge N. The chest radiograph in acute bronchiolitis. J Paediatr Child Health. 1990 26(4): 209-211.

Roback MG, Dreitlein DA. Chest radiograph in the evaluation of first time wheezing episodes: review of current clinical efficacy. Pediatr Emerg Care. 1998 Jun;14(3):181-4.
- American Academy of Pediatrics. Diagnosis and Management of Bronchiolitis, Subcommittee on Diagnosis and Management of Bronchiolitis. Pediatrics. 2006 Oct;118(4):1774-93.

Gadomski AM, Brower M. Bronchodilators for bronchiolitis. Cochrane Database Syst Rev. 2010;(12):CD001266.
- American Academy of Pediatrics. Diagnosis and Management of Bronchiolitis, Subcommittee on Diagnosis and Management of Bronchiolitis. Pediatrics. 2006 Oct;118(4):1774-93.

Klassen TP, Sutcliffe T, Watters LK, Wells GA, Allen UD, Li MM. Dexamethasone in salbutamol-treated inpatients with acute bronchiolitis: A randomized, controlled trial. J Pediatr. 1997 Feb;130(2):191-6.

Patel H, Platt R, Lozano JM, Wang EE. Glucocorticoids for acute viral bronchiolitis in infants and young children. Cochrane Database Syst Rev. 2004;(3):CD004878.

De Boeck K, Van der Aa N, Van Lierde S, Corbeel L, Eeckels R. Respiratory syncytial virus bronchiolitis: a double-blind dexamethasone efficacy study. J Pediatr. 1997 Dec;131(6):919-21.

Von Woensel JB, van Aalderen WM, Kimpen JL. Viral lower respiratory tract infection in infants and young children. BMJ 2003 Jul 5;327(7405):36-40.

Panickar J, Lakhanpaul M, Lambert PC, Kenia P, Stephenson T, Smyth A, Grigg J. Oral prednisolone for preschool children with acute virus-induced wheezing. N Engl J Med. 2009 Jan 22;360(4):329-38.
- Vandenplas Y, Rudolph CD, Di Lorenzo C, Hassall E, Liptak G, Mazur L, Sondheimer J, Staiano A, Thomson M, Veereman-Wauters G, Wenzl TG, North American Society for Pediatric Gastroenterology Hepatology and Nutrition, European Society for Pediatric Gastroenterology Hepatology and Nutrition. Pediatric gastroesophageal reflux clinical practice guidelines: joint recommendations of the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) and the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN). J Pediatr Gastroenterol Nutr. 2009;49:498-547.

van der Pol RJ, Smits MJ, van Wijk MP, Omari TI, Tabbers MM, Benninga MA. Efficacy of proton-pump inhibitors in children with gastroesophageal reflux disease: a systematic review. Pediatrics. 2011 May;127(5):925-35.

Gibbons TE, Gold BD. The use of proton pump inhibitors in children: a comprehensive review. Paediatr Drugs. 2003;5(1):25-40.

Orenstein SR, Hassall E. Infants and proton pump inhibitors: tribulations, no trials. J Pediatr Gastroenterol Nutr. 2007;45:395-8.

Khoshoo V, Edell D, Thompson A, Rubin M. Are we overprescribing antireflux medications for infants with regurgitation? Pediatrics. 2007 Nov;120:946-9.
- American Academy of Pediatrics. Diagnosis and Management of Bronchiolitis, Subcommittee on Diagnosis and Management of Bronchiolitis. Pediatrics. 2006 Oct;118(4):1774-93.

Schroeder AR, Marmor AK, Pantell RH, Newman TB. Impact of pulse oximetry and oxygen therapy on length of stay in bronchiolitis hospitalizations. Arch Ped Adolesc Med. 2004 Jun;158(6):527-530.

Hunt CE, Corwin MJ, Lister G, Weese-Mayer DE, Neuman MR, Tinsley L, Baird TM, Keens TG, Cabral HJ. Longitudinal assessment of hemoglobin oxygen saturation in healthy infants during the first 6 months of age. J Pediatr. 1999 Nov;135(5):580-6.

Alverson BK, McCulloh RJ, Koehn KL. Continuous versus intermittent pulse oximetry monitoring of children hospitalized for bronchiolitis. Abstract presented at IDWeek 2012. Sand Diego (CA). 2012 Oct 19.

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Five Things Physicians and Patients Should Question

1

Don't use PET/CT for cancer screening in healthy individuals.

- The likelihood of finding cancer in healthy adults is extremely low (around 1%), based on studies using PET/CT for screening.
- Imaging without clear clinical indication is likely to identify harmless findings that lead to more tests, biopsy or unnecessary surgery.

2

Don't perform routine annual stress testing after coronary artery revascularization.

- Routine annual stress testing in patients without symptoms does not usually change management.
- This practice may lead to unnecessary testing without any proven impact on patient management.

3

Don't use nuclear medicine thyroid scans to evaluate thyroid nodules in patients with normal thyroid gland function.

- Nuclear medicine thyroid scanning does not conclusively determine whether thyroid nodules are benign or malignant.
- Cold nodules on thyroid scans will still require biopsy.
- Nuclear medicine thyroid scans are useful to evaluate the functional status of thyroid nodules in patients who are hyperthyroid.

4

Avoid using a computed tomography angiogram to diagnose pulmonary embolism in young women with a normal chest radiograph; consider a radionuclide lung study ("V/Q study") instead.

- When the clinical question is whether or not pulmonary emboli are present, a V/Q study can provide the answer with lower overall radiation dose to the breast than can CTA, even when performed with a breast shield.

5

Don't use PET imaging in the evaluation of patients with dementia unless the patient has been assessed by a specialist in this field.

- Without objective evidence of dementia, the potential benefit of PET is unlikely to justify the cost or radiation risk.
- Dementia subtypes have overlapping patterns in PET imaging. Clinical evaluation and imaging often provide additive information and should be assessed together to make a reliable diagnosis and to plan care.
- For β -amyloid PET imaging, it is not currently known what a positive PET result in a cognitively normal person means; this method is not established for an individual prediction.

How This List Was Created

The president of the Society of Nuclear Medicine and Molecular Imaging (SNMMI) appointed a Steering Committee, led by the president-elect, to develop the "Top 5" list. This committee solicited input from five SNMMI clinical specialty councils (cardiovascular, brain, nuclear oncology, general nuclear medicine, pediatric) and our PET Center of Excellence. A task force made up of the Steering Committee and specialty council/center leadership convened, and its members also provided recommendations. The Steering Committee reviewed and ranked the submissions and presented the five highest-ranked statements to the SNMMI Board of Directors and House of Delegates.

SNMMI's disclosure and conflict of interest policy can be obtained by contacting the organization (email@snmmi.org).

Sources

- Lee JW, Kang KW, Paeng JC, Lee SM, Jang SJ, Chung JK, Lee MC, Lee DS. Cancer screening using 18F-FDG PET/CT in Korean asymptomatic volunteers: a preliminary report. *Ann Nucl Med* [Internet]. 2009 Sep [cited 2012 Oct 19];23(7):685-91.
Minamimoto R, Senda M, Terauchi T, Jinnouchi S, Inoue T, Iinuma T, Inoue T, Ito K, Iwata H, Uno K, Oku S, Oguchi K, Tsukamoto E, Nakashima R, Nishizawa S, Fukuda H, Murano T, Yoshida T. Analysis of various malignant neoplasms detected by FDG-PET cancer screening program: based on a Japanese Nationwide Survey. *Ann Nucl Med* [Internet]. 2011 Jan [cited 2012 Oct 19];25(1):45-54.
- Hendel RC, Berman DS, Di Carli MF, Heidenreich PA, Henkin RE, Pellikka PA, Pohost GM, Williams KA. ACCF/ASNC/ACR/AHA/ASE/SCCT/SCMR/SNM 2009 appropriate use criteria for cardiac radionuclide imaging: a report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, the American Society of Nuclear Cardiology, the American College of Radiology, the American Heart Association, the American Society of Echocardiography, the Society of Cardiovascular Computed Tomography, the Society for Cardiovascular Magnetic Resonance, and the Society of Nuclear Medicine. *J Am Coll Cardiol* [Internet]. 2009 Feb [cited 2012 Oct 19];53:2201-29.
- Welker MJ, Orlov D. Thyroid Nodules. *Am Fam Physician* [Internet]. 2003 Feb 1 [cited 2012 Oct 19];67(3):559-567.
Cooper DS, Doherty GM, Haugen BR, Kloos RT, Lee SL, Mandel SJ, Mazzaferri EL, McIver B, Pacini F, Schlumberger M, Sherman SI, Steward DL, Tuttle RM, American Thyroid Association (ATA) Guidelines Taskforce on Thyroid Nodules and Differentiated Thyroid Cancer. Revised American Thyroid Association Management Guidelines for Patients with Thyroid Nodules and Differentiated Thyroid Cancer. *Thyroid* [Internet]. 2009 Nov [cited 2012 Oct 19];19(11):1167-214.
Lee JC, Harris AM, Khafagimimum FA. Thyroid Scans. *Aust Fam Physician* [Internet]. 2012 [cited 2012 Oct 19];41(8): 586.
- International Commission on Radiological Protection. Radiation dose to patients from radiopharmaceuticals (Addendum to ICRP Publication 53). ICRP Publication 80. 1998. *Ann. ICRP* 28 (3).
McCollough CH, Primak AN, Braun N, Kofler J, Yu L, Christner J. Strategies for reducing radiation dose in CT. *Radiol Clin North Am* [Internet]. 2009 Jan [cited 2012 Oct 19];47:27-40.
McCollough CH, Primak AH, Braun N, Kofler J, Yu L, Christner J. Strategies for reducing radiation dose in CT. *Radiol Clin North Am*. 2009;47:27-40.
Hurwitz LM, Yoshizumi TT, Goodman PC, Nelson RC, Toncheva G, Nguyen GB, Lowry C, Anderson-Evans C. Radiation dose savings for adult pulmonary embolus 64-MDCT using bismuth breast shields, lower peak kilovoltage, and automatic tube current modulation. *AJR Am J Roentgenol* [Internet]. 2009 Jan [cited 2012 Oct 19];192(1):244-53.
Stein EG, Haramati LB, Chamarthy M, Sprayregen S, Davitt MM, Freeman LM. Success of a safe and simple algorithm to reduce use of CT pulmonary angiography in the emergency department. *AJR Am J Roentgenol* [Internet]. 2010 Feb [cited 2012 Oct 19];194:392-397.
Parker MS, Hui FK, Camacho MA, Chung JK, Broga DW, Sethi NN. Female breast radiation exposure during CT pulmonary angiography. *AJR Am J Roentgenol* [Internet]. 2005 Nov [cited 2012 Oct 19];185:1228-1233.
Niemann T, Nicolas G, Roser HW, Müller-Brand J, Bongartz G. Imaging for suspected pulmonary embolism in pregnancy-what about the fetal dose? A comprehensive review of the literature. *Insights Imaging* [Internet]. 2010 Nov [cited 2012 Oct 19];1:361-372.
Freeman LM, Haramati LB. V/Q scintigraphy: alive, well and equal to the challenge of CT angiography. *Eur J Nucl Med Mol* [Internet]. Imaging. 2009 Mar [cited 2012 Oct 19];36:499-504.
Brenner DJ, Hall EJ. Computed tomography—an increasing source of radiation exposure. *N Engl J Med* [Internet]. 2007 Nov 29 [cited 2012 Oct 19];357:2277-2284.
Freeman LM, Stein EG, Spraregen S, Chamarthy M, Haramati LB. The current and continuing role of ventilation-perfusion scintigraphy in evaluating patients with suspected pulmonary embolism. *Semin Nucl Med* [Internet]. 2008 Nov [cited 2012 Oct 19]. 38(6):432-440.
Burns SK, Haramati LB. Diagnostic imaging and risk stratification of patients with acute pulmonary embolism. *Cardiol Rev* [Internet]. 2012 Jan-Feb [cited 2012 Oct 19];20(1):15-24.
- Herholz K, Carter SF, Jones M. Positron emission tomography imaging in dementia. *Br J Radiol* [Internet]. 2007 Dec [cited 2012 Oct 19]; 80:S160-7.
Drzezga A. Amyloid-plaque imaging in early and differential diagnosis of dementia. *Ann Nucl Med* [Internet]. 2010 Feb [cited 2012 Oct 19];24:55-66.
Drzezga, A. Basic pathologies of neurodegenerative dementias and their relevance for state-of-the-art molecular imaging studies. *Eur J Nucl Med Mol Imaging* [Internet]. 2008 Mar [cited 2012 Oct 19];35 (Suppl 1):S4-S11.
Schroeter ML, Raczkka K, Neumann J, Yves von Cramon D. Towards a nosology for frontotemporal lobar degenerations-a meta-analysis involving 267 subjects. *Neuroimage* [Internet]. 2007 Jul 1 [cited 2012 Oct 19];36(3):497-510.
Vlassenko AG, Mintun MA, Xiong C, Sheline YI, Goate AM, Benzinger TL, Morris JC. Amyloid-beta plaque growth in cognitively normal adults: longitudinal [11C]Pittsburgh compound B data. *Ann Neurol* [Internet]. 2011 Nov [cited 2012 Oct 19];70(5):857-61.

About the ABIM Foundation

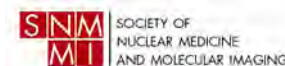
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To learn more about the ABIM Foundation, visit www.abimfoundation.org.

About the Society of Nuclear Medicine and Molecular Imaging

The Society of Nuclear Medicine and Molecular Imaging (SNMMI) is a nonprofit scientific and professional organization dedicated to the science, technology and practical application of nuclear medicine and molecular imaging, with the ultimate goal of improving human health. Founded in 1960, SNMMI represents more than 19,000 nuclear medicine and molecular imaging professionals worldwide.



For more information about nuclear medicine and molecular imaging, please visit SNMMI's consumer website, www.discoverMI.org.

For more information or to see other lists of Five Things Physicians and Patients Should Question, visit www.choosingwisely.org.

Five Things Physicians and Patients Should Question

1 Don't routinely use sentinel node biopsy in clinically node negative women ≥ 70 years of age with hormone receptor positive invasive breast cancer.

Hormonal therapy is standard for all patients with hormone receptor positive disease. The omission of sentinel lymph node biopsy in clinically node negative women ≥ 70 years of age treated with hormonal therapy does not result in increased rates of locoregional recurrence and does not impact breast cancer mortality. Patients ≥ 70 years of age with early stage hormone receptor positive breast cancer and no palpable axillary lymph nodes can be safely treated without axillary staging.

2 Don't routinely use breast MRI for breast cancer screening in average risk women.

MRI screening should be reserved for those at increased risk. Women considered at high risk include: known BRCA gene mutation carriers; first-degree relatives of known BRCA gene mutation carriers; those with a lifetime risk exceeding 20% as measured by risk-assessment tools based primarily on family history of breast cancer; and those with a clinical history associated with a significant risk for breast cancer, including women who received mantle radiation before the age of 30.

3 Don't obtain routine blood work (e.g., CBC, liver function tests) other than a CEA level during surveillance for colorectal cancer.

Due to lack of sensitivity and accuracy in detecting early recurrences, current evidence does not support measurement of CBC or liver function tests for surveillance following colorectal cancer treatment. Although evidence is not unequivocal, surveillance regimens that include serial carcinoembryonic antigen (CEA) testing have been associated with improved survival.

Depending on the stage of non-metastatic disease, accepted components for colorectal cancer surveillance include a combination of history and physical examination; CEA; CT of the chest, abdomen and pelvis; and colonoscopy at variable intervals depending on stage and risk of recurrent disease.

4 Don't perform routine PET-CT in the initial staging of localized colon or rectal cancer or as part of routine surveillance for patients who have been curatively treated for colon or rectal cancer.

A CT of the chest, abdomen and pelvis with IV and PO contrast provides excellent staging and standard PET imaging does not significantly improve diagnostic accuracy or outcomes as part of the initial workup or surveillance testing. Use of PET does not eliminate the need for recommended staging CT with IV and PO contrast but does increase costs.

5 Don't routinely order imaging studies for staging purposes on patients newly diagnosed with localized primary cutaneous melanoma unless there is suspicion for metastatic disease based on history and physical exam.

Routine imaging studies for localized melanoma including chest radiographs, brain MRI, cross-sectional imaging and PET/CT are insensitive at the lower limits of resolution and do not significantly improve staging of these patients. There is a low risk of metastases and also a risk of detecting findings unrelated to the melanoma (e.g., false positive findings or incidental, unrelated findings). Imaging should be performed if there are concerning findings on history and physical exam, and such tests should be driven by symptoms.

How This List Was Created

The Society of Surgical Oncology (SSO) maintains disease site workgroups (DSWGs) to represent the various disease sites associated with surgical oncology. The DSWGs are comprised of experts in the following disease sites: gastrointestinal, melanoma/sarcoma, breast, hepatobiliary, endocrine/head & neck and colorectal. The SSO Quality Committee initiated the *Choosing Wisely* measure development process by asking the DSWGs to identify tests or procedures commonly used in their respective areas of expertise whose necessity should be questioned and discussed. The Quality Committee received submissions from all six disease sites; however, because the list was limited to five measures, the Committee felt it was precluded from incorporating measures representing all disease sites. As a means of refining the list of *Choosing Wisely* measures, the Quality Committee elected to include the five measures impacting the largest number of patients. The draft list was reduced significantly – eliminating the endocrine, hepatobiliary, and sarcoma measures. The five measures were selected from the breast, colorectal and melanoma sets. These five measures were submitted to and approved by the SSO Executive Council.

Quality Committee Members

Sandra Wong, MD, MS, Chair
David Shibata, MD, Vice Chair

Dave Bentrem, MD
Ned Carp, MD

Fabian Johnston, MD, MHS
Tari King, MD

Larissa Temple, MD
Sharon Weber, MD

Sources

- Hughes KS, Schnaper LA, Bellon JR, Cirrincione CT, Berry DA, McCormick B, Muss HB, Smith BL, Hudis CA, Winer EP, Wood WC. Lumpectomy plus tamoxifen with or without irradiation in women age 70 years or older with early breast cancer: long-term follow-up of CALGB 9343. *J Clin Oncol* 2013 Jul 1;31(19):2382-7.
- Martelli G, Miceli R, Daidone MG, Vetrella G, Cerrotta AM, Piomalli D, Agresti R. Axillary dissection versus no axillary dissection in elderly patients with breast cancer and no palpable axillary nodes: results after 15 years of follow-up. *Ann Surg Oncol*. 2011 Jan;18(1):125–33.
- Saslow D, Boetes C, Burke W, Harms S, Leach MO, Lehman CD, Morris E, Pisano E, Schnall M, Sener S, Smith RA, Warner E, Yaffe M, Andrews KS, Russell CA; American Cancer Society Breast Cancer Advisory Group. American Cancer Society guidelines for breast screening with MRI as an adjunct to mammography. *CA Cancer J Clin*. 2007 Mar-Apr;57(2):75-89. Erratum in: *CA Cancer J Clin*. 2007 May-Jun;57(3):185.
- Mulder RL, Kremer LC, Hudson MM, Bhatia S, Landier W, Levitt G, Constone LS, Wallace WH, van Leeuwen FE, Ronckers CM, Henderson TO, Dwyer M, Skinner R, Oeffinger KC; International Late Effects of Childhood Cancer Guideline Harmonization Group. Recommendations for breast cancer surveillance for female survivors of childhood, adolescent, and young adult cancer given chest radiation: a report from the International Late Effects of Childhood Cancer Guideline Harmonization Group. *Lancet Oncol*. 2013 Dec;14(13):e621-9.
- Benson AB 3rd, Bekaii-Saab T, Chan E, Chen YJ, Choti MA, Cooper HS, Engstrom PF, Enzinger PC, Fakih MG, Fenton MJ, Fuchs CS, Grem JL, Hunt S, Kamel A, Leong LA, Lin E, May KS, Mulcahy MF, Murphy K, Rohren E, Ryan DP, Saltz L, Sharma S, Shibata D, Skibber JM, Small W Jr, Sofocleous CT, Venook AP, Willett CG, Gregory KM, Freedman-Cass DA; National Comprehensive Cancer Network. Localized colon cancer, version 3.2013: featured updates to the NCCN Guidelines. *J Natl Compr Canc Netw*. 2013 May 1;11(5):519-28.
- El-Shami K, Oeffinger KC, Erb NL, Willis A, Bretsch JK, Pratt-Chapman ML, Cannady RS, Wong SL, Rose J, Barbour AL, Stein KD, Sharpe KB, Brooks DD, Cowens-Alvarado RL. American Cancer Society colorectal cancer survivorship care guidelines. *CA Cancer J Clin*. 2015;65(6):428-55.
- Meyerhardt JA, Mangu PB, Flynn PJ, Korde L, Loprinzi CL, Minsky BD, Petrelli NJ, Ryan K, Schrag DH, Wong SL, Benson AB 3rd; American Society of Clinical Oncology. Follow-up care, surveillance protocol, and secondary prevention measures for survivors of colorectal cancer: American Society of Clinical Oncology clinical practice guideline endorsement. *J Clin Oncol*. 2013 Dec 10;31(35):4465-70.
- Colon Cancer. Version 2.2106. Clinical Practice Guidelines in Oncology [Internet]. Fort Washington (PA): National Comprehensive Cancer Network. [cited 2016 May 27]. Available from: https://www.nccn.org/professionals/physician_gls/pdf/colon.pdf.
- Benson AB 3rd, Bekaii-Saab T, Chan E, Chen YJ, Choti MA, Cooper HS, Engstrom PF, Enzinger PC, Fakih MG, Fenton MJ, Fuchs CS, Grem JL, Hunt S, Kamel A, Leong LA, Lin E, May KS, Mulcahy MF, Murphy K, Rohren E, Ryan DP, Saltz L, Sharma S, Shibata D, Skibber JM, Small W Jr, Sofocleous CT, Venook AP, Willett CG, Gregory KM, Freedman-Cass DA; National Comprehensive Cancer Network. Localized colon cancer, version 3.2013: featured updates to the NCCN Guidelines. *J Natl Compr Canc Netw*. 2013 May 1;11(5):519-28.
- Balthazar EJ, Megibow AJ, Hulnick D, Naidich DP. Carcinoma of the colon: detection and preoperative staging by CT. *AJR Am J Roentgenol*. 1988 Feb;150(2):301-6.
- Cipe G, Ergul N, Hasbahceci M, Firat D, Bozkurt S, Memmi N, Karatepe O, Muslumanoglu M. Routine use of positron-emission tomography/computed tomography for staging of primary colorectal cancer: does it affect clinical management? *World J Surg Oncol*. 2013 Feb 27;11:49.
- Wang TS, Johnson TM, Cascade PN, Redman BG, Sondak VK, Schwartz JL. Evaluation of staging chest radiographs and serum lactate dehydrogenase for localized melanoma. *J Am Acad Dermatol* 2004 Sep;51:399-405.
- Mohr P, Eggermont AM, Hauschild A, Buzaid A. Staging of cutaneous melanoma. *Ann Oncol*. 2009 Aug;20 Suppl 6:vi14-21.

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About the Society of Surgical Oncology

Founded in 1940 as the James Ewing Society, the Society of Surgical Oncology® is the preeminent organization for surgeons, scientists and health care specialists dedicated to advancing the treatment of cancer through leading edge scientific research and surgical techniques.



The Society's 2,800 U.S. and international members are at the forefront of the field, representing premier universities, hospitals and cancer centers from around the globe; in addition to its domestic initiatives, the Society has entered into agreements with six international surgical societies to advance collaborative cancer care education globally. The Society's focus on all solid-tumor disease sites is reflected in its Annual Cancer Symposium, monthly scientific journal (*Annals of Surgical Oncology*), education initiatives and committee structure. The mission of the Society of Surgical Oncology is to improve multidisciplinary patient care by advancing the science, education and practice of cancer surgery worldwide.

For more information, visit www.surgonc.org.

For more information or to see other lists of Things Clinicians and Patients Should Question, visit www.choosingwisely.org.



Five Things Physicians and Patients Should Question

1 Patients who have no cardiac history and good functional status do not require preoperative stress testing prior to non-cardiac thoracic surgery.

- Functional status has been shown to be reliable for prediction of perioperative and long-term cardiac events. In highly functional asymptomatic patients, management is rarely changed by preoperative stress testing. It is therefore appropriate to proceed with the planned surgery without it.

Unnecessary stress testing can be harmful because it increases the cost of care and delays treatment without altering surgical or perioperative management in a meaningful way. Furthermore, low-risk patients who undergo preoperative stress testing are more likely to obtain additional invasive testing with risks of complications.

Cardiac complications are significant contributors to morbidity and mortality after non-cardiac thoracic surgery, and it is important to identify patients preoperatively who are at risk for these complications. The most valuable tools in this endeavor include a thorough history, physical exam and resting EKG. Cardiac stress testing can be an important adjunct in this evaluation, but it should only be used when clinically indicated.

2 Don't initiate routine evaluation of carotid artery disease prior to cardiac surgery in the absence of symptoms or other high-risk criteria.

- Carotid stenosis with symptoms (stroke or transient ischemic attacks [TIA]) is a known risk for cardiovascular accident and appropriate for preoperative testing.
- The presence of a carotid bruit does not equate to an increased risk of stroke after cardiac surgery.
- Patients with carotid stenosis have a higher rate of cerebrovascular complications after cardiac surgery, but there is no evidence that prophylactic or concomitant carotid surgery decreases this rate of complications in asymptomatic patients.

ACC/AHA 2011 guidelines for coronary artery bypass graft surgery indicate carotid artery duplex scanning is reasonable in selected patients who are considered to have high-risk features. However, this was based on a consensus and a low level of evidence. In addition, a recent consensus report from the United Kingdom questioned whether neurologic sequelae developing in cardiac surgery patients with asymptomatic carotid disease are due to the carotid artery disease or rather act as a surrogate for an increased stroke risk from atherosclerotic issues with the aorta.

The Northern Manhattan Stroke Study concluded that carotid auscultation had poor sensitivity and positive predictive value for carotid stenosis and so decisions on obtaining carotid duplex studies should be considered based on symptoms or risk factors rather than findings on auscultation.

3 Don't perform a routine pre-discharge echocardiogram after cardiac valve replacement surgery.

- Pre-discharge cardiac echocardiography is useful after cardiac valve repair. It provides information regarding the integrity of the repair and allows the opportunity for early identification of problems that may need to be addressed surgically during the index hospitalization. Unlike valve repair, there is a lack of evidence that supports the routine use of cardiac echocardiography pre-discharge after cardiac valve replacement.
- Scenarios that would justify the use of pre-discharge cardiac echocardiography include: inability to perform intraoperative transesophageal echocardiography, clinical signs and symptoms worrisome for valvular malfunction or infection, or a large pericardial effusion.

Patients with suspected or biopsy proven Stage I NSCLC do not require brain imaging prior to definitive care in the absence of neurologic symptoms.

- The incidence of occult brain metastasis in Stage I lung cancer is low (<3%) and so routine brain imaging results in increased costs, delays in therapy and rarely changes patient management.
- False-positive studies occur in up to 11% of patients resulting in further invasive testing or incorrect over staging, with potentially tragic effects on treatment decisions and outcomes.

Some clinicians perform routine screening by brain magnetic resonance imaging (MRI) or computed tomography (CT) scans to rule out occult brain metastasis in asymptomatic patients prior to surgical resection of early stage lung cancer. This practice of routine screening for occult brain metastases has not been evaluated by a randomized clinical trial and may not be cost-effective or medically necessary.

Pooled data from retrospective studies that included a comprehensive clinical evaluation demonstrated that only 3% of patients who have a negative neurologic evaluation present with intracranial metastasis. One study, limited to Stage I patients, reported a prevalence of 1.3%. The joint statement of the American Thoracic Society and the European Respiratory Society did not advocate preoperative imaging of the brain in patients with NSCLC who present without neurologic symptoms, and the current National Comprehensive Cancer Network (NCCN) non-small cell lung cancer guidelines do not recommend preoperative brain imaging for asymptomatic patients with Stage IA non-small cell lung carcinoma.

Prior to cardiac surgery, there is no need for pulmonary function testing in the absence of respiratory symptoms.

- PFTs can be helpful in determining risk in cardiac surgery, but patients with no pulmonary disease are unlikely to benefit and do not justify testing.
- Symptoms attributed to cardiac disease that are respiratory in nature should be better characterized with PFTs.

Risk models for cardiac surgery developed from review of The Society of Thoracic Surgeons Adult Cardiac Surgery Database incorporate a variable for chronic lung disease. Only recently have actual FEV1 and DLCO data been collected in the database. In the absence of respiratory symptoms or suggestive medical history, pulmonary function testing is quite unlikely to change patient management or assist in risk assessment. Although some data are beginning to emerge about preoperative pulmonary rehabilitation prior to cardiac surgery for patients with even mild to moderate obstructive disease, this does not directly extrapolate to asymptomatic patients.

How This List Was Created

The Society of Thoracic Surgeons (STS) list development process was led by the First Vice-President, and involved input from multiple workforces, including the Workforce on Adult Cardiac and Vascular Surgery, Workforce on General Thoracic Surgery, and Workforce on Evidence Based Surgery, and was staffed by STS' Director of Quality. The initial 17 recommendations from these Workforces were narrowed down to eight based upon frequency, clinical guidelines and potential impact. STS leadership approved these eight recommendations for presentation to members in an online survey. The results of the survey, as well as research and systematic literature review by the Workforce on Evidence Based Surgery, were presented to the STS Executive Committee, which approved the five final recommendations.

Sources

1

Fleisher LA, Beckman JA, Brown KA, Calkins H, Chaikof E, Fleischmann KE, Freeman WK, Froehlich JB, Kasper EK, Kersten JR, Riegel B, Robb JF, Smith SC Jr, Jacobs AK, Adams CD, Anderson JL, Antman EM, Buller CE, Creager MA, Ettinger SM, Faxon DP, Fuster V, Halperin JL, Hiratzka LF, Hunt SA, Lytle BW, Nishimura R, Ornato JP, Page RL, Tarkington LG, Yancy CW. ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for non-cardiac surgery: A report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines on Perioperative Cardiovascular Evaluation for Non-cardiac Surgery). *Circulation*. 2007 Oct 23;116:e418-99.

Poldermans D, Bax JJ, Boersma E, De Hert S, Euckhout E, Fowkes G, Gorenek B, Henneric MG, Iung B, Kelm M, Per Kjeldsen K, Kristensen SD, Lopez-Sendon J, Pelosi P, Philippe F, Pierard L, Ponikowski P, Schmid J-P, Sellevold OFM, Sicari R, Van den Berghe G, Vermassen F. Guidelines for preoperative cardiac risk assessment and perioperative cardiac management in non-cardiac surgery. The task force for preoperative cardiac risk assessment and perioperative cardiac management in non-cardiac surgery of the European Society of Cardiology and endorsed by the European Society of Anaesthesiology. *Eur Heart J*. 2009;30:2769–812.

Brunelli A, Varela G, Salati M, Jimenez MF, Pompili C, Novoa N, Sabbatini A. Recalibration of the revised cardiac risk index in lung resection candidates. *Ann Thorac Surg*. 2010;90:199–203.

Wijesundera DN, Beattie WS, Elliot RF, Austin PC, Hux JE, Laupacis A. Non-invasive cardiac stress testing before elective major non-cardiac surgery: Population based cohort study. *BMJ*. 2010;340:b5526.

2

American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. 2011 ACCF/AHA Guideline for Coronary Artery Bypass Graft Surgery. *Circulation*. 2011;124(23):e652-e735.

Stansby G, Macdonald S, Allison R, de Belder M, Brown MM, Dark J, Featherstone R, Flather M, Ford GA, Halliday A, Malik I, Naylor R, Pepper J, Rothwell PM. Asymptomatic carotid disease and cardiac surgery consensus. *Angiology*. 2011;62:457-460.

Tarakji KG, Sabik JF, Bhudia SK, Batizy LH, Blackstone EH. Temporal onset, risk factors, and outcomes associated with stroke after coronary artery bypass grafting. *JAMA*. 2011;305:381-390.

Naylor AR, Bown MJ. Stroke after cardiac surgery and its association with asymptomatic carotid disease: An updated systematic review and meta-analysis. *Eur J Vasc Endovasc Surg*. 2011;41:607-624.

Cournot M, Boccalon H, Cambou JP, Guilloux J, Taraszkiwicz D, Hanaire-BROUTIN H, Chamontin B, Galinier M, Ferrières J. Accuracy of the screening physical examination to identify subclinical atherosclerosis and peripheral arterial disease in asymptomatic subjects. *J Vasc Surg*. 2007 Dec;46:1215-21.

Ratchford EV, Jin Z, Di Tullio MR, Salameh MJ, Homma S, Gan R, Boden-Albala B, Sacco RL, Rundek T. Carotid bruit for detection of hemodynamically significant carotid stenosis: The Northern Manhattan Study. *Neurol Res*. 2009;31:748–752.

3

Zoghbi WA, Chambers JB, Dumesnil JG, Foster E, Gottdiener JS, Grayburn PA, Khandheria BK, Levine RA, Marx GR, Miller FA Jr, Nakatani S, Quiñones MA, Rakowski H, Rodriguez LL, Swaminathan M, Waggoner AD, Weissman NJ, Zabalgoitia M. Recommendations for evaluation of prosthetic valves with echocardiography and doppler ultrasound: A report from the American Society of Echocardiography's Guidelines and Standards Committee and the Task Force on Prosthetic Valves, developed in conjunction with the American College of Cardiology Cardiovascular Imaging Committee, Cardiac Imaging Committee of the American Heart Association, the European Association of Echocardiography, a registered branch of the European Society of Cardiology, the Japanese Society of Echocardiography and the Canadian Society of Echocardiography, endorsed by the American College of Cardiology Foundation, American Heart Association, European Association of Echocardiography, a registered branch of the European Society of Cardiology, the Japanese Society of Echocardiography, and Canadian Society of Echocardiography. *J Am Soc Echocardiogr*. 2009 Sep;22(9):975-1014.

American College of Cardiology/American Heart Association Task Force on Practice Guidelines; Society of Cardiovascular Anesthesiologists; Society for Cardiovascular Angiography and Interventions; Society of Thoracic Surgeons. ACC/AHA 2006 guidelines for the management of patients with valvular heart disease: A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (writing committee to revise the 1998 Guidelines for the Management of Patients With Valvular Heart Disease): Developed in collaboration with the Society of Cardiovascular Anesthesiologists: Endorsed by the Society for Cardiovascular Angiography and Interventions and the Society of Thoracic Surgeons. *Circulation*. 2006 Aug 1;114(5):e84-231.

Bonow RO, Carabello BA, Chatterjee K, de Leon AC Jr, Faxon DP, Freed MD, Gaasch WH, Lytle BW, Nishimura RA, O'Gara PT, O'Rourke RA, Otto CM, Shah PM, Shanewise JS. 2008 focused update incorporated into the ACC/AHA 2006 guidelines for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 1998 Guidelines for the Management of Patients With Valvular Heart Disease): Endorsed by the Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, and Society of Thoracic Surgeons. *Circulation*. 2008 Oct 7;118(15):e523-661.

American College of Cardiology Foundation Appropriate Use Criteria Task Force; American Society of Echocardiography; American Heart Association; American Society of Nuclear Cardiology; Heart Failure Society of America; Heart Rhythm Society; Society for Cardiovascular Angiography and Interventions; Society of Critical Care Medicine; Society of Cardiovascular Computed Tomography; Society for Cardiovascular Magnetic Resonance; American College of Chest Physicians. ACCF/ASE/AHA/ASNC/HFSA/HRS/SCAI/SCCM/SCCT/SCMR 2011 Appropriate Use Criteria for Echocardiography. A Report of the American College of Cardiology Foundation Appropriate Use Criteria Task Force, American Society of Echocardiography, American Heart Association, American Society of Nuclear Cardiology, Heart Failure Society of America, Heart Rhythm Society, Society for Cardiovascular Angiography and Interventions, Society of Critical Care Medicine, Society of Cardiovascular Computed Tomography, Society for Cardiovascular Magnetic Resonance American College of Chest Physicians. *J Am Soc Echocardiogr*. 2011 Mar;24(3):229-267.

4

Silvestri GA, Gould MK, Margolis ML, Tanoue LT, McCrory D, Toloza E, Detterbeck F. Noninvasive staging of non-small cell lung cancer. ACCP Evidenced-Based Clinical Practice Guidelines (2nd Edition). Chest. 2007;132(3suppl):178S-201S.

Tanaka K, Kubota K, Kodama T, Nagai K, Nishiwaki Y. Extrathoracic staging is not necessary for non-small-cell lung cancer with clinical stage T1–2 N0. Ann Thorac Surg. 1999 Sep;68(3):1039-1042.

American Thoracic Society and European Respiratory Society Consensus Report. Pretreatment evaluation of non-small cell lung cancer. Am J Respir Crit Care Med 1997;156:320-332.

Toloza EM, Harpole L, and McCrory DC. Noninvasive staging of non-small cell lung cancer: A review of the current evidence. Chest. 2003;123;(1 Spp1):137S-146S.

National Comprehensive Cancer Network. National Comprehensive Cancer Network clinical practice guidelines in oncology (NCCN Guidelines®): Non-small cell lung cancer. Fort Washington (PA): NCCN;2012.

Colice GL, Birkmeyer JD, Black WC, Littenberg B, Silvestri G. Cost-effectiveness of head CT in patients with lung cancer without clinical evidence of metastases. Chest. 1995;108(5):1264-1271.

5

Shahian DM, O'Brien SM, Filardo G, Ferraris VA, Haan CK, Rich JB, Normand SL, DeLong ER, Shewan CM, Dokholyan RS, Peterson ED, Edwards FH, Anderson RP. The society of thoracic surgeons 2008 cardiac surgery risk models: Part 1--coronary artery bypass grafting surgery. Ann Thorac Surg. 2009 Jul;88:S2-22.

O'Brien SM, Shahian DM, Filardo G, Ferraris VA, Haan CK, Rich JB, Normand SL, DeLong ER, Shewan CM, Dokholyan RS, Peterson ED, Edwards FH, Anderson RP. The society of thoracic surgeons 2008 cardiac surgery risk models: Part 2--isolated valve surgery. Ann Thorac Surg. 2009 Jul;88:S23-42.

Ried M, Unger P, Puehler T, Haneya A, Schmid C, Diez C. Mild-to-moderate copd as a risk factor for increased 30-day mortality in cardiac surgery. Thorac Cardiovasc Surg. 2010 Oct;58:387-391.

Adabag AS, Wassif HS, Rice K, Mithani S, Johnson D, Bonawitz-Conlin J, Ward HB, McFalls EO, Kuskowski MA, Kelly RF. Preoperative pulmonary function and mortality after cardiac surgery. Am Heart J. 2010 Apr;159(4):691-697.

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Founded in 1964, The Society of Thoracic Surgeons (STS) is an international not-for-profit organization representing more than 6,500 cardiothoracic surgeons, researchers and other health care professionals who are part of the cardiothoracic surgery team. STS members are dedicated to ensuring the best possible outcomes for surgeries of the heart, lung and esophagus, as well as other surgical procedures within the chest.



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