

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, Rubin 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.
- Croxton 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.

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



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.



We help the world breathe®
PULMONARY • CRITICAL CARE • SLEEP

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.