large study of systemic biomarkers at exacerbation of COPD suggesting that a suitable plasma biomarker is also currently unavailable.[17] However, let us not shy away from these difficult concepts and debate what we really mean by "exacerbation of COPD". The inclusion of a definition of exacerbation in the new GOLD guideline is a real step forward and, in the same way that the inclusion of GOLD stage 0 prompted discussion, research and revision to the guideline, we hope that this will now take place in defining exactly what is—and perhaps more importantly what is not—an exacerbation of COPD.

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LUNG ALERT

Evidence-based recommendations on the investigation of acute pulmonary embolism

▲ Stein PD, Woodard PK, Weg JG, *et al*. Diagnostic pathways in acute pulmonary embolism: recommendations of the PIOPED II investigators. *Am J Med* 2006;**119**:1048–55.

This paper from the PIOPED (Prospective Investigation Of Pulmonary Embolism Diagnosis) II investigators presents updated guidelines on diagnostic algorithms for pulmonary embolism (PE).

In all cases, an objective clinical assessment of the probability of PE is initially recommended. In patients at low or moderate risk of PE this should be followed by a rapid ELISA-based D-dimer assay. A negative D-dimer effectively allows PE to be ruled out in these groups. Where PE cannot be ruled out, and for those in the high-risk group, CT pulmonary angiography (CTPA) should be performed, ideally with venous phase imaging of the lower leg veins (CT venography).

In moderate- and high-risk patients with a positive CTPA, and low-risk patients with a main or lobar PE on CTPA, treatment is recommended. A negative CTPA in low-risk patients rules out PE. In moderate-risk patients with a negative CTPA only, additional venous ultrasound is recommended to rule out PE. The accuracy of the diagnostic tests is specifically reported.

In patients with discordant findings (low-risk with segmental or sub-segmental PE on CTPA or high-risk with negative CTPA) further imaging is recommended. If not previously imaged, the leg veins should be examined using ultrasound, CT venography or magnetic resonance venography. Further pulmonary imaging may be performed by pulmonary scintigraphy or digital subtraction angiography.

Bedside transthoracic echocardiography and leg ultrasonography are recommended as the initial investigations for patients in extremis, with appropriate further imaging as soon as the patient is stabilised. In pregnancy, D-dimer is recommended after clinical assessment, followed by venous ultrasound and pulmonary scintigraphy or CTPA.

These guidelines provide a rational approach to the common and difficult diagnostic challenges encountered in patients with PE.

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