Venous Thromboembolism Prophylaxis in Hospitalized Leukemia / Bone Marrow Transplant Patients: An Audit of Current Practice

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Background

- Hospitalized cancer patients are at an increased risk for venous thromboembolism (VTE), including deep vein thrombosis (DVT) and pulmonary embolism (PE) [1].
- Inpatient VTE prophylaxis (VTE-Px) is now a required organizational practice for hospitals as per Accreditation Canada and should be considered in all hospitalized cancer patients.
- Leukemia/bone marrow transplant (L/BMT) patients are at an increased risk of bleeding due to chemotherapy-induced thrombocytopenia and data are limited on the overall risk of VTE in this patient population (reported rates vary from 2-12% [2-4]).
- It is unclear whether consensus recommendations for VTE-Px in hospitalized cancer patients are applicable to L/BMT patients.

Objective

To identify the proportion of hospitalized L/BMT patients who received appropriate VTE prophylaxis during their hospital admission, according to recognized, evidence-based consensus guidelines [1,5].

Methods

- Retrospective chart review via the electronic medical record (medication record, bloodwork, discharge summary) of patients admitted to the L/BMT service at Vancouver General Hospital over a 6-month period.
- Each admission was treated as a separate event.

Inclusion criteria

- Adult L/BMT patients admitted between Jan 1st to June 30th, 2010

Exclusion criteria

- Patients with hospital admissions lasting less than 48 hours

Endpoints

- Proportion of patients started on appropriate VTE-Px within 48 hours of hospital admission
- Incidence of documented DVT and/or PE, severe bleed, or death during hospitalization

Definitions

- Patients were deemed ineligible for VTE-Px if they had any of:
  - Active bleeding or high risk of serious bleeding
  - Platelet count less than 50 x 10^9/L
  - History of heparin-induced thrombocytopenia
  - Known major bleeding disorder or acquired coagulopathy
  - Already receiving therapeutic anticoagulation
- Appropriate VTE-Px was defined as either one of the following:
  - Unfractionated heparin 5000 units SC q8h
  - Dalteparin 5000 units SC daily
  - Enoxaparin 40mg SC daily
  - Fondaparinux 2.5mg SC daily

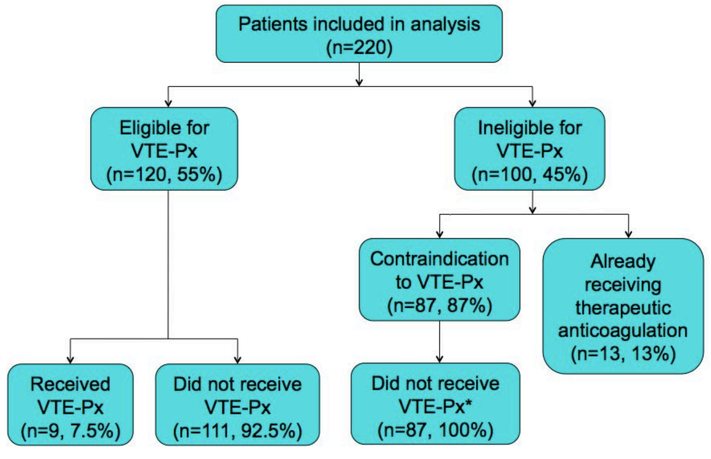
Results

Table 1: Patient Demographics

Baseline characteristics	n=220 (%)
Mean age in years (range)	49 (19-77)
Male	142 (65)
Mean length of stay (days)	19
Reason for admission	
Chemotherapy	72 (33)
Complication	73 (33)
Bone marrow transplant	63 (29)
Autologous	30
Allogeneic	33
Assessment	10 (4)
Palliative care	2 (1)
Risk factors for thrombosis on admission	
Presence of central venous catheter	179 (81)
Age > 60 years	68 (31)
Immobility/ECOG>3	12 (5)
Infection	55 (25)
Obesity (BMI>30)	34 (15)
Smoker (past 3 months)	25 (11)
Prior history of VTE	6 (3)
Prior history of PE	9 (4)
Estrogen-containing oral contraceptives or hormone replacement therapy	6 (3)

Figure 1: Primary Endpoint

*one patient had an IVC filter



Results

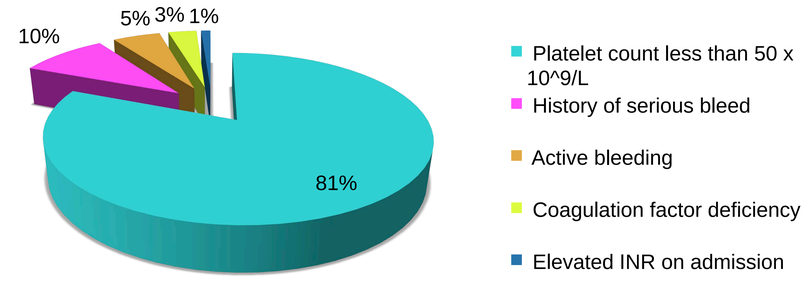
Table 2: Secondary Endpoints

- 9 of the 120 eligible patients (7.5%) received VTE-Px.
- 8 received guideline appropriate VTE-Px and one patient was prescribed enoxaparin dosed BID rather than the once daily dosing labelled for prophylaxis in medical patients.

	Eligible, received VTE-Px (n=9, 4%)	Eligible, did not receive VTE-Px (n=111, 50%)	Ineligible, did not receive VTE-Px (n=87, 40%)
DVT/PE	0	1	0
Serious bleed	0	6	7
Death	1	4	3

Figure 2: Contraindications to VTE-Px

(some patients had more than one contraindication)



Discussion

- This was a retrospective study and available data were limited to what had been documented in the electronic medical records.
- DVT/PE were confirmed on radiology reports, however documentation errors and ommitances exist in the electronic discharge summaries that data was collected from.
- Data was collected by a single researcher and lacked independent verification.

Conclusions

- Only 7.5% of L/BMT patients who were eligible for VTE-Px on admission were prescribed VTE-Px.
- In patients who were eligible for VTE-Px but did not receive it, DVT/PE rates were low (less than 1%) whereas serious bleeding rates were higher (5.4%).
- Perhaps the decision to not prescribe VTE-Px for hospitalized L/BMT patients is appropriate.
- Further research on the incidence of VTE/PE and bleeding events in this patient population is needed.

References

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