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 Prothromboplastin 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.

These items are provided solely for informational 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.

Released February 21, 2014 (1–5), February 3, 2015 (6–10) and September 14, 2016 (11–15)
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.

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.

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.

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.

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).
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 (0.75 mm 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.

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 100 mg/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).

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.
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.

Do not perform fluorescence in situ hybridization (FISH) for myelodyplastic 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.
How This List Was Created (1–5)
The American Society for Clinical Pathology (ASCP) list of recommendations was developed under the leadership of the ASCP 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 tested 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.

ASCPs’ disclosure and conflict of interest policy can be found at www.ascp.org.

Sources

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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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.

For more information, visit www.ascp.org.

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