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Doctors should stratify patients with suspected pulmonary embolism to determine diagnostic strategy

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When evaluating patients with suspected acute pulmonary embolism (PE), physicians should stratify patients into groups for whom different diagnostic strategies are appropriate, the American College of Physicians (ACP) advises in a new paper published today in *Annals of Internal Medicine*.

"The use of computed tomography (CT) for the evaluation of patients with suspected pulmonary embolism is increasing despite no evidence that this increased use has led to improved patient outcomes, while exposing patients to unnecessary risks and expense," said ACP President Dr. Wayne J. Riley. "ACP's advice is designed to help physicians identify patients for whom a PE is so unlikely that they need no further testing, for whom plasma D-dimer testing can provide additional risk stratification, and for whom imaging is indicated because of their high risk and clinical presentation."

A serum d-dimer test is a blood test to check for the presence of blood clots.

The first step for physicians when evaluating patients with suspected acute PE is to use a validated clinical prediction rule to estimate their pre-test probability of PE. The benefit of such a decision tool is that it helps standardize the evaluation for physicians who infrequently encounter and/or evaluate patients for PE, ACP advises. The Wells and Geneva

rules have been validated and are considered equally accurate in predicting the probability of PE.

In patients who have a low pre-test probability of PE, physicians should apply the PERC (Pulmonary Embolism Rule-Out Criteria) rule. Physicians should not obtain D-dimer tests or imaging studies in patients with a low pre-test probability of PE and who meet all eight PERC.

Patients who have an intermediate pre-test probability of PE or patients with low pre-test probability of PE who do not meet all PERC should have a high sensitivity D-dimer test as the initial step in diagnosis. Physicians should not use imaging studies as the initial test in patients who have a low or intermediate pre-test probability of PE.

Since normal D-dimer levels increase with age, physicians should use age-adjusted D-dimer thresholds (age times 10 ng/mL rather than a generic 500 ng/mL) in patients older than 50 years to determine whether imaging is warranted. Physicians should not obtain any imaging studies in low or intermediate risk patients with a D-dimer below the age-adjusted cutoff.

"While highly sensitive, plasma D-dimer testing is nonspecific and false-positives can lead to unnecessary imaging," said Dr. Ali S. Raja, Vice Chair, Department of Emergency Medicine, Massachusetts General Hospital, who co-authored the paper for ACP's Clinical Guidelines Committee. "The use of an age-adjusted threshold resulted in maintenance of sensitivities with improved specificities in all age groups."

Patients with high pre-test probability of PE should obtain imaging with CT pulmonary angiography. Physicians should reserve V/Q scans for patients who have a contraindication for CT pulmonary angiography or if CT pulmonary angiography is not available. Physicians should avoid

obtaining a D-dimer measurement in patients with a high pre-test probability of PE.

A pulmonary embolism is a sudden blockage in a lung artery. The cause is usually a blood clot in the leg called a deep vein thrombosis that breaks loose and travels through the bloodstream to the lung.

More information: *Annals of Internal Medicine*, www.annals.org/article.aspx?doi=10.7326/M14-1772

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