

# Improving Local Practice of Venous Thromboembolism Prevention in Medical Patients

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Abstract

*Venous thromboembolism has long been recognised as a potentially avoidable cause of significant morbidity and mortality in hospitalised patients. With national recommendations awaited there have been clear instructions from the department of health that steps need to be made at a local level to increase awareness and address the problem prior to the expected completion of the NICE guidelines in 2007. We demonstrated an improvement in the prescription of thromboprophylaxis following implementation of simple and inexpensive changes in our department.*

Keywords

*Venous thromboembolism, Deep vein thrombosis, Pulmonary thromboembolism, Preventative therapy, Medical patients.*

Introduction

Venous thromboembolic disease (VTE), either in the form of deep vein thrombosis (DVT) or pulmonary thromboembolism (PTE) causes 25–32,000 hospital admissions per year in England and Wales and is the immediate cause of death in 10% of all patients who die in hospital.<sup>1</sup> In 2004 the Department of Health (DoH) decided to conduct a “short inquiry into the prevention of venous thromboembolism in hospitalised patients”.<sup>2</sup> This initially focused on surgical and orthopaedic patients; however with evidence that approximately 17% of ‘hospital acquired’ VTE occur in medical patients<sup>3</sup> this has been expanded to include medical admissions and medical ward patients. The guidelines for surgical patients were issued earlier this year, however medical and hospital-wide guidance is still in process with no expected date of completion as yet. In the meantime the DoH has advised hospitals to establish their own local practice in VTE prevention.

Several guidelines are recommended by the DoH, including the Scottish Intercollegiate Guidelines Network (SIGN) guideline, which was originally drafted in 1995 and updated in 2002,<sup>4</sup> along with the American College of Chest Physicians (ACCP) guidance on Antithrombotic Therapy.<sup>5</sup> All of these documents advocate the use of low molecular weight heparin (LMWH), graduated compression stockings (TEDS) or both as evidence-

based methods for VTE prevention. Both of these are readily available for use in our acute assessment unit and on medical wards.

Our own guidelines have been based on the SIGN document and the latest Health Committee Report into the prevention of VTE.

Risk Categories for prescription of VTE prophylaxis

Using well established risk factors (see Figure 1) combined with the reason for admission/diagnosis as a marker of likelihood of prolonged hospital admission ( $\geq 3$  days), 3 categories of risk were established:

- low risk (<1 risk factor and no reason for prolonged admission)
- moderate risk (1 factor plus likely prolonged admission or two risk factors)
- high risk (> 2 risk factors)

The following standards were established:

- All patients at moderate or high risk should receive prophylaxis with LMWH unless contra-indicated or a decision to withdraw treatment had been made.
- All patients at high risk should be prescribed both TED stockings and LMWH.
- Contraindications should be recorded in the notes for all cases where thromboprophylaxis was not prescribed.

|                                                      |                            |
|------------------------------------------------------|----------------------------|
| Age > 60 years                                       | Varicose veins             |
| Obesity                                              | Previous VTE               |
| Malignancy                                           | Heart failure              |
| Pregnancy                                            | Immobility > 3 days        |
| Hormone Therapy                                      | Inflammatory bowel disease |
| Polycythaemia                                        | Paraproteinaemia           |
| Severe Infection                                     | Nephrotic syndrome         |
| Thrombophilias                                       | Behets Disease             |
| Paroxysmal nocturnal haemaglobinuria (PNH).          |                            |
| Recent (< 3 months) myocardial infarction or stroke. |                            |
| Antipsychotic medication & acute medical illness.    |                            |

Figure 1. Risk factors for developing VTE.

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|               | Sample size | Number eligible for prophylaxis | Number (%) of eligible patients receiving LMWH | Number (%) receiving clexane at 'prophylactic' dose |
|---------------|-------------|---------------------------------|------------------------------------------------|-----------------------------------------------------|
| Initial audit | 72          | 32                              | 8 (25)                                         | 1 (3)                                               |
| Re-audit      | 25          | 8                               | 7 (88)                                         | 6 (75)                                              |

**Table 1.** Audit results.

### Selection of Sample

The patient sample comprised consecutive patients admitted during 4 separate 24 hour periods between January and February 2006. Teams caring for the patients were not aware that the audit was being conducted.

Medical and nursing notes were reviewed following the consultant-led ward round the following day.

Patients transferred to another hospital before case notes could be reviewed were excluded.

### Results of initial audit

The initial sample group comprised 72 patients, of whom 62 were eligible for inclusion. Of these, 35 patients were at moderate/high risk of developing VTE; three of these were deemed unsuitable for prophylaxis due to documented risk factors for LMWH and TEDS ( $n = 1$ ) and withdrawal of active treatment ( $n = 2$ ). No patients at risk of VTE in the study group were taking other anticoagulant therapy prior to admission.

Of the 32 patients requiring LMWH according to our guidelines, only 8 (25%) were prescribed LMWH, of whom 7 were receiving this in full treatment dose for suspected PTE or acute coronary syndrome. Only one patient who was deemed at moderate / high risk was actively prescribed *prophylactic* dose LMWH and no patients had documented application of TED stockings. Four of the patients not receiving any prophylaxis without documented reason were in the 'high risk' category.

One patient without risk factors (diagnosis post-ictal state) was prescribed prophylactic dose LMWH.

Documentation of risk factors for VTE was noted to be extremely poor.

### Implementing change

The first part of implementing change was presentation of the initial audit data to the junior and senior medical staff, in order to highlight the inadequate management of patients at risk of VTE. An update of the current House of Commons Health Select Committee report was also presented along with some suggestions for ways in which to improve our current practice, whilst awaiting further guidance from NICE. The suggestion of a guideline 'tool' in the form of a checklist included in the admission documentation was received favourably but there were concerns about the practicalities of adding time-consuming paperwork to the pre-existing admissions documents.

Appropriate use of LMWH and TEDS was also discussed. With the NICE guidelines still outstanding it was agreed that LMWH should be used as preventative therapy unless contra-indicated and combined with TEDS

as clinical risk indicated. It was agreed to use TEDS for patients in whom LMWH was contra-indicated.

Re-education of staff occurred in the form of informal tutorials to junior/middle-grade medical staff. Guidance on patients at risk and preventative therapy was integrated into our assessment unit guidelines with reminders placed in several highly visible areas on the unit. Instructions to 'consider VTE prevention' were added to all drug prescription charts in a highly visible way prior to use (see Figure 2).

Scarborough & North East Yorkshire Healthcare NHS Trust  
MEDICATION PRESCRIPTION & ADMINISTRATION RECORD

PLEASE ENSURE THAT YOU ARE FAMILIAR WITH THE PRESCRIBING GUIDANCE IN THE JUNIOR DOCTORS HANDBOOK AND ON EACH WARD BEFORE PRESCRIBING

|            |                      |        |
|------------|----------------------|--------|
| HOSPITAL   | REGISTRATION DETAILS |        |
| WARD       | Hospital No.         |        |
| CONSULTANT | Name                 |        |
| ALLERGIES  | Address              |        |
|            | Date of birth        | Height |
|            | Weight               |        |

NB Anticoagulant monitoring & prescription sheet for this patient: YES / NO

FOR PHARMACY USE ONLY

RECORD OF DRUGS BEING TAKEN AT ADMISSION Source of information:

Compliance Aid: YES / NO Recorded by: Date:

PHARMACY NOTES

Date:

**CONSIDER VTE PROPHYLAXIS**

**Figure 2.**

### Re-Audit

A repeat audit of VTE preventative therapy on the assessment unit was carried out on two separate occasions 6 weeks after the changes were implemented. The sample size was smaller than our initial audit and was not powered for statistical significance.

The results showed an improvement in our prescription of preventative therapy, with 75% of eligible patients receiving thromboprophylactic doses of LMWH. Use of TED stockings had not improved in the 'high risk' group.

Documentation of contraindications for thromboprophylaxis and risk factors for VTE remained poor.

### Discussion

Our data confirm that a significant number of patients admitted as part of the acute medical 'take' are at risk of VTE. However the numbers receiving thromboprophylaxis in our initial audit sample were very disappointing; if the patients receiving LMWH for therapeutic purposes were excluded, only one of the

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remaining 25 eligible patients received LMWH and none of the high risk patients were prescribed TED stockings. Despite the limitations of the smaller sample number and different sampling period, our re-audit demonstrated improvements in LMWH prescription rates by an approach which involved:

- Recognition of local prophylaxis prescription problems
- Establishment of local guidelines
- Regular informal tutorials for junior and middle grade medical staff on the importance of documentation of risk and prescription of VTE thromboprophylaxis
- Reminders to 'consider VTE prophylaxis' included on drug prescription charts and displayed prominently in AAU.
- Daily re-reinforcement of practice by senior medical staff on AAU.

Given the multi-disciplinary care provided in medical assessment units, extension of the tutorials to involve nursing staff is particularly important; this may also have a major impact on the use of TED stockings, since nursing staff are usually more intimately involved in their application than are the junior doctors.

We feel the application of simple and inexpensive measures can improve thromboprophylaxis prescription on a medical unit; however there remains considerable scope for improvement. The use of a simple proforma incorporated into the drug chart or the admission record may provide this and is planned for future implementation in our unit. It is hoped that this will also be effective in addressing issues of poor documentation around risk factors for VTE and contraindications for thromboprophylaxis.

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