

An audit of Dalteparin Prescribing in XX Hospice

Background

25,000 people die from preventable venous thromboembolism (VTE) every year.¹ The use of primary thromboprophylaxis (mechanical and chemical) has been inconsistent in the past.¹ Primary thromboprophylaxis (PTP) has been made a national priority by the Department of Health (DoH).² In 2007 the Chief Medical Officer's Expert Working Group Report recommended that all patients undergo a VTE risk assessment on admission to hospital (appendix 1).³ More recently, VTE has become one of the key measures incorporated into the NHS safety thermometer aiming to deliver 'harm free' care.⁴

PTP and palliative care

Few hospice patients are prescribed PTP.² The reasons are multifactorial and include; paucity of clinical evidence pertaining to this patient group, absolute contraindications to PTP and patient choice.^{1,2}

Cancer and related treatments are known to increase the risk of VTE. The risk is thought to increase as disease progresses and procogulants increase.² NICE guidelines state that PTP should not be offered to cancer patients who are ambulant or those who are dying.¹ However, the guidelines state that PTP could be considered for those with potentially reversible acute pathology.¹ The clinical challenge is to determine prognosis when VTE risk assessment is undertaken and to identify those patients who are at risk of treatment induced morbidity / mortality (i.e. haemorrhage). Specific guidelines have been drawn up to aid decisions relating to palliative care patients e.g. the Pan Birmingham Cancer Network venous thromboembolism prophylaxis prevention guidelines.² These were shown in one study to improve documentation of PTP decisions with only a marginal increase in PTP prescriptions.²

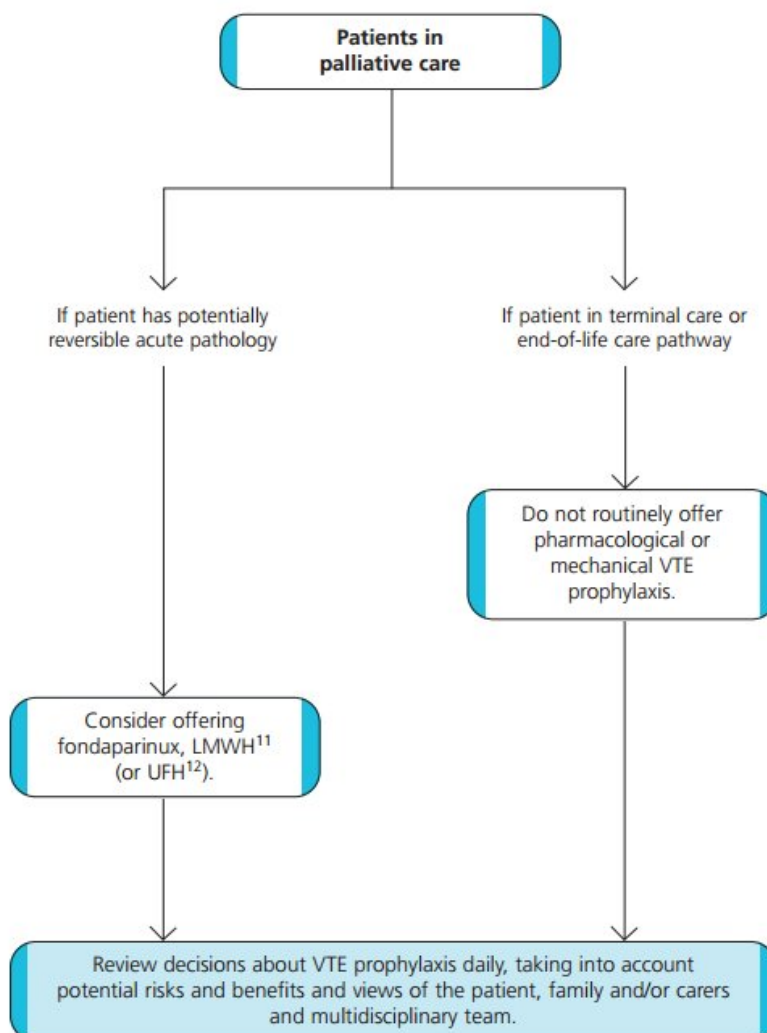
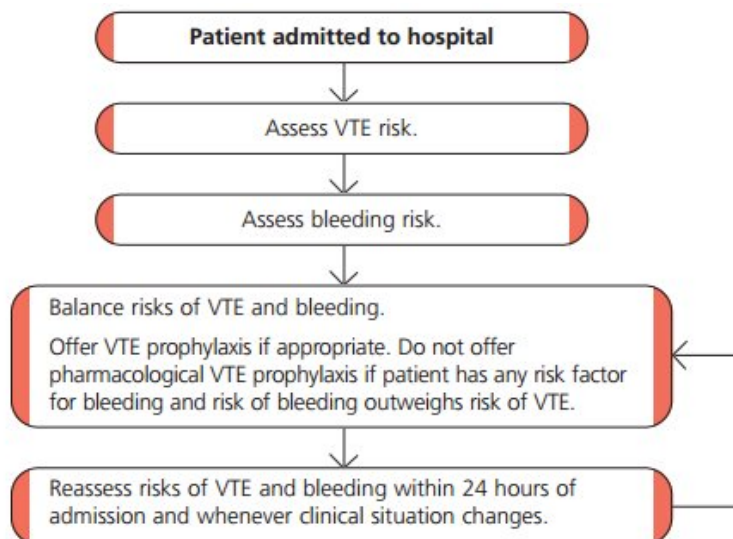
XX Hospice

XX Hospice provides 20 specialist palliative care inpatient beds. In January 2012 AA Teaching Hospitals NHS Foundation Trust and XX Hospice converted from Enoxaparin (Clexane) to Dalteparin Sodium (Fragmin) as the low molecular weight heparin (LMWH) of choice both for VTE treatment and PTP. The standard dose of Dalteparin is 5,000 units once daily when used as PTP. In renal impairment (defined as an eGFR of less than 20ml/min/1.73m²) or low body weight (less than 45kg) a reduced dose of Dalteparin should be used.⁵

The Trust has developed local "guidelines for the prevention of venous thromboembolic disease" which are based on NICE clinical guideline 92 "venous thromboembolism: reducing the risk".^{1,5}

These guidelines formed the audit standard against which current practice was compared.

Summary of the guidance ¹



Audit standards ^{1,5}

All patients

Audit standard 1: 100% of patients should have a VTE risk assessment form in their notes.

Audit standard 2: 100% of patients should have an assessment of their VTE risk and bleeding risk within 24 hours of admission (i.e. the VTE risk assessment form should be completed including date and signature of doctor).

For patients not offered PTP

Audit standard 3: 100% of patients should have a documented justification of this non-treatment decision. For the purposes of the audit this could either be written on the VTE risk assessment form or in the body of the notes.

For patients offered PTP

Audit standard 4: 100% of patients on LMWH should have a weight clearly documented on admission or within the first 24 hours.

Audit standard 5: 100% of patients on LMWH should have a renal function measured on admission or within the first 48 hours of treatment.

NB. 24 & 48 hours have been chosen as it is not always appropriate to weigh / take blood from a patient on admission particularly for those patients admitted out of hours.

For patients on treatment dose LMWH

Audit standard 6: 100% of patients who are on the appropriate dose for weight should have a therapeutic Dalteparin chart correctly filled in.

Audit standard 7: 100% of patients who are on a reduced dose (based on oncology / haematology advice) should have their dose clearly prescribed on the medication chart.

For patients who are discharged on LMWH

Audit standard 8: 100% of patients discharged on LMWH should have evidence in the notes / discharge summary of all of the following:

- Intended duration of treatment
- Follow up plan with regards to dose, blood monitoring
- A Dalteparin shared care form (appendix 2)

All patients

Audit standard 9: there should be evidence in the case notes that decisions regarding LMWH (VTE prophylaxis and treatment) are reviewed.

Methods

All hospice inpatients for the four month period 1/2/2012 – 31/5/2012 were included in the audit. This period was chosen to capture practice using Dalteparin following the change from Enoxaparin. Data were collected in early June 2012.

Some patients were admitted more than once over this period and for the purposes of the study each admission was considered separately (i.e. some patients were included more than once). The rationale is that all patients should undergo a risk assessment on admission; when a patient is discharged and then readmitted it is likely that their clinical situation (and therefore VTE risk) has changed.

Notes were examined retrospectively to assess documentation and prescribing only; clinical decisions were not reviewed. Information was gathered to allow the audit standards to be assessed. In addition, medication charts were examined in case there was mismatch between documented intention and prescribed therapy. Irrespective of the decision made on admission, the medication charts were reviewed to establish whether the LMWH prescription changed over the course of the inpatient episode. Case notes were examined in more detail when the LMWH prescription was altered, the patient was commenced on the end of life care pathway and / or the patient was discharged.

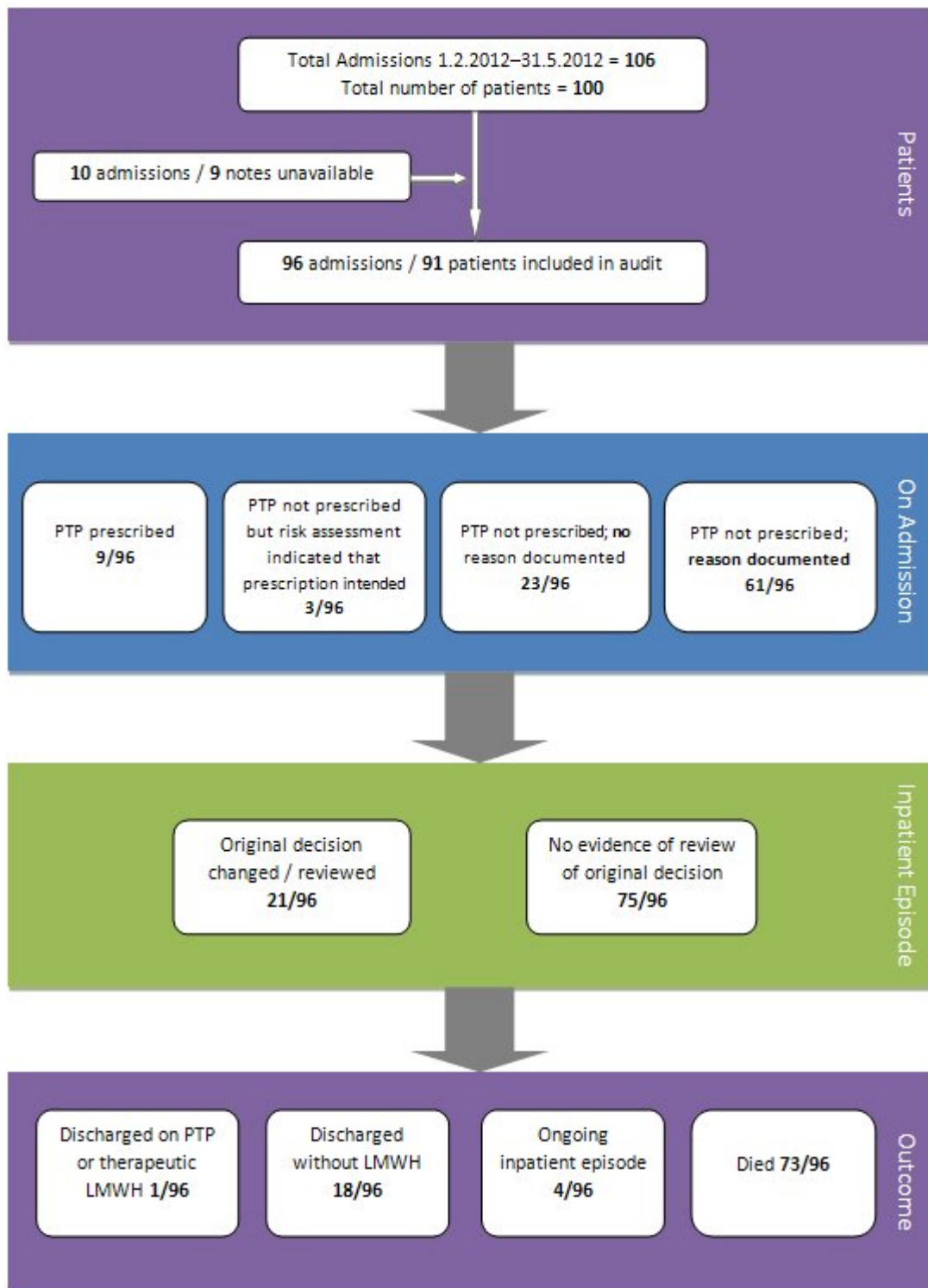
This audit was registered with XX Hospice prior to the data collection phase.

Audit tool:

An audit tool was generated from the guidelines to standardise data collection. A pilot study involving 5 sets of notes was carried out to assess the viability of the audit questions. The tool did not require modification prior to analysis of the remaining notes. Data were collected by one individual, thereby limiting variability.

Results

A total of 106 separate admissions occurred in over the 4 month study period. During data collection, 9 case notes were unavailable which accounted for 10 admissions. 6 patients were admitted twice between February and May. No patient was admitted on more than two occasions.



Audit standard 1

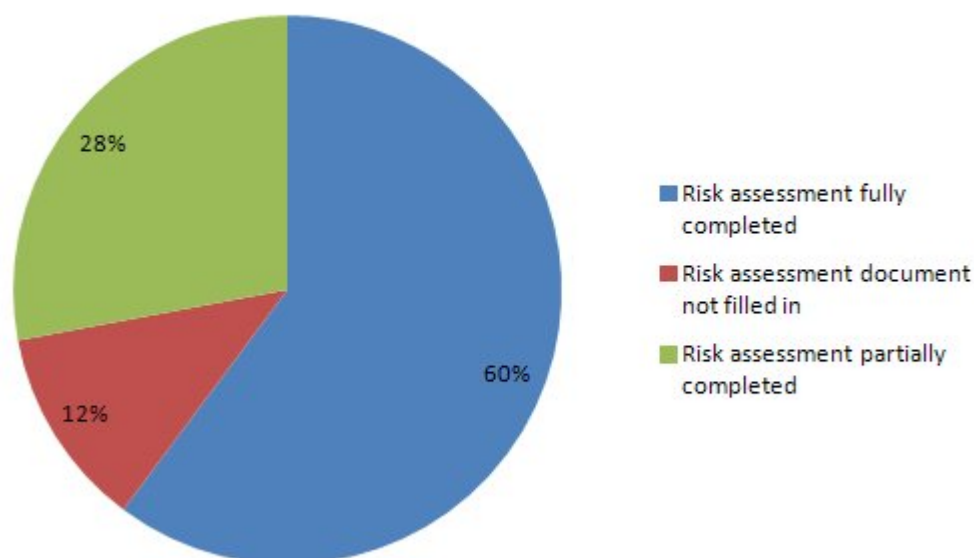
100% of notes had a least one VTE risk assessment form.

The majority of admissions (93/96 or 97%) had an associated VTE risk assessment form. 3 people did not have their VTE risk formally assessed on readmission. 2 patients were transferred to an acute hospital for investigation or treatment with a plan at the time of transfer that they would return to the hospice. The third patient was discharged but readmitted 24 hours later following an acute deterioration at home.

Audit standard 2

Of the 93 admissions that had an associated VTE risk assessment form in the notes; the form was fully completed on the day of admission in 56 cases (60%). However, 37/93 (40%) charts failed to comply with the audit standard. 11 forms were entirely blank, the remaining 26/93 were incomplete. Missing information included: date, documentation of mobility, documentation of clinical decision and signature / name of doctor.

Completion of VTE Risk Assessment on Admission (n = 93)



Audit standard 3

87/96 patients (91%) were not prescribed PTP. A justification was documented in 61/87 (70%) cases as summarised in the table below. NB. Some individuals had more than one contraindication to PTP.

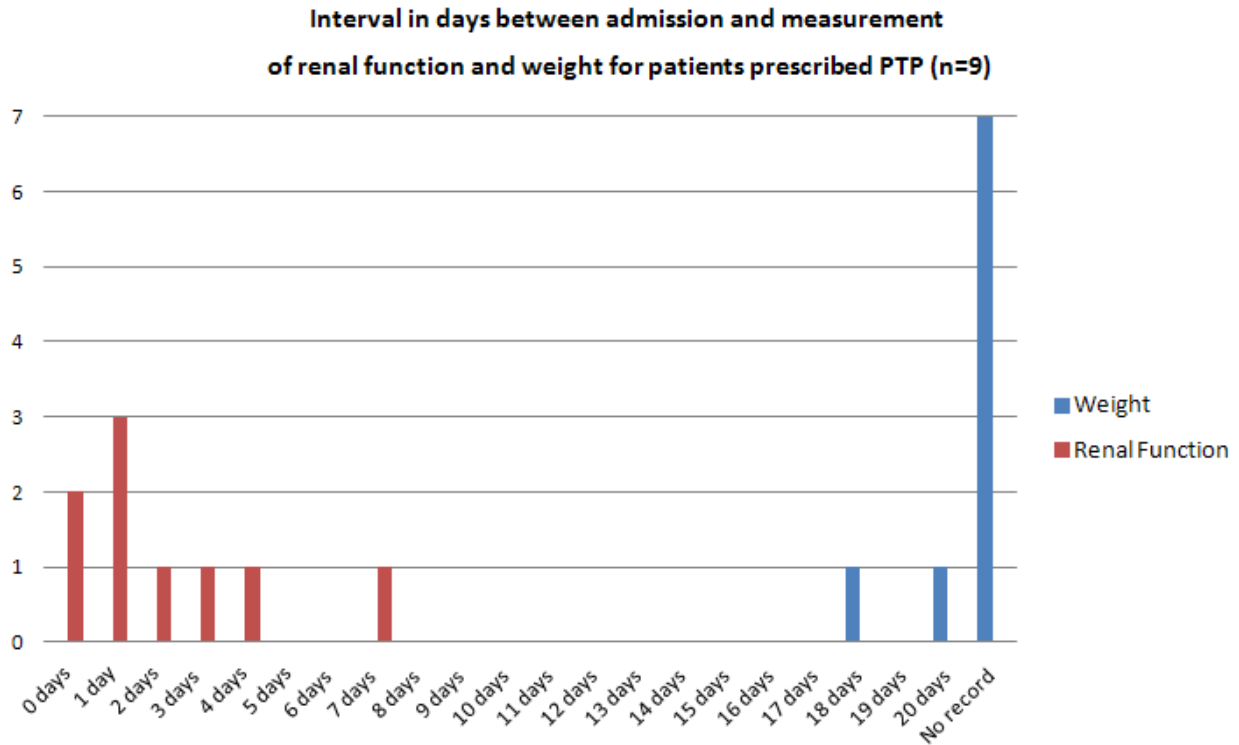
Reason documented for not prescribing PTP on admission	No. of patients (n=61)
Bloods pending	1
Already prescribed therapeutic Dalteparin / Enoxaparin / Warfarin	12
No increased risk over baseline / mobile	10
Active bleeding (epistaxis, haemoptysis, widespread bruising, haematemesis, haematuria, PV bleeding)	8
Thrombocytopenia	4
Previous subdural haematoma	4
Cerebral metastases or primary brain tumour	3
Risk of acute haemorrhage	5
Admitted for end of life care	16
Renal failure	3
Falls risk	3

23/87 patients were not prescribed PTP but there was no justification for this decision in the notes. The risk assessment form for 3 patients indicated that a decision had been taken to initiate PTP but no prescription was present on the medication chart.

Audit standards 4 and 5

9 patients were offered and prescribed prophylactic Dalteparin. The bar chart below shows the interval between admission and measurement of (1) renal function and (2) weight. All 9 patients had renal function measured on at least on occasion. However only 6/9 had their renal function checked within 48 hours of admission.

No patient was weighed within 24 hours of admission; 7/9 patients (78%) had no record of weight in their case notes at all.



1 patient was prescribed mechanical thromboprophylaxis.

Audit standards 6 and 7

12 patients were admitted on therapeutic anticoagulation; 8 were on Dalteparin, 3 on Enoxaparin and 1 on warfarin. All of the Enoxaparin and warfarin prescriptions were correctly documented on the appropriate charts.

Of the patients admitted on Enoxaparin, 1 patient was converted to therapeutic Dalteparin (and discharged on treatment). The remaining 2 patients deteriorated shortly after admission therefore treatment was stopped on clinical grounds. The patient admitted on warfarin remained on this treatment until his death in XX Hospice.

As a result of the above, 9 therapeutic Dalteparin prescriptions were reviewed as part of this audit. 7 prescriptions were appropriately documented on Dalteparin treatment charts (as the dose was correct for weight).

Prescriptions for the 2 patients receiving reduced dose LMWH were on Dalteparin treatment charts rather than medication charts.

Audit standard 8

1 patient was discharged in therapeutic Dalteparin. The treatment rationale, details regarding blood monitoring and intended duration of treatment were included in the discharge summary. In addition, a Dalteparin shared care form was faxed to the GP on the day of discharge and subsequently filed in the notes.

Audit standard 9

There was evidence in 21/96 patient episodes that the decision taken on admission regarding PTP or therapeutic anticoagulation was reviewed. Most reviews resulted in a change in prescription. For clinical reasons, decisions pertaining to some patients were reviewed on more than one occasion therefore the totals in the table below are greater than the number of patients.

Only 1 of the 4 patients who were suspected clinically of suffering a new VTE was on treatment. The remaining 3 were not prescribed PTP based on a completed risk assessment.

Prompts for reviewing original decision	Already on LMWH?	Effect on LMWH prescription	No. of patients
Patient discharged	Prophylactic Dalteparin	Stopped	2
	Therapeutic Dalteparin	Continued	1
Blood test results available	No	Prophylactic Dalteparin prescribed	1
Deterioration in clinical condition (excluding bleeding / suspected new VTE)	Prophylactic Dalteparin	Stopped	2
	Therapeutic Enoxaparin	Converted to prophylactic Dalteparin	1
		Stopped	1
Therapeutic Dalteparin	Stopped	1	
Acute bleed / bruising / falling Hb	Prophylactic Dalteparin	Stopped	2
	Therapeutic Dalteparin	Stopped	3
End of life care pathway commenced	Prophylactic Dalteparin	Stopped	1
	Therapeutic Dalteparin	Continued	1
Thrombocytopenia	Therapeutic Dalteparin	Converted to prophylactic Dalteparin	1
Suspected or confirmed new PE	No	Transferred for investigation	1
		Prophylactic Dalteparin prescribed	1
Suspected or confirmed new DVT	No	Therapeutic Dalteparin prescribed	1
	Therapeutic Dalteparin	Therapeutic dose increased	1
Negative venous Doppler or CTPA	Therapeutic Dalteparin	Dalteparin stopped	2
New spinal cord compression	No	Prophylactic Dalteparin prescribed	1
Deterioration in renal function	Prophylactic Dalteparin	Stopped	1
Mobility returned to normal	Prophylactic Dalteparin	Stopped	1

Conclusion

1. Whilst VTE risk assessment forms are routinely placed in the notes of new admissions medical staff do not always complete these forms.
2. Most patients were not offered PTP but the justification for this decision was not always documented. Of those who were prescribed PTP, renal function was often measured but an accurate weight was not.
3. Therapeutic dose Dalteparin was always prescribed on the correct chart when the dose was appropriate for weight. When the dose is reduced it should be prescribed on the medication chart, this is not happening at present.
4. XX Hospice failed to meet audit standards 1-7.
5. XX Hospice clearly communicates decisions regarding Dalteparin to primary care teams when patients are discharged on treatment. That is, standard 8 was achieved.
6. Clinical decisions regarding PTP and therapeutic anticoagulation are reviewed at AA Hospice.

Discussion

Weight

Weight is clinically important as patients who weigh less than 45kg should be prescribed a reduced dose of Dalteparin. Very few patients on PTP had a weight recorded in their case notes. One potential reason for this is that there is no set place to record this information. Following discussion with ward based staff it would appear that people document weight in different places. As part of this audit the nursing admission documents, medication charts and observation charts were reviewed but it is possible that more patients were weighed and this information was not seen during data collection. There may be other barriers to recording weight e.g. the physical symptoms and reduced mobility of the palliative care inpatient population.

Intended treatment never received

The risk assessment form for three patients indicated that a decision had been taken to initiate PTP but no prescription was present on the medication charts. This is clinically concerning. Whilst it is possible that the risk / benefit balance of PTP changed prior to Dalteparin being prescribed, prescriber omission is another explanation.

Bleeding

Although 5 patients on LMWH developed clinically significant bleeding, it is impossible to determine whether this relationship was causal. The incidence of bleeding in those not prescribed LMWH was not assessed as part of this audit.

Reviewing decisions regarding LMWH

Evidence was present in several notes that decisions regarding LMWH were reviewed. Whether documented decision review in 21 of 96 admissions is more or less than expected is unclear. All reviews captured were prompted by a change in clinical situation but it is possible that other prescriptions should have been altered and were not.

Limitations

1. 9 case notes were not available during the data collection period.
2. The beginning of the audit period was 2 weeks after the hospice switched from using Enoxaparin to Dalteparin. The results may have been better had a later period been chosen when clinical staff were more familiar with the new medication and documentation.

Recommendations

1. That medical staff be reminded of the importance of a VTE risk assessment for all new admissions and re-admissions.
2. That medical staff be reminded that if a decision has been taken to initiate PTP it must be prescribed. The dose should be based on weight and renal function.
3. That all clinical staff be reminded of the importance of measuring weight whenever PTP or therapeutic dose LMWH is prescribed. Consensus needs to be reached about where in the case notes this should be documented. If a patient cannot be weighed, this should be clearly documented and this fact should be taken into account when considering the risks and benefits of treatment.
4. That all medical staff be reminded that reduced dose therapeutic Dalteparin (as per oncology guidelines) should be prescribed on the medication chart and not on a Dalteparin chart so as to avoid confusion and the possibility of error.
5. That a re-audit be undertaken after the above recommendations have been implemented.

References:

1. NHS National Institute for Clinical Excellence, 2011. Venous thromboembolism – reducing the risk (CG92). [online] Available at: <<http://www.nice.org.uk/CG092>> [Accessed 14th June 2012].
2. Gillon S, Noble S et al. Primary thromboprophylaxis for hospice inpatients: Who needs it? Palliative Medicine 2011; 25(7):701-705
3. Department of Health, 2010. Venous thromboembolism (VTE) risk assessment. [online] Available at: <http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_088215> [Accessed 14th June 2012].
4. NHS, 2011. 'Harm free' care a new mindset in patient safety improvement: NHS safety thermometer. [online] Available at: <<http://harmfreecare.org/measurement/nhs-safety-thermometer/>> [Accessed 14th June 2012].
5. Host Organisation. Thromboprophylaxis Guidelines. Version 3. Approved by Host Organisation Thrombosis Committee April 2012

[Appendix 1](#)

Host organization - Thromboprophylaxis risk assessment

[Appendix 2](#)

Host organization – Shared care protocol