

Five 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.

Five More 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).

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 is comprised of 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.

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, Binkely 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.
Ahlquist 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, Lewandrowski 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.

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 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.



American Society for
Clinical Pathology

For more information, visit www.ascp.org.