

# *Acute Pulmonary Embolism: Practical Questions GPs Want Addressed*

Pulmonary embolism is a common and potentially life-threatening disease. The objectives of this brief review are to address questions that are commonly asked by clinicians involved in the day-to-day care of patients with pulmonary embolism.

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In recent years, several studies have been done that have changed our understanding of the pathogenesis, treatment and prognosis of patients with acute pulmonary embolism (PE).

## *Does the treatment of acute PE differ from that of DVT?*

PE and deep vein thrombosis (DVT) are considered part of the same disease process, known collectively as venous thromboembolism (VTE). Thus, approximately 50% of patients who present with symptomatic DVT of the lower limbs also have concomitant asymptomatic PE.<sup>1</sup> Similarly, approximately 25% of patients who present with symptomatic PE also have asymptomatic proximal DVT in the lower limbs.<sup>1</sup>

***Approximately 50% of patients who present with symptomatic DVT of the lower limbs also have concomitant asymptomatic PE.***

The initial treatment of VTE involves the use of a short-acting anticoagulant, such as low-molecular-weight heparin or unfractionated heparin, administered for a five to seven day period. This treatment is supported by a Grade 1A recommendation from the 2004 iteration of the American College of Chest Physicians Conference Guidelines on Anti-thrombotic and Thrombolytic Therapy.<sup>2</sup> The long-term treatment usually consists of an oral anticoagulant, such as warfarin, which is administered to achieve a target international normalized ratio of two to three.<sup>2</sup> Both the initial and long-term treatment are the same for patients with PE and DVT, or both.

## *When can patients with acute PE be treated at home?*

The majority of patients diagnosed with DVT will receive treatment without the need for hospitalization. Home treatment is facilitated by the availability of low-molecular-weight heparin, which can be administered as weight-based, once- or twice-daily subcutaneous dosing that does not require laboratory monitoring. This approach, which is efficacious and safe, has also been applied to patients with acute PE.<sup>3</sup>

However, since patients with PE—compared to patients with DVT—tend to have more debilitating symptoms, such as dyspnea and chest pain, the management of their symptoms may necessitate short periods of hospitalization to administer oxygen and/or analgesic therapy. In addition, patients with PE may have associated hemodynamic consequences, such as hypotension and respiratory insufficiency and would warrant hospitalization for monitoring and supportive care.

In general, patients presenting with acute submassive PE, who:

- are hemodynamically stable,
- do not have major PE-related symptoms, or
- co-morbidity and
- have adequate cardiorespiratory reserve,

can be safely treated at home with subcutaneous low-molecular-weight heparin. Another reasonable management option for these patients is for them to undergo a short overnight, or one- to two-day hospitalization to ensure that they remain clinically stable. Afterwards, a decision can be made in regard to continuing treatment.

### *What is the optimal duration of anticoagulant therapy in patients with PE?*

In general, the duration of anticoagulant therapy is similar for patients with PE or DVT.<sup>4</sup> For patients who have transient and reversible risk factors, such as surgery or trauma and develop thrombosis, three months of treatment is warranted.

For patients who develop unprovoked (or idiopathic) VTE, in whom there are no known clinical risk factors for thrombosis, a minimum six months of treatment is recommended.

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For patients who experience VTE in association with active cancer (*i.e.*, they have been treated within the past six months or are receiving palliative care), a minimum six month duration of anticoagulant therapy would be warranted. It is possible that treatment be administered indefinitely.

Finally, for patients who experience multiple episodes of VTE, a minimum year and often life-long treatment may be warranted.

There is controversy as to whether or not patients with VTE and certain thrombophilic blood abnormalities, such as prothrombin gene or factor V Leiden mutations, should receive treatment of more than six months. Until there is more evidence, anticoagulant treatment for a minimum of six months is reasonable in these patients.


#### **About the author...**

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### *Concluding thoughts*

Despite recent advances, there remain several unanswered questions about the treatment of patients with acute PE. These unanswered questions include:

1. The role of thrombolytic therapy in patients who have submassive PE
2. Whether the presence of right ventricular dysfunction, as identified by echocardiography, would warrant consideration of thrombolytic therapy
3. The role of pulmonary thrombectomy, in individuals other than those who suffer from pulmonary hypertension, due to chronic thromboembolism

Ongoing research studies are attempting to address these and other questions. 

### **Take-home message**

- Initial treatment of VTE involves the use of a short-acting anticoagulant, such as low molecular weight heparin or unfractionated heparin, administered for a five to seven day period.
- Long-term treatment usually consists of an oral anticoagulant, such as warfarin.
- Both initial and long-term treatment are the same for patients with PE, DVT, or both.
- Patients with PE—compared to patients with DVT—tend to have more debilitating symptoms, such as dyspnea and chest pain. As a result, their treatment may necessitate short periods of hospitalization.
- The duration of anticoagulant therapy is similar for patients with PE or DVT.

References:

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3. Buller HR, Wells PS: Outpatient treatment of patients with pulmonary embolism. *Semin Vasc Med* 2001; 1(2):229-34.
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