



CT and D-dimer testing are overused in patients with suspected pulmonary embolism, US college says

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Patients with suspected acute pulmonary embolism (PE) should be stratified based on their likelihood of having a PE before having a D-dimer test or computer tomography (CT), guidelines have said.

New “best practice” guidelines from the clinical guidelines committee of the American College of Physicians were published online on 28 September.¹ “With the rising cost of PE evaluations, along with increasing awareness of potential harm and doubts about mortality benefits, a more focused strategy is needed,” the committee said.

CT exposes patients to potentially hazardous radiation and is associated with risk of nephropathy from contrast agents. Although use of CT for the evaluation of PE was increasing, there was no evidence that increased use had improved patient outcomes, the committee said. “In fact, evidence suggests that many of the PEs diagnosed with increasing use of CT may be less severe. As a result, although the incidence of PE has risen significantly with the use of CT, there has been minimal or no associated change in mortality,” said the committee.

To reduce the costs and risks of overtesting, the committee recommended that physicians use decision tools to stratify patients into three risk groups for which different diagnostic strategies were appropriate: those in whom PE was so unlikely that there was no need for further testing; those for whom plasma D-dimer testing was indicated; and those at high enough risk that imaging was indicated.

The committee recommended that, as a first step, physicians use a validated clinical prediction rule, such as the Wells prediction rule or the revised Geneva score, to estimate the probability of a patient having a PE. These rules generate a probability score based on factors such as the patient’s age, heart rate, and other clinical signs and whether they have a history of factors such as cancer, previous PE, or a recent surgery or immobilization.

For patients found to have a low pre-test probability of PE, physicians should apply the pulmonary embolism rule-out criteria, which include age under 50, initial heart rate less than 100 beats a minute, and an initial oxygen saturation greater than 94% on room air. Patients with a low pre-test probability of PE who meet all eight rule-out criteria have a 0.3% likelihood of PE and therefore should have neither the D-dimer test nor imaging studies, the committee said.

On the other hand, patients with an intermediate pre-test probability of PE or those with low pre-test probability who do not meet all rule-out criteria should have a high sensitivity D-dimer test as the first step, the committee said. Physicians should not use imaging studies as the first test in patients who have a low or intermediate pre-test probability of PE.

When plasma D-dimer testing is indicated, physicians should use highly sensitive, enzyme linked immunosorbent assays and preferably use the appropriate age adjusted D-dimer thresholds in their assessments. Physicians should not obtain any imaging studies in patients with a normal D-dimer concentration, the committee said, but a raised plasma D-dimer concentration should lead to imaging studies.

Patients with a high pre-test probability of PE should undergo imaging studies, with CT pulmonary angiography being the preferred method of diagnosis. Ventilation-perfusion lung scanning should be used when CT pulmonary angiography is unavailable or contraindicated, the committee said. A D-dimer assay should not be obtained in patients with a high pre-test probability of PE because a negative value will not obviate the need for imaging, the committee said.

1 Raja AS, Greenberg JO, Qaseem A, Denberg TD, Fitterman N, Schuur JD. Evaluation of patients with suspected acute pulmonary embolism: best practice advice from the clinical guidelines committee of the American College of Physicians. *Ann Intern Med* 29 Sep 2015. doi:10.7326/M14-1772.

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