Shifting pulmonary embolism management to primary care

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Deep vein thrombosis and pulmonary embolism are a major cause of hospital admissions. This article examines the way patients can be treated in an outpatient setting and how this can improve the patient’s quality of life as well as provide cost benefits to the NHS.

Deep vein thrombosis (DVT) and pulmonary embolism (PE) are a major cause of admissions to hospital. Both have a lifetime incidence of approximately 2–5 per cent, with the incidence of PE being around 23 per 100,000 population (Anderson et al, 1991).

PE can be difficult to detect because patients present with a wide array of signs and symptoms, so it is important that correct diagnosis is made with appropriate radiological investigation.

The treatment of DVT and PE is now firmly established with low molecular weight heparin (LMWH) followed by a variable period of oral anticoagulation, usually warfarin (British Haemostasis and Thrombosis Task Force, 1998; Simmonneau et al, 1997).

LMWH can be administered as a once-daily subcutaneous injection and does not require monitoring. Recent practice has therefore moved towards management of DVT in the community, which clearly has considerable benefits to both the patient and secondary care services (Koopman et al, 1996; Levine et al, 1996).

Outpatient DVT management is usually provided by teams of specially trained staff, often specialist nurses, and is well established at most hospital trusts. PE is part of the same disease process so it may be possible to use existing outpatient DVT clinics to manage selected patients with confirmed PE as outpatients.

Supporting literature

Many clinical trials have shown that DVT can be safely and effectively managed at home (Koopman et al, 1996; Levine et al, 1996). These authors not only find home treatment to be safe with a low risk of morbidity but also to be highly acceptable to patients and health care workers.

No randomised studies have assessed ambulatory PE management. A small number of patients with DVT and coexisting PE have been managed as outpatients (Koopman et al, 1996; Levine et al, 1996) and a cohort study in Canada demonstrated that 70 per cent of patients with confirmed PE might be managed with an early discharge protocol (Kovacs et al, 2000) with no reported complications and significant cost savings.

In the UK the latest edition of the British Thoracic Society guidelines for the management of suspected PE (BTS, 2003) acknowledges that some patients may be treated as outpatients. The guidelines do not suggest agreed or validated criteria for selecting patients for outpatient management, therefore at present in the UK most patients with a PE are still being treated as inpatients. However, studies are under way to evaluate validated criteria for selecting certain PE patients to be managed out of the hospital setting before this can be accepted as routine practice.


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Ambulatory management
While the concept of treating patients with a PE as outpatients seems a logical step from a secondary care point of view, health care professionals working in primary care may have a different view and will require a detailed protocol for the management of these patients to ensure this is safe and effective. Since August 2001 we have been one of several UK centres involved in an audit collating data on the management of patients presenting with PE.

In phase one all the centres collected information on the inpatient management of PE patients at their trust including follow-up at three months following diagnosis. Patients were assessed for suitability for early discharge and outcome data for this subset of patients was analysed separately, enabling us to establish that early discharge would have been safe in this group. Overall complication rates were low compared with previous studies (Koopman et al, 1996) and there were no early complications in the group identified as suitable for early discharge.

Phase two, in which selected patients with a PE who fulfilled defined criteria were being treated as outpatients, began in September 2003 (Box 1).

The study is ongoing but to date 105 patients have been managed as outpatients and no bleeding or thromboembolic complications have been reported.

Patients are asked to complete a satisfaction survey after LMWH treatment. The results show that patients were very satisfied and 98 per cent of them indicated that they would prefer to be treated at home if they were diagnosed with PE again.

The study aimed to treat 150 patients as outpatients and provide evidence that validated criteria for outpatient management of PE can be successfully introduced. Patients are reviewed by a consultant physician to obtain consent for inclusion in the study and for early discharge. These patients receive counselling from an anticoagulant team member, are given information on all aspects of the care that they will receive at home and are issued with a 24-hour emergency telephone number.

Patients presenting with a PE can often be very anxious as they may have experienced severe pain and become very breathless, so the reassurance of being in hospital can assist in allaying anxieties. However, the disadvantages include concerns about family members not being able to sleep on the ward due to noise.

Suitable patients are seen by a member of the anticoagulant team who, with the patient, devises a plan of care that meets both the needs of the patient and the healthcare provider. This also gives time for any family members to be involved and ensures that they are fully informed of the decisions. Arrangements are made for taking LMWH by self-administration, attending the clinic on a daily basis or administration by a district nurse. International normalised ratio (INR) blood tests are requested and results given to the patient on the same day, with the dose adjusted as necessary. This gives us an opportunity to discuss issues with the patient and address concerns.

Effective communication with primary care is essential and a full discharge form is completed and faxed to the GP and, if relevant, district nurse on the day that the patient is discharged. The patients are always able to contact a member of the team for advice during anticoagulation treatment and not just for the initial phase, which enables us to monitor their progress continually.

Cost benefits
The Department of Health Hospital Episodes Statistics 2003–2004 report (DoH, 2004) states that in this period there were 25,062 episodes of PE, resulting in 178,952 inpatient bed days, with an average stay of 11 days per episode. In our trust the cost of a bed day is £180, which would equate to an annual spend nationwide of more than £32m for bed days. Assuming that each patient received the recommended minimum six days of LMWH treatment at an average cost of £8 per day the annual cost would be around £1.2m, which is only 3.7 per cent of the cost of an inpatient stay.

Conclusion
In summary, a significant emotional and financial cost is associated with the management of PE. A drive to evidence-based management of this condition in the community is necessary, both in terms of patients’ well-being and cost savings.

Increasing evidence now supports the practice of selected patients presenting with PE being safely treated at home.