

## Prevention of Venous Thromboembolism

**Summary** The Policy Directive has been revised to clearly outline the role of PHOs in supporting clinicians and ensuring systems are in place that promote safe VTE prevention practices. It also removes reference to the NHMRC Clinical Practice Guideline for the Prevention of Venous Thromboembolism in Patients Admitted to Australian Hospitals (2009) which was rescinded in August 2016, and adds clearer guidance for VTE prevention in palliative care, mental health and day surgery patient cohorts.

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**Distributed to** Ministry of Health, Public Health System, Divisions of General Practice, Government Medical Officers, NSW Ambulance Service, Private Hospitals and Day Procedure Centres, Tertiary Education Institutes

**Audience** All Clinical and Administration Staff; All Medical and Nursing Staff; pharmacists; Clinical Staff

## **PREVENTION OF VENOUS THROMBOEMBOLISM**

### **PURPOSE**

This Policy Directive outlines the mandatory requirements for an effective Venous Thromboembolism (VTE) Prevention Program and aims to ensure that systems are in place that support clinicians to undertake these requirements.

### **MANDATORY REQUIREMENTS**

- All NSW Public Health Organisations (PHOs) have a strategy to embed systems to comply with the actions summarised in the Prevention of Venous Thromboembolism Framework (Appendix 4.1 of this policy).
- The systems would enable risk assessments for VTE to be undertaken for:
  - All adult patients admitted to NSW public hospitals within 24 hours, and reassessed regularly as clinically appropriate (as a minimum every 7 days), if clinical condition changes and at transfers of care
  - All adult patients discharged home from the Emergency Department who, as a result of acute illness or injury, have significantly reduced mobility relative to normal state
  - All pregnant and postpartum women during the first comprehensive antenatal assessment; within 24 hours of any antenatal admission; when clinical situation alters; and during postpartum care, within 2 hours of birth (vaginal or caesarean section)
- The systems would also enable patients identified at risk of VTE to receive prophylaxis most appropriate to that risk and their clinical condition.
- All PHOs should make available decision support tools to guide prescription of prophylaxis appropriate for the patient's risk level.
- All PHOs are to have a strategy in place that includes regular monitoring of VTE prevention indicators to facilitate continuous improvement, and a system of communicating findings from review of VTE indicators.
- Clinicians are made aware of their role in undertaking routine VTE risk assessment, providing appropriate prophylaxis where patients are identified at risk of VTE, and to participate in their local public health organisation's VTE prevention program.

### **IMPLEMENTATION**

#### **Clinical Excellence Commission**

- Provide the tools to support PHOs in the implementation of this Policy.

#### **Chief Executives of Local Health Districts and Specialty Health Networks**

- Assign leadership responsibility and resources to support implementation and compliance with this Policy.

**Director of Clinical Governance**

- Ensure that a local monitoring and evaluation program is in place that includes regular review of VTE prevention indicators, assess the effectiveness of VTE prevention strategies and assist with identifying areas that require focused attention.
- Regularly report on VTE prevention indicators to local quality committees, the Clinical Excellence Commission and other relevant State committees.

**Director of Clinical Operations, Hospital, Facility and Clinical Network Managers**

- Ensure all relevant staff receive education regarding VTE prophylaxis.
- Distribute VTE risk assessment and prophylaxis decision support tools to all clinical units.
- Ensure formulary management includes availability of medications recommended for VTE prophylaxis.
- Ensure clinical speciality protocols include VTE prophylaxis where appropriate.
- Participate and contribute to the PHO's monitoring and evaluation program for VTE prevention and include compliance review in routine clinical audit programs.
- Ensure data on indicators for VTE prevention processes are collected at clinical audit and provided, as required to, the Clinical Excellence Commission to enable and support quality improvement initiatives at a state level, the NSW Ministry of Health for state wide performance and compliance monitoring, and Clinical Department Heads to communicate findings from review of VTE indicators to clinical staff and support local improvement strategies.
- Ensure case review of patients developing a VTE that occurs during, or as a result of, a hospital admission.
- Ensure each clinical unit regularly reviews their VTE data and develops strategies towards improving prophylaxis where required.

**Attending Medical Officer (or Delegate)**

- Actively participate in their local public health organisation's VTE prevention program.
- Are aware of undertaking VTE risk assessment on all eligible patients (as noted above).
- Review the patient's related bleeding risk and based on that assessment, ensure prescription and administration of appropriate prophylaxis as required.
- Partner with patients and their carers to have an active role in preventing VTE by discussing the reason for treatment, risks and consequences of VTE prophylaxis on admission and on transfer to community or home care where required.
- Document outcome of VTE risk assessment, prophylaxis treatment; and other significant information, including any relevant dosage adjustment in the patient's health care record, approved risk assessment tools, or other locally approved forms.
- Confirm appropriate peri-operative prescription of both pharmacological and mechanical prophylaxis where indicated.

- Regularly review VTE risk during the patient care episode, particularly as clinical condition changes, and that prophylaxis is monitored and adjusted accordingly.

## REVISION HISTORY

Version	Approved by	Amendment notes
November-2019 (PD2019_057)	Deputy Secretary, People, Culture and Governance	This revision removes reference to the NHMRC Clinical Practice Guideline for the Prevention of VTE in Patients Admitted to Australian Hospitals (2009) and replaces PD2014_032.
September 2014 (PD2014_032)	Deputy Secretary, Governance, Workforce and Corporate	This policy includes statements on VTE management of high-risk patient groups and replaces PD2010_077.
December 2010 (PD2010_077)	Deputy Director-General Health System Quality Performance and Innovation	New policy replacing GL2008_014.
September 2008 (GL2008_014)	Director-General	New guideline

## ATTACHMENTS

1. Procedures: Prevention of Venous Thromboembolism.

## Prevention of Venous Thromboembolism.



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## 1 BACKGROUND

### 1.1 About this document

Venous thromboembolism (VTE) is a significant preventable adverse event for hospitalised patients. The incidence of developing a VTE has been shown to be 100 times greater among hospitalised patients than those in community<sup>1</sup>. Serious adverse outcomes resulting from VTE may occur, including an increased risk of recurrent thrombosis, morbidity from post-thrombotic syndrome or death.

Effective prevention of VTE is achieved through assessment of risk factors and the provision of appropriate prophylaxis.

This Procedure describes the system processes required to be embedded into standard workflow and clinical practice, to reduce a patient's risk of developing VTE.

These include:

- Identifying patients who should be assessed for VTE risk
- Assessing VTE risk
- Prescribing appropriate prophylaxis
- Reassessing VTE risk during care
- Engaging the patient
- Monitoring performance and practice, to assess compliance and to facilitate continuous improvement.

This Policy requires:

- All public health organisations (PHOs) to have a strategy to embed systems to support clinicians assess and manage VTE risk in patients.

The Prevention of Venous Thromboembolism Framework (Appendix 4.1) provides a summary of the required actions for NSW public hospitals and health services.

- Attending Medical Officers and their medical teams to review all adult patients that require assessment for risk of VTE and, based on that assessment in correlation with evidence-based guidelines, prescribe prophylaxis accordingly.

Assessment outcome must be noted in the patient health care record or other approved form, and the rationale behind decision to prescribe or withhold prophylaxis should also be noted.

- Nursing staff/ midwives, pharmacists and other relevant allied health staff to be aware of VTE risk and assist in ensuring the processes for prevention are implemented.

To support the implementation of this Policy, the Clinical Excellence Commission (CEC) has developed tools to support clinicians to undertake VTE risk assessments. NSW VTE risk assessment tools and other resources can be found on the CEC website

<http://www.cec.health.nsw.gov.au/patient-safety-programs/adult-patient-safety/vte-prevention>).

The use of these VTE risk assessment tools is NOT mandatory. Where not used, a similar tool meeting the requirements set out in this Procedure document must be implemented.

The CEC will continue to work with PHOs to facilitate VTE prevention strategies across NSW public hospitals.

## 1.2 Related Documents

This Policy is to be read in conjunction with the following NSW Health Policies:

- High-Risk Medicines Management
- Clinical Handover
- Incident Management

## 1.3 Key definitions

<b>Anticoagulant</b>	Any agent used to prevent the formation of blood clots. These include oral agents, such as warfarin, dabigatran, rivaroxaban and apixaban, and others which are injected into the vein or under the skin, such as unfractionated heparin and low molecular weight heparin e.g. enoxaparin sodium.
<b>Attending Medical Officer (AMO)</b>	The Attending Medical Officer (AMO) is the senior medical practitioner who has primary responsibility for the patient during admission. This AMO is a consultant who may be a visiting medical officer or a staff specialist. The AMO may lead a team that includes related medical officers and this team plays a critical role in the assessment and prevention of VTE.
<b>Australian Commission on Safety and Quality in Health Care (ACSQHC)</b>	The Australian Commission on Safety and Quality in Health Care is a government agency that leads and coordinates national improvements in safety and quality in health care across Australia.
<b>Deep Vein Thrombosis (DVT)</b>	<p>A blood clot that occurs in the “deep veins” in the legs, thighs or pelvis.</p> <ul style="list-style-type: none"> <li>- <b>Asymptomatic deep vein thrombosis</b> is defined as painless DVT detected only by ultrasound, or ascending venography and is often confined to the distal veins.</li> <li>- <b>Symptomatic deep vein thrombosis</b> results from occlusion of a major leg vein and results in leg pain or swelling. It requires specific investigation and treatment which in hospitalised patients may delay discharge, or require readmission to hospital.</li> </ul>
<b>Family of Measures</b>	<p>There are three types of measures.</p> <p><b>Outcome measures:</b></p> <ul style="list-style-type: none"> <li>- Refer to the ‘voice of the customer or user’</li> <li>- Define how the system is performing</li> <li>- Broadly speaking describe what the result is.</li> </ul> <p><b>Process measures:</b></p> <ul style="list-style-type: none"> <li>- Refer to the ‘voice of the workings of the system’</li> </ul>

	<ul style="list-style-type: none"> <li>- Serve to answer process questions i.e. are the parts and/or steps in the system performing as planned?</li> </ul> <p><b>Balancing measures:</b></p> <ul style="list-style-type: none"> <li>- Reflect on what happened to the system as we improved the outcome and process measures (e.g. unanticipated consequences, other factors influencing outcome).</li> </ul>
<b>Health Information Exchange (HIE)</b>	HIE data is coded data based on the medical record. The quality of this information depends on the quality of the medical records, currency and accuracy of coding.
<b>Mechanical Prophylaxis</b>	VTE prophylaxis in the form of a Graduated Compression Stocking, anti-embolic stocking, Intermittent Pneumatic Compression or Foot Impulse Device.
<b>Must</b>	Indicates a mandatory action requiring compliance.
<b>Postpartum Period</b>	Period beginning immediately after the birth of a child and extending for about six weeks.
<b>PowerPlan</b>	An electronic order set listing pharmacological and mechanical options based on protocols, grouped for faster electronic order entry.
<b>Prescriber</b>	A health professional legally entitled to prescribe medicines according to prevailing <i>NSW Poisons and Therapeutic Goods Act 1966</i> and Regulations.
<b>Pulmonary embolism (PE)</b>	A blood clot that breaks off from the deep veins and travels around the circulation to block the pulmonary arteries (arteries in the lung). Most deaths arising from deep vein thrombosis are caused by pulmonary emboli. ( <i>Plural = pulmonary emboli</i> )
<b>Public Health Organisation (PHO)</b>	Under the <i>Health Services Act 1997 (NSW)</i> , a local health district, statutory health corporation or affiliated health organisation in respect of its recognised establishments and recognised services.
<b>Quality Audit Reporting System (QARS)</b>	The QARS has been developed by the CEC to provide local health districts (LHDs) and speciality networks (SNs), and their facilities with a tool to conduct quality audits to provide evidence for the accreditation process, evaluate performance and initiate relevant action plans. The QARS allows evaluation at LHD, facility or ward levels. Benchmarking against the NSW average and peer groups is also available.
<b>Quality Improvement Data System (QIDS)</b>	The QIDS is a system that takes data and presents in charts for quality improvement. It was designed for unit level managers and clinicians to have easy access to information to improve their services.
<b>Should</b>	Indicates a recommended action that is best followed unless there are sound reasons for taking a different course of action.
<b>Significantly Reduced Mobility Relative to Normal State</b>	Refers to patients who are bedbound, or likely to spend a substantial proportion of the day in bed or in a chair due to the clinical condition for which they are being treated, or unable to walk unaided due to injury such as severe lower leg injury (e.g. fracture, dislocation, complete tendon rupture), requiring rigid immobilisation, or non-weight bearing status. The change in mobility should be assessed in relation to the patient's normal state of functioning.
<b>Transfer of Care</b>	Transfer of care involves transferring professional responsibility and accountability for the care of a patient to another person or professional or a combination of professionals. It includes discharge from an acute inpatient setting to the community setting, subacute care or non-acute care. It can also

	include transfer between hospitals, or transfer between attending teams and/or units within a hospital..
<b>Thromboprophylaxis</b>	Measures taken to assist in reduction of the risk of thrombosis.
<b>Venous thromboembolism (VTE)</b>	The blocking of a blood vessel by a blood clot. Includes both deep vein thrombosis and pulmonary embolism.
<b>VTE Risk Outcome</b>	<p>The decision reached after a risk assessment is carried out to evaluate the likelihood of a patient developing a VTE due to existing risk factors. The patients risk outcome can fall under one of three categories.</p> <p><b>Lower Risk:</b> Patient has a lower risk of developing a VTE and requires no active treatment.</p> <p><b>Moderate Risk:</b> Patient is at risk of developing a VTE and requires treatment with pharmacological prophylaxis (where no contraindications exist) and mechanical prophylaxis should be used where pharmacological therapy is contraindicated.</p> <p><b>Higher Risk:</b> Patient is at a relatively higher risk of developing a VTE and requires combination treatment (where no contraindications exist) with both pharmacological AND mechanical prophylaxis.</p>

## 2 VENOUS THROMBOEMBOLISM PREVENTION

### 2.1 Identifying Patients for Assessment

All PHOs must have systems in place to support clinicians to assess and manage VTE risk in patients. The following patient groups must be identified and undergo a VTE risk assessment.

#### 2.1.1 Patients in the Emergency Department

Adult patients (>16 years) to be discharged home from an Emergency Department who, as a result of their acute illness or injury (including interventions such as leg casts/braces), have significantly reduced mobility relative to normal state. They should undergo VTE risk assessment and be prescribed appropriate prophylaxis by an Emergency Department clinician prior to leaving the Emergency Department.

All other patients to be discharged home from an Emergency Department do not need to be assessed for VTE risk.

PHOs need to have systems in place that ensure adult patients being admitted to an inpatient ward or unit from an Emergency Department undergo a VTE risk assessment and be prescribed appropriate prophylaxis within 24 hours of presentation.

#### 2.1.2 Admitted Patients

All adult patients (>16 years) admitted to a NSW public hospital or health service should undergo a VTE risk assessment within 24 hours of admission and, if appropriate, be prescribed prophylaxis.

This includes patients admitted to an inpatient ward (medical or surgical), or a unit such as a mental health unit or sub-acute facility (such as rehabilitation or palliative care).

Although, VTE prevention processes within the mental health setting are currently not as robust as in the general population, there is growing evidence to suggest that atypical antipsychotics (particularly clozapine) increase VTE risk. Additionally, reduced mobility is a strong risk factor for VTE and should be considered in the context of mental health patients, particularly in catatonia, neuroleptic malignant syndrome, over-sedation, use of physical restraints, severe depression, bed rest in anorexia nervosa and other acute states of reduced activity.

It should also be noted that while palliative care patients are required to undergo VTE risk assessment, patients in the terminal stage of life may not require VTE prophylaxis and therefore may not need to undergo assessment. This decision should be aligned with the goals of care, which are to be considered in consultation with the patient and their family and/or carers.

### **2.1.3 Pregnant and Postpartum Women**

All pregnant and postpartum women should undergo VTE risk assessment:

- During the first comprehensive antenatal assessment
- Within 24 hours of admission into a non-obstetric setting for a non-pregnancy related complaint
- Within 24 hours of admission into an obstetric setting for a pregnancy or non-pregnancy related complaint
- During postpartum care, within 2 hours of birth (vaginal or caesarean section)

### **2.1.4 Planned Admission and Day Surgery**

Patients undergoing planned surgical and invasive interventions and/or imaging guided invasive interventions are required to be assessed by a medical officer to determine the risks and benefits of stopping pre-existing, established anticoagulation or anti-platelet therapy before discontinuing these therapies.

- Prophylaxis should be considered for day surgery patients based on evidence in situations of significantly reduced mobility relative to normal state, prolonged and/or general anaesthesia and for patients demonstrating one or more other risk factors.

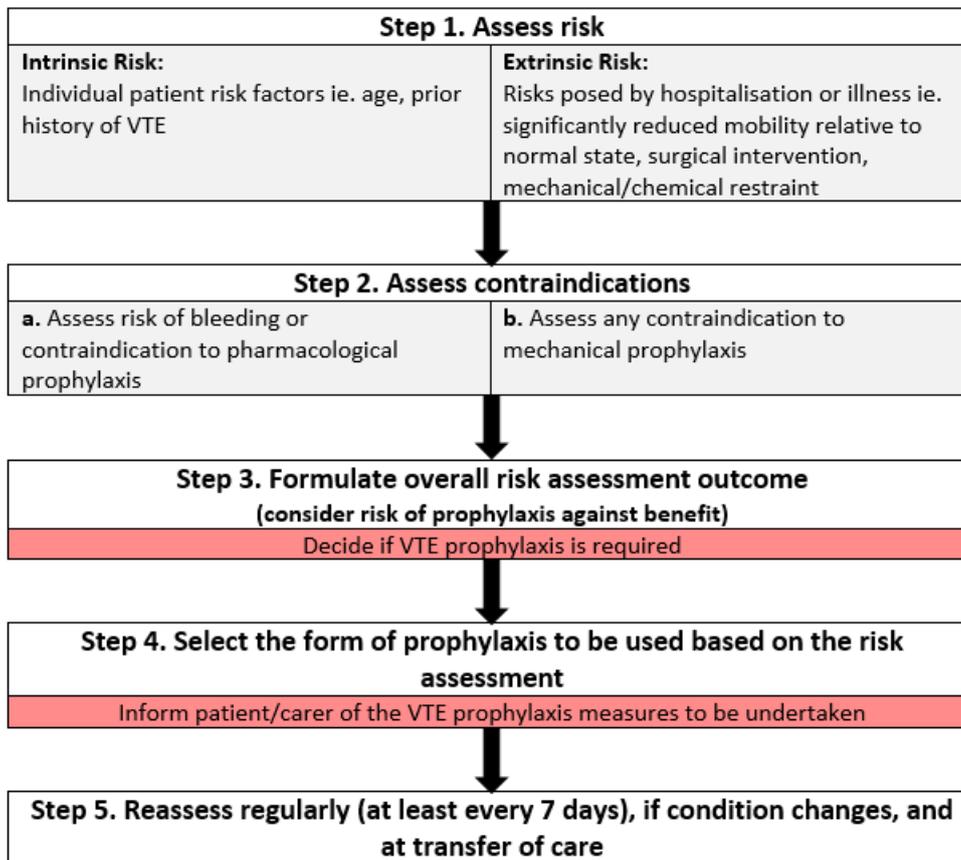
Day surgery or procedure patients who receive only local anaesthesia without any reduction in mobility relative to normal state, do not require routine VTE assessment, unless otherwise clinically appropriate.

## **2.2 Risk Assessment**

Systems introduced by PHOs should support clinicians to complete a VTE risk assessment for the identified target patient groups.

Standardised, approved risk assessment tools are to be made available to all clinical staff.

The risk assessment tool must ensure the following steps are undertaken during the assessment.



### 2.2.1 Assessing VTE Risk in Admitted Patients

Systems introduced by PHOs should be to support Attending Medical Officers (and delegates) to complete a VTE risk assessment for all adult patients admitted to NSW public hospitals within 24 hours.

A **NSW Adult Venous Thromboembolism Risk Assessment Tool** has been developed for use in admitted patients and to support implementation. See the CEC website for a copy of the tool (<http://www.cec.health.nsw.gov.au/patient-safety-programs/adult-patient-safety/vte-prevention/risk-assessment>).

### 2.2.2 Assessing VTE Risk in Pregnant and Postpartum Women

Systems introduced by PHOs should support midwives and medical officers to complete a VTE risk assessment. Where a midwife completes the assessment, systems need to ensure that the outcome of the assessment is referred to the attending medical officer (or delegate).

Any standard risk assessment tool used within the PHO must identify all pregnant and postpartum women to be at risk of VTE. These women should then be referred to an obstetrics consultant/team for risk assessment and decision to commence pharmacological and/or mechanical prophylaxis.

A pregnant woman admitted into a non-obstetric setting for a non-pregnancy related complaint can initially be assessed using a standard risk assessment tool given it complies with the requirements highlighted above.

A dedicated obstetric VTE risk assessment tool should be used to assess pregnant and postpartum women in an obstetrics setting. It should identify risk factors, contraindications and evidence-based treatment options that are unique to this target group.

A **NSW Maternity Venous Thromboembolism Risk Assessment Tool** has been developed to support implementation. See the CEC website for a copy of the tool (<http://www.cec.health.nsw.gov.au/patient-safety-programs/adult-patient-safety/vte-prevention/maternity>).

### 2.2.3 Documenting VTE Risk

Systems introduced by PHOs should support clinicians to document:

- That a risk assessment has been completed
- The outcome of the risk assessment.

When in use, clinicians are to document once a risk assessment has been completed on the dedicated VTE section of the acute National Inpatient Medication Chart (NIMC) (not included on the long-stay version).

Additional areas for documentation may include:

- Electronic medical record
- The patients' health care record
- Approved risk assessment tools
- Maternal antenatal hand-held record
- Other locally approved forms, such as patient care plans.

### 2.2.4 Additional Prevention Strategies

Irrespective of a patient's VTE risk outcome, the following prevention strategies should be considered and promoted.

- Patients remain adequately hydrated (unless contraindicated due to their clinical condition e.g. fluid restriction due to chronic heart failure) and must be encouraged to mobilise as soon as possible and to continue being mobile post discharge.<sup>2</sup>
- A plan for early mobilisation should be developed by a multidisciplinary team with the patient and their family/ carer.

## 2.3 Prescribing and Administration of Appropriate Prophylaxis

If pharmacological and/or mechanical prophylaxis is required and appropriate, prophylaxis should be prescribed and administered as early as possible during the patient's admission or as scheduled after the commencement of care and risk assessment is carried out.

The choice of pharmacological and mechanical prophylaxis must be informed by evidence. PHOs should ensure that systems are in place to provide clinicians with access to evidenced-based guidelines, a clinical specialty protocol, as well as reference

to drugs available on the hospital formulary. Pharmacological prophylaxis in this setting is in the form of an anticoagulant, and should be managed in accordance with the *NSW Health High-Risk Medicines Management Policy Directive*.

The standardised risk assessment tool made available should provide clinical decision support for Attending Medical Officers or other authorised prescribers such as Nurse Practitioners, when prescribing prophylaxis.

This procedure should be read in conjunction with clinical guidelines on VTE Prophylaxis. These include (but not limited to):

- Venous Thromboembolism Prevention Clinical Care Standard, Australian Commission on Safety and Quality in Health Care, Oct 2018  
<https://www.safetyandquality.gov.au/our-work/clinical-care-standards/venous-thromboembolism-prevention-clinical-care-standard/>
- Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism VTE: Reducing the Risk for Patients in Hospital, [NICE guideline \[NG89\]](#), Mar 2018
- VTE Prophylaxis, [BMJ Best Practice](#), July 2018
- Antithrombotic Therapy and Prevention of Thrombosis, 9th ed (2012): [American College of Chest Physicians \(ACCP\) Evidence-Based Clinical Practice Guidelines](#)
- Prevention and Treatment of VTE, [International Consensus Statement, International Angiology, April 2013](#)

### 2.3.1 Documentation of Prophylaxis

- Where electronic prescribing systems are in use, Attending Medical Officers or other authorised prescribers such as Nurse Practitioners should prescribe pharmacological and/ or mechanical prophylaxis as per local protocol. Where available, prescribing via a VTE PowerPlan (or similar) is encouraged and to be promoted.
- The regular NIMC (acute), contains a dedicated VTE section. Where this chart is used, the Attending Medical Officer (or delegate) or other authorised prescribers such as Nurse Practitioners, must prescribe pharmacological and/ or mechanical prophylaxis within the dedicated section. Prescribing outside of this section may lead to duplication of orders and risk of patient harm.

Where other versions of the NIMC without this section are in use, such as the long-stay chart, prescribing should be completed within the normal sections.

Checks associated with mechanical prophylaxis must also be documented at least twice daily by nursing staff/midwives. Checks should be documented on the NIMC (acute) or in an electronic medical record, where mechanical prophylaxis has been prescribed.

- For pregnant women, prescribed prophylaxis is also to be noted on the Antenatal hand held record, and electronic antenatal record where in use.

### 2.3.2 Contraindications and other considerations with Prophylaxis

- The risk of bleeding is a significant complication of pharmacological prophylaxis, particularly in surgical patients. The decision to commence pharmacological prophylaxis should be made after considering the benefits of treatment i.e. reducing VTE risk, against the risk associated with treatment (bleeding and other contraindications).

To support clinicians select the most appropriate prophylaxis for their patients, the standardised risk assessment tool should promote consideration of absolute or relative contraindications to pharmacological prophylaxis before a patient is prescribed therapy.

Where an absolute contraindication exists (e.g. bleeding disorders, active bleeding), the use of pharmacological prophylaxis should be avoided due to life-threatening risk, while relative contraindications require caution to be exercised and the benefits of therapy to be weighed against the risk.

Where pharmacological prophylaxis is contraindicated, mechanical prophylaxis remains an option and should be considered, as indicated, until the patient is mobile.

- Prescribers should refer to the current product information to select a safe dose for individual patients. Some agents are contraindicated or may require a reduction of dose i.e. in elderly patients or those with renal impairment.

Prescribers should take care to select the dose recommended for prophylaxis and not the dose recommended for therapeutic anticoagulation.

- In certain clinical scenarios where there is limited evidence and guidance available, careful consideration of individual patient risks and specialist advice may be required. This includes the following scenarios:
  - Peri-operative and peri-procedural management with anticoagulants
  - Cessation of oestrogen-containing oral contraceptives or hormone replacement therapy, if clinically appropriate.
  - Selecting an appropriate dose for extremes of total body weight <50kg or >120kg or body mass index  $\geq 35\text{kg/m}^2$ ).

- **Anaesthesia and VTE**

It is recommended that clinicians follow the advice provided in Section 5.9 of the Acute pain management: scientific evidence guidelines produced by the Australian and New Zealand College of Anaesthetists and Faculty of Pain Management (2015)<sup>3</sup>

For a practical guide on how to appropriately manage pregnant women receiving pharmacological prophylaxis requiring anaesthesia, clinicians may refer to the published consensus statement by the Society for Obstetric Anaesthesia and Perinatology (SOAP)<sup>4</sup>

### 2.4 Partnering with Patients

Systems introduced by PHOs should support clinicians to partner with patients and their carers in managing their risks and to have an active role in preventing VTE. Systems are in place for clinicians to provide patients information about VTE to enable shared-decision making regarding their VTE prevention plan.

Patients, carers and their families should be informed about:

- What a VTE is
- Signs and symptoms of VTE
- Risk factors specific to the patient's condition
- Effective interventions to reduce the risk of VTE developing
- Any pharmacological and/or mechanical prophylaxis they are receiving
- VTE prevention discharge plans (where required).

Written information should accompany any counselling points. Patient information highlighting the risk of developing a VTE in hospital should be available, and patient leaflets summarising key points should be provided. Resources are available at:

- CEC VTE Prevention website contains information for adult admitted patients <http://www.cec.health.nsw.gov.au/patient-safety-programs/adult-patient-safety/vte-prevention> and for women who are pregnant or postpartum <http://www.cec.health.nsw.gov.au/patient-safety-programs/adult-patient-safety/vte-prevention/maternity>
- ACQSHC website <https://www.safetyandquality.gov.au/our-work/clinical-care-standards/venous-thromboembolism-prevention-clinical-care-standard/Information> about the pharmacological agent used must also be provided. For example, Consumer Medicines Information (CMI) is available at <https://www.ebs.tga.gov.au/>.

#### 2.4.1 Documenting Patient Information

When a treatment decision has been made, clinicians should document that the patient has received an explanation of risks and benefits of prophylaxis, including the provision of additional information regarding VTE prevention. This should be recorded within the patients' health care record and/ or other approved form or tool.

### 2.5 Reassessing VTE Risk

Systems are in place for clinicians to undertake a reassessment of patient's VTE and bleeding risks:

- Regularly as clinically appropriate, as a minimum every 7 days
- When clinical condition changes (e.g. unplanned surgery, changes in mobility)
- At transfer of care.<sup>2</sup>

- Pregnant and Postpartum Women with a protracted antenatal admission should be reassessed every 7 days, as a minimum

Reassessment is required to:

- ensure that appropriate methods of VTE prophylaxis are used
- ensure that VTE prophylaxis is being used correctly
- identify adverse events resulting from VTE prophylaxis or its absence.

### 2.5.1 Reassessing Risk at Discharge and Continuity of Care

Systems should enable clinicians to reassess patients identified at risk at the point of discharge. Consideration should be made regarding the need for extended prophylaxis.

Attending Medical Officers are to ensure the development of a prospective action plan for patients requiring continuation of pharmacological and/ or mechanical prophylaxis on transfer home or to another care level. The plan is to be communicated in a timely manner to the patient's primary healthcare provider and explained to the patient/carer/family. This is particularly important when patients are transferred into community or residential aged care.

Clinicians must comply with key principles for transition of care and clinical handover with special regard to VTE prophylaxis treatment. This should occur at all transition points including transfer home or to another care service. Key principles are outlined in the *Venous Thromboembolism Prevention Clinical Care Standard* and the *NSW Health Clinical Handover Policy Directive*.

On transfer to home or another care service, a patient's supply of prophylactic medication should be arranged to enable uninterrupted treatment. Referral to another care model should be arranged including assurance of follow-up and continuity of supply as needed. Patients should be informed of the reason for ongoing treatment and the anticipated timeframe for discontinuation of the treatment. Patients must receive education on the administration of treatment as needed and be encouraged to mobilise (unless instructions for mobility restriction are in place).

### 2.6 Monitoring Performance and Practice

PHOs must ensure they have in place a monitoring and evaluation program that includes regular review of VTE prevention indicators to monitor performance, assess the effectiveness of VTE prevention strategies and assist with identifying areas that may require focused attention.

PHOs are required to regularly report on VTE prevention indicators to local governing quality committees and other relevant State committees.

As a minimum, the following indicators are required to be included in the monitoring and evaluation framework:

Indicator	Type of Measure	Suggested Data Sources
1. Rate of Hospital Acquired VTE events where prophylaxis was not prescribed appropriate to the level of risk in accordance with guidelines or local protocols.  Numerator = Hospital-acquired VTE events where appropriate prophylaxis was not prescribed  Denominator = All hospital-acquired VTE events	Outcome	<ul style="list-style-type: none"> <li>• Clinical Audit</li> <li>• Non-Fatal VTE Incident Tool</li> <li>• Incident Investigations i.e. RCAs</li> </ul>
2. Hospital Acquired VTE (rate per 1000 separations).	Outcome	<ul style="list-style-type: none"> <li>• HIE</li> <li>• QIDS</li> </ul>
3.1. Rate of documented VTE risk assessment completion within 24 hours for all adult inpatient admissions.	Process	<ul style="list-style-type: none"> <li>• Clinical Audit (QARS question ID 7110)</li> </ul>
3.2. Rate of documented VTE risk assessment completion on the first comprehensive antenatal assessment (for Maternity patients)	Process	<ul style="list-style-type: none"> <li>• Clinical Audit (QARS)</li> <li>• eMaternity</li> </ul>
3.3. Rate of documented VTE risk assessment completion during postpartum care, within 2 hours of birth (vaginal or caesarean section) (for Maternity patients).	Process	<ul style="list-style-type: none"> <li>• Clinical Audit (QARS)</li> <li>• eMaternity</li> </ul>
3.4. Rate of documented VTE risk assessment completion for adult patients discharged from ED with isolated lower limb injury requiring temporary lower limb mobilisation (for ED patients).	Process	<ul style="list-style-type: none"> <li>• Clinical Audit (QARS)</li> </ul>
4. Rate of VTE prophylaxis appropriate to the level of risk in accordance with Guidelines or local protocols.	Process	<ul style="list-style-type: none"> <li>• Clinical Audit (QARS question ID 7115)</li> </ul>

### 2.6.1 Clinical Audit

Regular clinical auditing is required to capture the necessary data to inform PHOs on VTE prevention indicators i.e. process measures relating to compliance with risk assessment completion and the prescription of appropriate prophylaxis.

For the purpose of monitoring performance for assurance, PHOs must review VTE indicator data from regular clinical auditing. As a guide, clinical audit should occur at least annually if the system is considered to be in a reliable state and more frequently i.e. quarterly to biannually where compliance is considered unreliable.

As well as providing assurance for local VTE prevention performance, data collection by clinical auditing and feedback play an important role in driving improvement.

Measurement for improvement generally require smaller sample sizes and short timeframes for data collection, to allow it to be repeated frequently for trending changes over time.

A simple VTE Prevention questionnaire is available within Quality Audit Reporting System (QARS) to assist PHOs to conduct clinical audit to capture data on VTE process measures and assessing compliance with the Prevention of Venous Thromboembolism Policy Directive. The questionnaire can be modified by adding or removing questions to suit local needs. However, the following questions must be included in any locally adapted QARS questionnaires:

- Rate of documented VTE risk assessment completion within 24 hours for all adult inpatient admissions. (question ID 7110)
- Rate of VTE prophylaxis appropriate to the level of risk in accordance with Guidelines or local protocols. (question ID 7115).

See the CEC website for further information: (<http://www.cec.health.nsw.gov.au/patient-safety-programs/adult-patient-safety/vte-prevention/monitoring-practice>)

The following audit tools and metrics are also available to assist with review of clinical processes and outcome. These include:

- The National Quality Use of Medicines indicators (accessible from NSW TAG website: <http://www.nswtag.org.au/qum-indicators/>)
- The NIMC (acute) VTE Prophylaxis Section Audit and Reporting Tool (accessible from ACSQHC website: <https://www.safetyandquality.gov.au/our-work/medication-safety/vteprophylaxis/>)
- VTE event rates using ACSQHC's hospital acquired complication (HAC) specifications or CEC defined ICD10 VTE codes (accessible from the VTE dashboard on QIDS)
- National Surgical Quality Improvement Program (NSQIP). Hospitals participating in the Agency for Clinical Innovation's NSQIP Collaborative may have access to data presenting performance against VTE metrics relating to preventable surgical complications.

### 2.6.2 Incident Reporting

All patients who present on admission with a VTE resulting from a previous hospitalisation (within 90 days of discharge) or who develop a VTE during hospitalisation must have the incident documented in the patient's health care record and recorded into the incident monitoring system.

Any significant unexpected change in a patient's condition relating to VTE prophylaxis including embolism and bleeding, must be considered an adverse event and be recorded in the incident monitoring system with the appropriate level of investigation initiated as per the requirements outlined in the *NSW Health Incident Management Policy Directive*.

### 2.6.3 Feedback to Clinical Staff

The PHO's VTE prevention monitoring and evaluation program must include a system of communicating VTE indicator data to clinicians in a timely manner to enable practice and quality improvement.

VTE incidents are to be reviewed with other clinical indicators and to be included as part of the existing hospital morbidity and mortality review process. Apart from PHO's Safety and Quality Committees, Morbidity and Mortality meetings should be considered as a forum to present data on VTE indicators.

### 2.6.4 Staff Education

Clinical staff should be provided with education on VTE prevention strategies.

Training resources can be found at:

- The CEC website <http://www.cec.health.nsw.gov.au/patient-safety-programs/adult-patient-safety/vte-prevention>
- 'Electronic Venous Thromboembolism (VTE) Risk Assessment Tool for Adult Inpatients' My Health Learning (Course Code: 212082420)
- ACSQHCHC website: NIMC (acute) VTE Prophylaxis section: <https://www.safetyandquality.gov.au/our-work/medication-safety/vteprophylaxis/>
- ACSQHC website: Hospital Acquired Complication (HAC) clinician fact sheet - Venous thromboembolism: <https://www.safetyandquality.gov.au/publications/hacs-information-kit-fact-sheet-venous-thromboembolism/>
- ACQSHC website for the Venous Thromboembolism Prevention Clinical Care Standard and implementation resources (including clinician fact sheet): <https://www.safetyandquality.gov.au/our-work/clinical-care-standards/venous-thromboembolism-prevention-clinical-care-standard/>

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### 3 REFERENCES

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2. National Institute for Health and Clinical Excellence (NICE) Guidelines. Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism VTE: Reducing the Risk for Patients in Hospital. March 2018
3. Schug SA, Palmer GM, Scott DA, et al. Acute pain management: scientific evidence. 4th ed. Melbourne: Australian and New Zealand College of Anaesthetists and Faculty of Pain Management, 2015
4. Leffert L, Butwick A, Carvalho B, Arendt K, Bates SM, Friedman A, et al. The Society for Obstetric Anesthesia and Perinatology Consensus Statement on the Anesthetic Management of Pregnant and Postpartum Women Receiving Thromboprophylaxis or Higher Dose Anticoagulants. *Anesthesia and analgesia* 2018;126(3):928-44.

## 4 APPENDIX

### 4.1 Prevention of Venous Thromboembolism Framework

FRAMEWORK FOR THE PREVENTION OF VENOUS THROMBOEMBOLISM		
This Framework has been developed to guide LHDs and facilities in the implementation of the <i>Prevention of Venous Thromboembolism Policy Directive</i>		
To Prevent VTE	What this means for Patients	Actions Required by NSW Hospitals and Health Services
<b>Identify Patients</b> 	<ul style="list-style-type: none"> <li>Patients with a potential to be at risk of VTE are identified</li> </ul>	<ol style="list-style-type: none"> <li>All patients admitted to a ward or unit will undergo VTE risk assessment</li> <li>All patients discharged from Emergency Departments with significantly reduced mobility relative to normal state will undergo VTE risk assessment</li> <li>All pregnant and postpartum women will undergo appropriate VTE risk assessment during the first comprehensive antenatal assessment, any antenatal admission (including for non-pregnancy related complaints) and during postpartum care, within 2 hours of birth (vaginal or caesarean section)</li> </ol>
<b>Assess and Document VTE Risk</b> 	<ul style="list-style-type: none"> <li>VTE assessment is promptly completed</li> <li>Risk vs. benefit of treatment is considered</li> <li>The outcome of the assessment is clearly documented and easily accessible by health care providers</li> </ul>	<ol style="list-style-type: none"> <li>VTE risk assessments are completed within 24 hours of patient admission</li> <li>A standardised, approved risk assessment tool should be made available to all clinical staff</li> <li>The risk assessment tool enables clinicians to weigh the risk of clotting against the risk of bleeding</li> <li>Outcome of the risk assessment is clearly documented in an approved record such as                             <ol style="list-style-type: none"> <li>Electronic medical record</li> <li>National Inpatient Medication Chart (NIMC)</li> <li>Patient health care record</li> <li>Approved risk assessment tool</li> <li>Maternal antenatal hand-held record</li> <li>Other locally approved form</li> </ol> </li> </ol>
<b>Prescribe Appropriate Prophylaxis</b> 	<ul style="list-style-type: none"> <li>Treatment is based on the best clinical knowledge and evidence</li> <li>Prescribed therapy is clearly documented and easily accessible by health care providers</li> </ul>	<ol style="list-style-type: none"> <li>Clinical decision support is available for all clinicians, and encourages review of risk vs. benefit of prophylactic treatment</li> <li>Clinical decision support is based on evidence-based guidelines</li> <li>Access to a range of antithrombotic agents is available on the formulary</li> <li>Where the regular NIMC is used, prescribing of both pharmacological and mechanical prophylaxis is completed in the dedicated VTE section</li> </ol>
<b>Engage the Patient</b> 	<ul style="list-style-type: none"> <li>Decisions actively involve patient/carers</li> <li>Patients/carers are aware of the risks and symptoms of VTE</li> </ul>	<ol style="list-style-type: none"> <li>Patients/carers are informed of VTE risks and treatment options</li> <li>Patients/carers are involved in treatment plans</li> <li>A standardised patient information leaflet is available for clinicians to provide to patients</li> </ol>
<b>Reassess</b> 	<ul style="list-style-type: none"> <li>Patients are regularly assessed for VTE throughout admission</li> <li>Prevention of VTE continues after discharge if required</li> </ul>	<ol style="list-style-type: none"> <li>VTE risk is reassessed regularly (at least every 7 days) OR as clinical condition changes</li> <li>Pregnant and postpartum women with a protracted admission should be reassessed every 7 days as a minimum</li> <li>Clinicians are prompted at discharge to assess the need of prolonged prophylaxis</li> </ol>
<b>Monitor Practice</b> 	<ul style="list-style-type: none"> <li>Hospitals monitor performance and strive to improve processes</li> <li>Health professionals are updated and aware of requirements</li> </ul>	<ol style="list-style-type: none"> <li>Rates of risk assessment completion are audited periodically (at least annually, or more frequently if compliance is poor)</li> <li>Rate of provision of appropriate prophylaxis are audited periodically</li> <li>Results of audit and review are reported back to clinicians to drive change</li> <li>Clinicians are educated on the need for VTE prevention measures</li> </ol>