Venous Thromboembolism Prevention

Goal: To Prevent Venous Thromboembolism in Hospitalised Patients

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Rationale and Aim

Venous thromboembolism (VTE) exerts a significant cost on the health care system and a considerable burden on the community. Each year approximately 30,000 Australians are hospitalised as a consequence of VTE, of which the majority are related to previous hospital admissions. The annual economic burden of VTE in Australia has been estimated to be as high as $21 Billion.1

Prevention of VTE is an important ongoing initiative to reduce iatrogenic harm and maximise efficiency in health care. Hospitals and health services are therefore required to apply VTE prevention strategies including risk assessment and prophylaxis, which adhere to current accepted best-practice. Phase 2 of the SQuIRe CPI Program (July 2009 onwards) will focus on working with hospitals to embed safety and quality initiatives, including VTE prevention, into the everyday work of clinical teams.

Eligible Patient Population

- All hospital inpatients are eligible for inclusion in this CPI program. However, the minimum expectation is that all WA adult surgical patients are included in the SQuIRe CPI VTE prevention program. This includes both elective and emergency surgical admissions.
- Hospitals and health services can elect to continue to include medical patients as a target of VTE prevention if they have already successfully implemented the program in surgical patients.
- The aim for SQuIRe CPI Phase 2 is to maximise spread and compliance to 100% of surgical patients in WA hospitals.

Implementation Method and Adapting Material

All SQuIRe CPI work is expected to be carried out using accepted Quality Improvement methodology such as the Model for Improvement: http://www.ihi.org/IHI/Topics/Improvement/ImprovementMethods/HowToImprove/

The key resource which contains critical steps in successfully implementing VTE prevention is the National Health and Medical Research Council “Stop the Clot Guide”, 2008: http://www.nhmrc.gov.au/nics/material_resources/resources/stop_clot.htm

SQuIRe CPI VTE teams

Improvements in VTE prevention care processes should be implemented within hospitals by multi-disciplinary teams supported by the hospital executive. As a minimum, the VTE team should include a medical practitioner with relevant clinical expertise, a senior nurse and a team member familiar with quality improvement methods. A pharmacist should be involved if available. For more details of team form, function, aim-setting and other strategies of successful VTE improvement teams, see the “SQuIRe 2 CPI Guide – Background Measurement and Reporting” – OSQH SQuIRe Guide Background Measurement Reporting and the “Stop the Clot Guide” (above).

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External and Technical Resources

VTE CPI teams are encouraged to examine the important work undertaken in WA and elsewhere that have improved reliable delivery of VTE care, and to apply and adapt material to their context where appropriate. To this end, a selection of resources is provided here. As some of these resources may be protected by copyright, please ensure all copyright requirements are met prior to their use.

- The National Health and Medical Research Council (NHMRC) National Institute of Clinical Studies (NICS):
  - “Stop the Clot” resources to support VTE prevention programs (including pamphlets, project guides, databases, audit tools)
- The NHMRC is currently developing a set of Clinical Practice Guidelines for the prevention of VTE. These guidelines are currently in draft for public consultation. For more details visit:
- The Victorian Quality Council recently published a case study of a VTE Prevention Program:

Communication channels

OSQH will send periodic updates of material relevant to this CPI via email to members of the SQuIRe VTE CPI email list (accessible via the WA Health Outlook global address book.)

VTE team participants are similarly encouraged to use this email forum for communication with others working in the same area around the state to share ideas, challenges and solutions.

Processes to Enable VTE Prevention

The aim of this CPI is that all WA hospitals develop systems to reliably ensure that all surgical patients are being assessed for their risk of developing a VTE, and that those at risk then receive appropriate VTE prophylaxis. Implementing these two key processes will reduce the incidence of potentially preventable VTE.

1. VTE risk assessment

A comprehensive standardised approach to VTE risk assessment for surgical patients based on current best-practice should be agreed upon and operationalised at local/hospital level. This will require that VTE risk assessment is sustainably embedded into standard work practices at all sites. Teams must consider who, how and when VTE risk is documented. Using PDSA cycles, solutions should be tested and refined, aiming to define the strategy that results in the most reliable VTE risk assessment process.

Hospitals and health services are encouraged to collaborate with, and support one another in the development and implementation of risk assessment tools and methods.
NB.

- Unit-specific protocols may be required,
- Teams are urged to test strategies and solutions on defined pilot patient groups/wards before spreading to other areas.
- Risk assessment should be documented in a location determined by hospital policy. Sites should determine the appropriate location to document risk assessment, and ensure that all staff are aware of this.

**Measurement Methods and Tools**

Hospital teams should regularly gauge their progress against their implementation goals by monitoring the proportion of adult surgical patients that have a documented VTE risk assessment completed.

The NSW Therapeutic Advisory Group (TAG) Quality Use of Medicines (QUM) indicator 1.1 can be used to define this indicator: http://www.ciap.health.nsw.gov.au/nswtag/publications/QUMIndicators/1.1.pdf

Inclusion of adult surgical patients only is required for submission to OSQH. http://www.safetyandquality.health.wa.gov.au/squire/guidebooks.cfm

- Reviewing the medical records of a random selection of all admitted adult surgical patients is a practical way of monitoring progress.
- The recommended number of patients in the sample may differ depending on the facility size and resources. Suggested numbers are recommended below and based on the NSW TAG QUM Indicators:

<table>
<thead>
<tr>
<th>Number of adult inpatient surgical beds</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 or more</td>
<td>20% of patients</td>
</tr>
<tr>
<td>30–149</td>
<td>30 patients</td>
</tr>
<tr>
<td>Less than 30</td>
<td>Number of beds</td>
</tr>
</tbody>
</table>

This sample may be selected in a number of ways aiming to generate a random cohort (eg. all inpatients from a ward on one day, or one week each month could be selected).

**Suggested Calculation:**

\[
\frac{\text{Number of adult surgical patients with documented VTE risk assessment}}{\text{Number of adult surgical patients in sample}} \times 100 = \% \text{ of adult surgical patients assessed for VTE risk}
\]

2. **VTE prevention / prophylaxis**

The appropriate prophylaxis for each patient will differ depending on his or her risk factors. Appropriate prophylaxis should be concordant with the recommendations in agreed best-practice guidelines as reflected in endorsed hospital VTE prophylaxis policy. Hospitals and health services are encouraged to collaborate with, and support one another in the development and implementation of risk assessment tools and methods. Key elements of VTE prophylaxis policies are included in the “Stop the Clot” resources.

The NHMRC Clinical Practice Guidelines for VTE Prevention are currently in draft for consultation. Publication is expected in October 2009.

NB.
- Hospital teams should not wait for formal approval of hospital-wide policies before commencing other steps in VTE prevention.
- Unit-specific protocols may be required.
- Audit, raising awareness, forming a team, understanding barriers and developing reliable local systems to document VTE risk assessment and prophylaxis are independent of final policy.

Measurement Methods and Tools
- Hospital teams should regularly gauge their progress against their implementation goals by monitoring the proportion of adult surgical patients documented to be at risk of VTE that receive appropriate VTE prophylaxis according to local VTE prevention policy.
- The NSW TAG QUM indicator 1.2 can be used to define this indicator. Inclusion of adult surgical patients only is required for submission to OSQH.
- Sampling the inpatient adult surgical population on a monthly basis is a practical way of monitoring progress. The recommended number of patients in the sample may differ depending on the facility size and resources. Suggested numbers are recommended below and based on the NSW TAG QUM Indicators:

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- The audit sample should be random. For example, it could include all adult surgical inpatients identified as being at higher risk of VTE on one day or week of each month. Documentation of the necessary prophylaxis measure should be evaluated against the agreed standard for the institution.
- NB. The group of patients audited should be those who have received VTE risk assessment and were documented as being at higher risk for VTE.

Suggested Calculation:

\[
\text{Number of surgical patients at higher risk of VTE who received appropriate VTE prophylaxis} \times 100 = \% \text{ of higher risk patients receiving appropriate VTE prophylaxis}
\]

Outcomes – VTE Incidence

Establishing a valid and reliable measure of VTE incidence can be difficult. Hospitals and health services are encouraged to create and monitor a meaningful local VTE prevention outcome measure of their choosing where possible.

For example, a facility may be able to examine re-admissions within a specified period (e.g. 30 days) and attempt to identify the proportion of these that are caused by iatrogenic VTE using methodologies such as medical record review.
Further discussion on the topic of incidence and outcome measurement will be discussed during Patient Safety Visits.

The American Society for Hospital Medicine in the USA has developed a VTE incidence calculator calculating VTE incidence based on the number of hospital beds and current VTE prophylaxis rates. It can be accessed via: IHI.org Topics VTE Incidence Calculator.
Surgical VTE Prophylaxis Guide

For ALL patients undergoing surgery at which surgery is imminent

**STEP 1**
Assess Patient Risk
- Hip or knee arthroplasty
- Major trauma
- Other surgery with prior VTE and/or active cancer
- Major surgery age > 40 years
- All other surgery

**STEP 2**
Assess for Anticoagulant Prophylaxis
- No anticoagulant
- Yes: Consider LMWH or UFH if additional risk factors 1
- Yes: Converse LMWH or UFH

**STEP 3**
Assess for Mechanical Prophylaxis
- NO: Observe closely for VTE
- YES: Do mechanical prophylaxis (see below)

Additional VTE Risk Factors
- Immobility, hospitalized following surgery, pregnancy or puerperium, above inflammatory, and cardiac history of VTE and/or family

Contraindications to mechanical prophylaxis
- Severe peripheral neuropathy
- Severe leg disability
- Severe skin gait

LMWH: Low Molecular Weight Heparin
UFH: Unfractionated Heparin
DIC: Disseminated Intravascular Coagulation
VTE: Venous Thromboembolism

Medical VTE Prophylaxis Guide

For patients with an acute medical illness

**STEP 1**
Assess Patient Risk
- Increased risk of VTE
- History of VTE
- Active cancer
- Decompensated heart failure
- Immobility for ≥2 weeks
- >50 years of age

**STEP 2**
Assess for Anticoagulant Prophylaxis
- No contraindications to anticoagulant prophylaxis?
- YES
- NO

**STEP 3**
Assess for Mechanical Prophylaxis
- Has there been any contraindication to mechanical prophylaxis?
- YES
- NO
