# Emergency Room Management of Patients with Suspected Pulmonary Embolism

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The full report is titled "Appropriateness of Diagnostic Management and Outcomes of Suspected Pulmonary Embolism." It is in the 7 February 2006 issue of *Annals of Internal Medicine* (volume 144, pages 157-164). The authors are P.-M. Roy, G. Meyer, B. Vielle, C. Le Gall, F. Verschuren, F. Carpentier, P. Leveau, and A. Furber, for the EMDEPU Study Group.

## What is the problem and what is known about it so far?

Deep venous thrombosis (DVT) is a condition in which blood clots (thrombi) form in the deep veins of the legs. The condition is dangerous because pieces of the clots can break off and travel through the bloodstream to the lungs. This problem, called pulmonary embolism (PE), can be fatal. Doctors typically treat patients who have DVT or PE with blood-thinning drugs called anticoagulants. Unfortunately, these drugs can cause side effects (such as bleeding), so doctors must use them only when they are sure of the diagnosis. If a patient is suspected to have 1 of these conditions, experts recommend that his or her doctor first evaluate the probability of the disease according to clinical findings (the clinical probability) and perform a series of tests that may include ultrasonography to look for a clot in the leg veins, a blood test called a D-dimer study to look for breakdown products from blood clots, and special lung scans (spiral computed tomography and ventilation–perfusion scans). However, there is limited information about how doctors apply these testing strategies and about the relationship between the testing strategies and patient outcomes.

## Why did the researchers do this particular study?

To evaluate the appropriateness of evaluation for PE in emergency departments and to see whether patients had better outcomes when physicians used the recommended evaluations.

## Who was studied?

1529 patients who presented to one of 117 emergency departments (116 in France and 1 in Belgium) with symptoms that suggested PE.

## How was the study done?

The researchers reviewed the patients' medical records to collect information on the patients; the tests used; and the rates of occurrence of DVT, PE, or death during the 3 months following the emergency department visit.

## What did the researchers find?

The researchers judged that the emergency departments failed to use the recommended evaluation procedures in 662 of the 1529 patients in the study. Patients with a confirmed diagnosis of PE were more likely to have been evaluated according to the recommended protocol than those for whom PE had been ruled out. Nonrecommended evaluations were more common in patients older than 75 years of age, patients with preexisting heart failure or lung disease, patients who were pregnant or had recently delivered a baby, and patients who were already taking anticoagulants when they arrived in the emergency department. Nonrecommended evaluations were also more frequent when no written diagnostic guidelines and no explicit rule to evaluate the clinical probability were available in the emergency department. The researchers followed patients judged not to have PE who did not receive anticoagulation for 3 months after the emergency department visit. The occurrence of PE, DVT, or death was lower among patients who received appropriate diagnostic management (1.2%) than among those who did not (7.7%).

## What were the limitations of the study?

This study did not evaluate whether the recommended diagnostic protocol overdiagnosed PE; therefore, people may have been labeled as having the condition when they actually did not.

## What are the implications of the study?

Emergency department patients with suspected PE frequently do not receive recommended diagnostic evaluations. Patients who are evaluated according to recommended guidelines are at lower risk for poor outcomes over the next 3 months than those who are not. Providing written guidelines and rules may help physicians follow recommendations.

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