A Retrospective Clinical Audit of Adherence to the Venous Thromboembolism Prophylactic Protocol in Surgical Patients

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Introduction

Venous thromboembolism (VTE) is a condition, which includes pulmonary embolism (PE) and deep vein thrombosis (DVT).[1]

VTE is a major cause of:
- Morbidity: Eg. post-thrombotic syndrome [1]
- Mortality: Fatal PE accounts for 10% of hospital deaths[1]
- Resource expenditure: Prolonged hospital stay or readmission and treatment costs[1]

The incidence of hospital acquired DVT is about 10-40% in medical or general surgical patients.[1] Evidence demonstrates that thromboprophylaxis may reduce a patient's risk of developing DVT by up to 76%.[2] Thus, VTE prophylaxis is recommended in patients at risk due to the high prevalence of VTE events, the consequences of experiencing a VTE event and the cost-effectiveness of thromboprophylaxis.[1]

Studies evaluating the adherence of hospital(s) to the American College of Chest Physicians (ACCP) guidelines for the prevention of venous thromboembolic disorders in surgical patients have ranged widely from 13.3% to 94%.[3,4]

The VTE prophylactic protocol at Vancouver Island Health Authority (South Island), based on ACCP guidelines, was developed following a post-operative pulmonary embolism death in 2000. The adherence and success of the protocol since its implementation has yet to be evaluated.

Objectives

Primary objective:
- To determine the rate of surgical patients who received adequate VTE prophylaxis compared to the protocol

Secondary objectives:
- To determine the rate of documented VTE events
- To determine the rate of adverse effects due to prophylactic therapy
- To determine the rate of patients whose charts contained sufficient data to stratify their level of risk of experiencing a VTE event

Methods

Design
- Quality assurance audit
- Retrospective chart review
- 100 patients in 5 surgical areas
  - General surgeries
  - Abdominal vascular surgeries
  - Cardiac surgeries
  - Simple prostatectomy procedures
  - Major urological procedures

Inclusion Criteria
- ≥ 40 years of age
- Elective surgical procedure
- Under general anesthesia ≥ 45 minutes
- Hospitalized for ≥ 48 hours after surgical procedure
- Date of procedure: April 2005 – April 2006

Exclusion Criteria
- Admission for medical reasons
- Admission for emergency surgery
- Orthopedic surgeries
- Anticoagulation utilization prior to surgical procedure

Data Analysis
- Level of risk of experiencing a VTE event was assessed for each patient based on the patient's surgery, age and recorded risk factors
- Adequacy of thromboprophylactic therapy was assessed by comparing the patient's thromboprophylaxis to the recommended VTE prophylaxis for that risk group

Results

Figure 1: Incidence of thromboprophylaxis utilization by surgical area

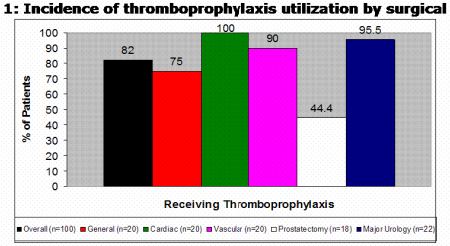


Figure 2: Incidence of inadequate thromboprophylaxis by surgical area

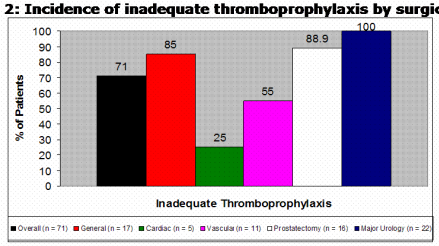
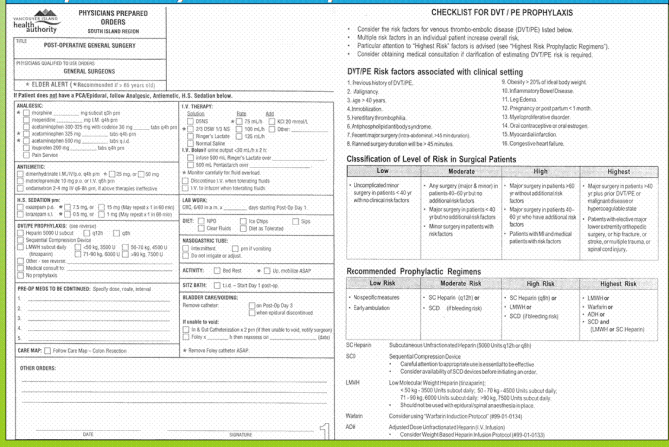


Table 1: Reasons for inadequate thromboprophylaxis by surgical area

	No. (%) of Patients					
	Overall (n = 71)	General (n = 17)	Cardiac (n = 5)	Vascular (n = 16)	Prostatectomy (n = 16)	Major Urology (n = 22)
No Prophylaxis	18 (25.4)	5 (29.4)	0 (0)	2 (18.2)	10 (62.5)	1 (4.5)
Not started within 24h	10 (14.1)	0 (0)	3 (60)	0 (0)	6 (37.5)	1 (4.5)
Incorrect dose	2 (2.8)	0 (0)	2 (40)	0 (0)	0 (0)	0 (0)
Incorrect risk stratification	41 (57.7)	12 (70.6)	0 (0)	9 (81.8)	0 (0)	20 (90.9)
Incorrect Duration	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Sample of Physicians Prepared Orders



Results

Secondary outcomes
- Documented VTE events: 2/100
  - –Prostatectomy: 1 PE event → No prophylaxis
  - –Major urology: 1 DVT event → Incorrect risk stratification
- Documented adverse drug effects: 0/100
- Sufficient chart data for risk stratification: 100/100

Definitions

Major surgery
- Opening of one of the major body cavities (abdomen, chest, skull) stressing vital organs; under general anesthesia for >45min

Minor surgery
- Not a major surgery

Adequacy of thromboprophylaxis
- Correct drug/device
- Correct dose
- Correct frequency
- Correct duration (≥7 days, until discharge or until ambulatory)
- Therapy started within 24h of procedure

Discussion

- DVT/PE prophylaxis is being utilized after surgical procedures with 82% of patients receiving a thromboprophylactic regimen.

- In comparison to the DVT/PE prophylaxis protocol, only 29% of the patients received adequate thromboprophylactic therapy.

- The most common reason for inadequacy was inappropriate risk stratification of experiencing a VTE event, which may be due to a lack of knowledge to appropriately risk stratify patients.

- These results for a low rate of adherence is consistent with other studies looking at compliance rates to ACCP's thromboprophylaxis guidelines.

- Limitations to this quality assurance audit include the following: Small sample size, reliance on a documented patient history, and that it was conducted as a retrospective chart review using a cohort of surgeries

Conclusions

- Many surgical patients in this quality assurance audit were receiving therapy to prevent VTE events. However, the therapy being utilized was sub-optimal in comparison to ACCP guidelines for VTE prevention.

- Recommendations
  - Education on risk stratification to practitioners
  - Modification of DVT/PE prophylaxis protocol
  - Conduction of another QA audit to assess for improvement after implementation of recommendations

References

1. Geerts WH, et al. Prevention of venous thromboembolism: The Seventh ACCP Conference on Antithrombotic and Thrombolytic therapy. Chest. 2004 Sep; 126(3 Suppl):338S-400S.
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4. Stratton SA, et al. Prevention of venous thromboembolism: Adherence to the 1995 American College of Chest Physicians consensus guidelines for surgical patients. Arch Intern Med. 2000; 160: 334-340.