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: E.g. post-thrombotic syndrome1
- Mortality: Fatal PE accounts for 10% of hospital deaths1
- Resource expenditure: Prolonged hospital stay or readmission and treatment costs2
The incidence of hospital acquired VTE is about 10-40% in medical or general surgical patients.3 Evidence demonstrates that thromboprophylaxis may reduce a patient’s risk of developing DVT by up to 76%.4 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%.4-14
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 2008. The adherence and success of the protocol since its implementation has yet to be evaluated.

Objectives
Primary objectives:
- 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
- 300 patients in 5 surgical areas
- General surgeons
- Abdominal vascular surgeons
- Cardiac surgeons
- 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 surgery
- 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
Secondary outcomes
- Documented VTE events: 2/100
- Prostatectomy: 1 PE event → No prophylaxis
- Major urology: 1 DVT event → Inadequate 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 had 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.

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