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What is This?
Primary thromboprophylaxis for hospice inpatients: Who needs it?

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Abstract
Primary thromboprophylaxis (PTP) is a Department of Health priority in England. The NICE guidelines agree that PTP is inappropriate in the dying patient, but should be considered for those with reversible pathology. In the light of continued variation and uncertainty in UK hospice practice, we assessed PTP prescribing in three hospices. Case notes were reviewed from consecutive patients admitted before (300 patients) and after (350 patients) implementation of the Pan Birmingham Cancer Network (PBCN) venous thromboembolism prophylaxis (VTE) prevention guidelines. Just under half (43%; 40%) of patients had a contraindication to anticoagulation and PTP. Whilst just under a tenth (8.6%; 8.7%) in each group had a temporary increased risk of VTE, considerably fewer (3.6%; 6.3%) had a temporary increased risk of VTE without contraindication to PTP. Patients receiving PTP increased slightly from 1% to 3.6% and documentation of PTP decisions increased from 5% to 81%. Whilst the PBCN VTE tool is a useful tool to tailor an approach for this complex patient group, many questions remain. Clinical trials that include patients with advanced disease with relevant outcome measures are needed to help inform the clinicians who care for them.

Keywords
Hospice, palliative care, thromboprophylaxis, venous thromboembolism

Introduction
VTE is a common consequence of hospital admission and an estimated 25,000 preventable deaths from hospital acquired thrombosis occur each year in the United Kingdom. The Department of Health has made VTE risk assessment and primary thromboprophylaxis (PTP) a national priority in the 2010 NHS Operational Framework and has produced a National VTE Risk Assessment Tool for use alongside the recently published NICE guidelines for reducing the risk of VTE in all hospitalized patients. Following the Chief Medical Officer’s announcement that the Commissioning for Quality and Innovation (CQUIN) payment framework will administer a proportion of hospital income conditional upon risk assessment of all patients, appropriate PTP has in effect been made mandatory within England. 

The NICE guidelines cover a breadth of clinical patient groups including patients with cancer receiving palliative care. The PTP recommendations for patients with cancer are based on level 1A evidence, but they are often applied to cancer patients with progressive disease. This patient group is largely excluded from the studies and represents a significant proportion of the patients seen by palliative care teams.

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However, these limitations need to be considered in context, as these patients could benefit most from PTP since procoagulants have been shown to increase with progressive malignant disease.\(^4,5\)

Traditionally, hospices have been reluctant to implement PTP, although practice appears to be changing.\(^6\) The NICE guidelines agree that PTP is inappropriate in the dying patient, expected to live for only a few days, but should be considered for those in whom reversible pathology may contribute to a temporary elevation of thrombotic risk. However, routine risk assessment for all patients admitted to a hospice is still unusual. Consequently, a patient may receive PTP purely on the basis of where they are admitted (hospital or hospice) rather than on clinical risk and indication.

The reluctance to prescribe low-molecular-weight heparin (LMWH) within the hospice setting has been reported previously.\(^7\) Some concerns raised, such as poor patient tolerance of injections or the belief that a fatal pulmonary embolus may be ‘a nice way to go’ are not supported by the literature.\(^8,9\)

However, these studies were very informative with respect to what evidence would be required in order to change or support current practice in the hospice setting. The studies forming the evidence basis for current treatment guidelines were conducted in a non-representative population and used outcome measures such as asymptomatic VTE and mortality which are of less relevance to patients with advanced disease where the focus is often on short term goals such as quality of life and symptom control. Physicians felt that such patient-centred outcome measures would be more relevant. Palliative physicians also suggested that the health economic aspects of prescribing costs should be considered;\(^7\) although this has been addressed with regard to the seminal paper comparing long-term LMWH with warfarin in patients with cancer and VTE,\(^10\) this study excluded patients with a performance status higher than Eastern Cooperative Oncology Group (ECOG) two; many treated in palliative care services will be three or four (i.e. with a poorer performance status than those in the trial).

Some local groups have drawn up guidelines based on such parameters for patients with advanced disease. Of particular note are the PBCN guidelines which provide a pragmatic flow-chart to identify palliative care patients for whom an admission may represent a temporary further increase in VTE risk (e.g. by acute medical illness, recent surgery, spinal cord compression undergoing treatment, reduced mobility with expectation of recovery) in whom PTP should be considered.\(^11\) These were the first evidence based UK guidelines specific to palliative care and, predating the NICE guidelines, were subsequently highlighted as an example of good practice in a document cited by NICE.

In the light of continued variation and uncertainty in UK hospice PTP practice we planned to assess PTP prescribing in three hospices. We subsequently examined practice following formal implementation of a VTE prevention policy in each of the three hospices. The aims of the assessment were to identify the proportion of patients who may be suitable for consideration of PTP using the PBCN guidance, to see whether a decision regarding PTP was documented on admission, and to assess the effect of introducing a VTE prevention policy on PTP prescribing and documentation of PTP clinical decision making in the three hospices.

### Methods

Three independent UK hospices: St Gemma’s, Leeds (32 beds); St Catherine’s, Scarborough (16 beds); and St Anne’s, Newport (10 beds) retrospectively reviewed the case notes of 100 consecutive admissions. A data extraction proforma was used to record the following: level of risk for VTE (applying Thromboembolic Risk Factors Consensus Group (THRIFT) criteria\(^12\) as modified by the PBCN Guidelines); prescription of PTP; documentation relating to decisions regarding PTP; contraindications to PTP and patient age, gender and diagnosis. Data was entered and analysed using SPSS (version 16.0) software.\(^13\)

A VTE prevention policy was devised, which included the use of the PBCN modification of the THRIFT VTE risk assessment tool, for each hospice and introduced according to local operational structures and procedures. The same information was then collected on consecutive admissions to the three units until the end of February 2010. The varying numbers of patients assessed in the three hospices in this stage reflects differences in inpatient unit sizes and the times taken to process the policy change through senior management.

As part of routine clinical assessment in two of the hospices, information on whether patients developed symptoms possibly related to VTE was recorded throughout the admission; new onset chest pain, new onset leg swelling or new onset breathlessness.

### Results

**Retrospective review of 300 consecutive hospice admissions**

The mean age was 70 (range 22–96) and 145 (48\%) were male. The primary diagnosis was cancer in 260 (86\%). Using the THRIFT risk assessment tool no
patient was assessed as having a low risk of VTE, 227 (76%) patients were assessed as moderate risk and 73 (24%) as high risk. Just under half of all patients (129; 43%) had a contraindication to starting PTP; 12 (4%) due to bleeding or platelet count less than $50 \times 10^{-9}/l$; 96 (32%) were thought to be dying at the time of admission; and 21 (7%) were already anticoagulated. Thirteen patients (4.3%) were receiving PTP on transfer from hospital and it was stopped in all on admission to the hospice. Only 26 (8.6%) patients were thought to be at a temporary higher risk of VTE; 10 due to infection, 12 due to reduced mobility secondary to pain, and four due to spinal cord compression (with intent to treat). Fifteen of these 26 patients had contraindications to PTP. However only three of the 11 patients who had a temporary elevated VTE risk and no contraindications were started on PTP (see Figure 1). There was a documented decision relating to PTP in the case notes of 16 (5%) patients.

Implementation of risk assessment policy, guidelines and prospective case note review of hospice admissions

Assessment was made of 350 consecutive admissions. The mean age was 69.6 (range 18–98) and 179 (51%) were male. The primary diagnosis was cancer in 269 (77%). Using the THRIFT risk assessment tool, 12 patients (3.4%) were assessed as having low risk of VTE, 283 (80.8%) were assessed as moderate risk and 55 (15.7%) as high risk. One hundred and forty (40%) patients had a contraindication to starting PTP; 32 (9.1%) due to bleeding or platelet count less than

![Flow chart of patient VTE risk assessment and PTP prescription before and after VTE prevention policy.](pmj.sagepub.com)

CI: contraindication; VTE: venous thromboembolism; PTP: primary thromboprophylaxis.
50 \times 10^{-9}/l; 61 (17.4\%) were thought to be dying at the time of admission, 32 (9.1\%) were already anticoagulated, and 15 (4.3\%) had other reasons (such as liver failure, renal failure or severe anaemia). Nineteen patients were receiving PTP on transfer from hospital; seven of these were continued, eight were stopped (three patients thought to be dying, two patients no longer at elevated risk of VTE and in three patients the reasons were unclear) and data was missing for four patients. Only 30 (8.6\%) patients were thought to have a temporary higher risk of VTE, eight due to infection, 17 due to reduced mobility secondary to pain, four due to spinal cord compression (with intent to treat) and one due to thalidomide treatment. Ten of these 30 patients had contraindications to PTP. However, only 13 of the 20 patients who had a temporary elevated VTE risk and no contraindications, were started on PTP. It is unclear why the other seven patients were not started on PTP (see Figure 1).

There was a documented decision relating to PTP in the case notes of 282 (81\%) patients.

**Documentation of chest pain, leg swelling and shortness of breath**

Of the 250 patients reviewed, the average length of admission was 10 days. One patient developed chest pain, three developed leg swelling, seven developed breathlessness and three patients developed both leg swelling and breathlessness. Of these patients, none would have received PTP using the PBCN guidelines as nine did not fulfil the criteria for initiating PTP and the other five had contraindications to anticoagulation.

**Discussion**

Despite almost all patients admitted to the participating hospices having a moderate to high risk of VTE, nearly half had a contraindication for initiating PTP. In addition, of those without a contraindication, most patients did not fulfil the PBCN criteria for initiating PTP in a palliative care patient. According to these guidelines therefore, the percentage of hospice inpatients who may benefit from PTP, and who have no clear contraindications to anticoagulation, is low (approximately 6\% in this assessment). Nevertheless, this small group of patients with a potentially reversible cause for their elevated risk should not be overlooked.

This also demonstrates that implementing a PTP policy in a hospice setting is feasible and increases the documentation surrounding PTP decisions (from 5\% to 81\%), although a VTE prevention policy did not result in many more patients being started on LMWH. In all three hospices, assessment for VTE risk and PTP prescription has been incorporated into the admission documentation and informal feedback from those using it reported it as practical and easy to use. The improvement in documentation also highlights the limitations of retrospective studies. A further limitation is that we cannot tell whether the lack of documentation in the retrospective survey also represents a lack of awareness of the issue. Anecdotally, from informal feedback from the admitting doctors in the second review, we suspect it is both, but this was not formally assessed.

However, several issues are raised. Firstly, although the PBCN guidelines are an excellent start, calling attention to an area that has been neglected; they are nevertheless based on consensus opinion only. We do not know whether PTP should be given to all patients unless anticoagulation is contraindicated; for example, of the 14 patients who developed possible VTE related symptoms, nine of these did not fulfil the guidelines for PTP in the PBCN protocol (and the other five had contraindications). Secondly, we do not know whether the concept of two weeks PTP during a hospital admission is applicable for a patient with advanced active cancer and ongoing thrombosis risk; one patient had PTP stopped on hospice transfer despite falling into the category of ‘temporary elevation of VTE risk’, because they had completed two weeks PTP. Thirdly, we do not know whether the outcome measurements common in VTE research (bleeding or recurrent/new VTE or survival) hold any relevance to patients with advanced disease or how we should best assess them.

A randomized controlled trial is clearly warranted in people admitted to hospices with advanced disease (both cancer and non-malignant disease). The intervention should be PTP with LMWH, for example at a dose of 40mg enoxaparin as used in the MEDENOX trial, and compared with placebo. However there are basic questions in relation to: the stage in the disease trajectory of greatest risk, other risk factors, and, the patient relevant outcome measures in this group that need to be answered to inform study design. Until these issues are addressed, results from clinical trials will continue to be difficult to apply to patients admitted to hospices.

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**Competing interests**

With regard to this report, the authors declare the following statement of conflict of interest: SN and MJ are co-directors of the TRAD Alliance. The TRAD Alliance is supported by an unrestricted educational grant from Pfizer. SN has given lectures on behalf of Pfizer, Sanofi Aventis, Leo Pharma and Boeringer Ingelheim. All fees are donated directly to charity. There are no conflicts of interests declared from SG, SK, JW, KL and AN.
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