Deep Vein Thrombosis (DVT) - Lower Limb

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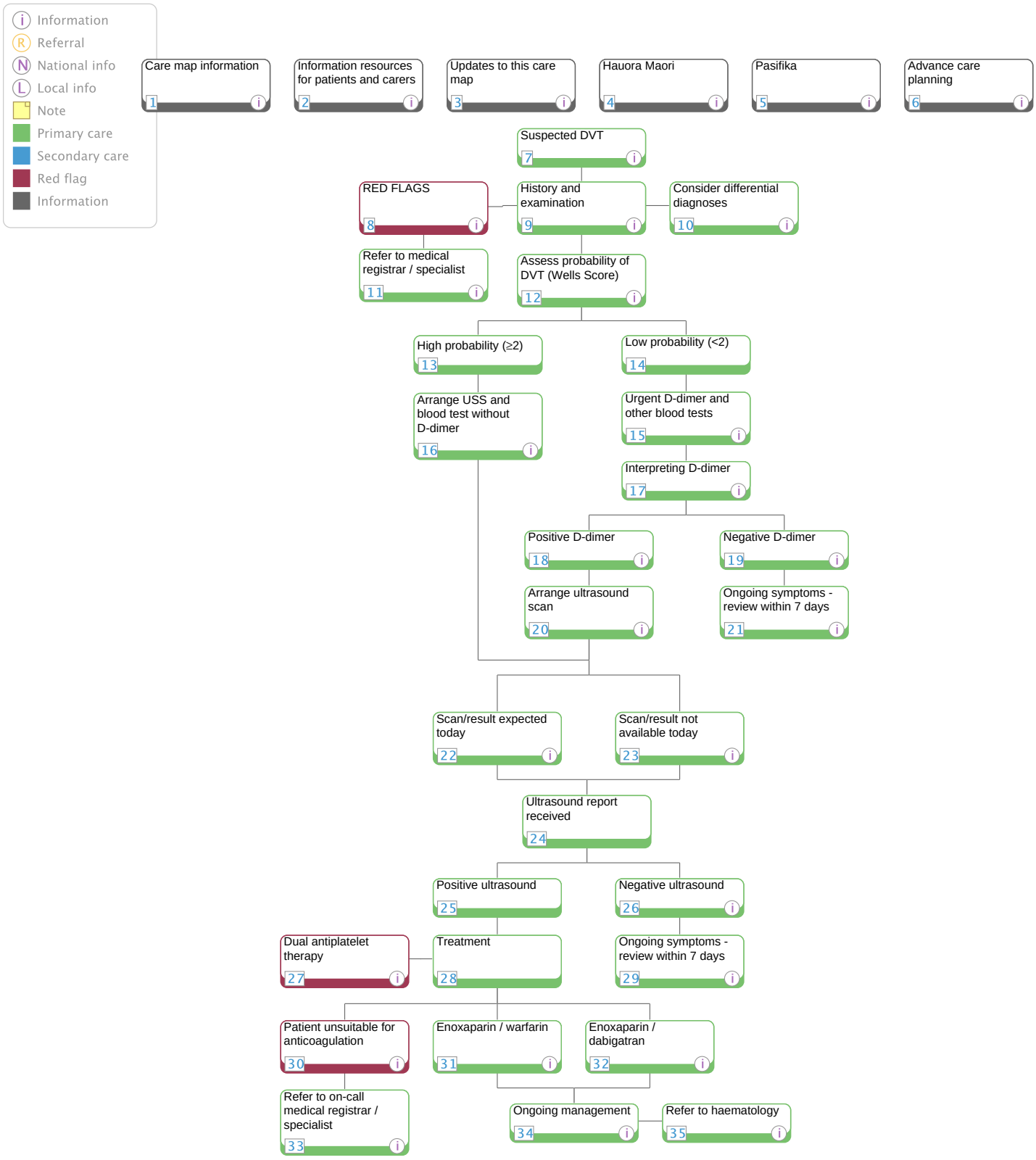

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This care map was published by Hawkes Bay District. A printed version of this document is not controlled so may not be up-to-date with the latest clinical information.

Deep Vein Thrombosis (DVT) - Lower Limb

1 Care map information

Quick info:

This pathway is intended for use in patient with suspected deep vein thrombosis (DVT) in a lower limb residing in the Hawke's Bay region.

This Pathway should be used only for patients in which it will influence the patient management. It is to be used as a guide and doesn't replace clinical judgement.

2 Information resources for patients and carers

Quick info:

DVT Resources:

- Clot Basics

Language translation assistance:

HBDHB Interpreting Service. To make an appointment (charges may apply):

- phone 06 878 8109 ext 5805 or
- email interpreting@hawkesbaydhb.govt.nz

These websites may help with simple words and phrases:

- Babelfish
- Google translate

Language Line - professional interpreters are available, free of charge, for telephone-based sessions (44 languages are supported):

- Phone 0800 656 656
- Monday - Friday 9am - 6pm
- Saturday 9am - 2pm

Bookings are not usually necessary. For longer consultations (for example, a nurse consultation for a newly diagnosed patient) it is best to make a booking at least 24 hours in advance by calling the above number or emailing language.line@dia.govt.nz and providing your contact details and a summary of the service you require (time and date of the meeting, language, approximate length of the appointment, gender of interpreter (if relevant)

3 Updates to this care map

Quick info:

Date of publication: January 2016

Date of review and republication: May 2017

Date of next review: May 2019

This care map has been developed in line with consideration to evidenced based guidelines.

For further information on contributors and references please see the Pathway's Provenance Certificate

4 Hauora Maori

Quick info:

Maori are a diverse people and whilst there is no single Maori identity, it is vital practitioners offer culturally appropriate care when working with Maori whanau. It is important for practitioners to have a baseline understanding of the issues surrounding Maori health. This knowledge can be actualised by (not in any order of priority):

- considering the importance of introductions ('whanaungatanga') - a process that enables the exchange of information to support interaction and meaningful connections between individuals and groups. This means taking a little time to ask where this person is from or to where they have significant connections
- asking Maori people if they would like their whanau or significant others to be involved in assessment and treatment

- asking Maori people about any particular cultural beliefs they or their whanau have that might impact on assessment and treatment of the particular health issues

Maori health services

HBDHB contracts Maori health providers to deliver community based nursing and social support services. Practitioners should discuss, where appropriate, information about relevant Maori health services. A referral to one of these providers may assist Maori people to feel more comfortable about receiving services following discussions.

***Central Hawke's Bay**:*

Central Health
Cnr Herbert & Ruataniwha Streets, Waipukurau
Phone: 06 858 9559 Fax: 06 858 9229
Email: reception@centralhealth.co.nz
Referral Form

***Hastings**:*

Te Taiwhenua o Heretaunga
821 Orchard Road, Hastings 4156
Phone: 06 871 5350 Fax: 06 871 535
Email: taiwhenua.heretaunga@ttoh.iwi.nz
Referral Form

Kahungunu Health Services (Choices)
500 Maraekakaho Road, Hastings
Phone: 06 878 7616
Email: kahungunu@paradise.net.nz
Referral Form

***Napier**:*

Te Kupenga Hauora
5 Sale Street, Napier
Phone: 06 835 1840
Email: info@tkh.org.nz
Referral Form

***Wairoa**:*

Kahungunu Executive (no website)
65 Queen Street, Wairoa 4108
Phone: 06 838 6835 Fax: 06 838 7290
Email: kahu-exec@xtra.co.nz

Secondary care Maori Health Services:

Hawke's Bay DHB - Te Wahanga Hauora Maori Health Services
Phone: 06 878 8109 ext. 5779, 06 878 1654 or 0800 333 671 Email: admin.maorihealth@hawkesbaydhb.govt.nz

Further Information

Practitioners should be versed in the knowledge of:

- historical overview of legislation that impacted on Maori well-being
- Maori models of health, such as Te Whare Tapa Wha and Te Wheke when working with Maori whanau
- national Maori Health Strategies:
  - **Mai Maori Health Strategy 2014-2019 -** Full file or Summary diagram

- **He Korowai Oranga**: Maori Health Strategy - sets the Government's overarching framework to achieving the best health outcomes for Maori
- local Hawke's Bay health sector's strategies and initiatives for improving Maori health and wellbeing
- Medical Council of New Zealand competency standards

Cultural Competency Training

Training is available through the Hawke's Bay DHB to assist you to better understand Maori culture and to better engage with Maori people. Contact the coordinator

Email: education@hbdhb.govt.nz to request details of the next courses.

5 Pasifika

Quick info:

Pacific people value their culture, language, families, education and their health and wellbeing. Many Pacific families have a religious affiliation to a local church group.

The Pacific people are a diverse and dynamic population:

- more than 22 nations represented in New Zealand
- each with their own unique culture, language, history, and health status
- share many similarities which we have shared with you in order to help you work with Pacific people more effectively
- for many families language, cost and access to care are barriers

Pacific ethnic groups in Hawke's Bay include Samoa, Cook Islands, Fiji, Tonga, Niue, Tokelau, Kiribati and Tuvalu. Samoan and Cook Island groups are the largest and make up two thirds of the total Pacific population. There is a growing trend of inter-ethnic relationships and New Zealand born Pacific populations.

Acknowledge The FonaFale Model (Pacific model of health) when working with Pacific people and families.

General guidelines when working with Pacific people and families (information developed by Central PHO, Manawatu):

- Cultural protocols and greetings
- Building relationships with your Pacific people
- Involving family support and religion during assessments and in the hospital
- Home visits

Hawke's Bay-based resources:

- HBDHB interpreting service website **or** phone 06 8788 109 ext.. 5805 (no charge for the hospital; charges may apply for community-based translations) **or** contact coordinator at interpreting@hbdhb.govt.nz
- Pacific Navigation Services Ltd Phone: 027 971 9199
- services to assist Pacific people to access healthcare (SIA)
- Improving the Health of Pacific People in Hawke's Bay - Pacific Health action Plan

Ministry of Health resources:

- Ala Mo'ui Pathways to Pacific Health and wellbeing 2014-2018
- Primary Care for Pacific people: a Pacific and health systems approach
- Health education resources in Pacific languages (links to a web page where you can download resources)

6 Advance care planning

Quick info:

Advance Care Planning:

Advance Care Planning is a voluntary process of discussion and shared planning for future health care. It involves the person who is preparing the plan, and usually involves family/whanau and health care professionals.

Advance Care Plan:

An Advance Care Plan is the outcome of Advance Care Planning. It is formulated by the person and sets out their views about care towards the end of their life. It may also include views about medical care and a wide range of other matters. An Advance Care Plan may include an Advance Directive.

Advance Directive:

An Advance Directive is a statement a person makes about their medical care in the future and becomes effective if a person ceases to be competent to make decisions for themselves. An Advance Directive is legally binding if made in appropriate circumstances.

Competency and Advance Care Planning:

Competent people have the right to make autonomous decisions that as medical professionals we may regard as imprudent, and sometimes such decisions are a reflection of the person's longstanding personality, beliefs or lifestyle. This right is described in the Health and Disability Consumers Rights Acts.

According to ACP - A Guide for the NZ Health Care Workforce - "in the context of ACP, competency relates to an individual's ability to make a decision regarding their own health care (that is, competence at decision-making or decision-capacity). At a minimum, decision making capacity requires the ability to understand and communicate, to reason and deliberate, and the possession of a set of values".

Helpful websites:

- The code of rights
- Advance care planning guide Ministry of Health
- Advance care planning resources

7 Suspected DVT

Quick info:

Deep vein thrombosis (DVT) has a highly variable presentation, and may be asymptomatic.

When present, clinical signs/symptoms of DVT are likely to be acute, and include [1]:

- unilateral leg pain
- swelling
- tenderness
- increased temperature
- pitting oedema
- prominent superficial veins

Be aware that 50% of patients with DVT do not have symptoms.

Patient Handout:

- Clot basics

References:

[1] Scottish Intercollegiate Guidelines Network (SIGN). Prevention and management of venous thromboembolism. Guideline 122. Edinburgh: SIGN; 2010

8 RED FLAGS

Quick info:

Refer immediately if:

- suspected deep vein thrombosis (DVT) in pregnancy
- suspected Pulmonary Embolism (PE)
- renal patient on dialysis
- suspected DVT other than lower limbs

Associated other comorbidities:

- clotting disorder

9 History and examination

Quick info:

Record onset, location, and character of patient's leg pain and swelling.

Discuss and document presence of the following risk factors [2]:

- prior history of deep vein thrombosis (DVT)
- cancer
- age over 60 years
- obesity
- acquired or familial thrombophilia
- surgery
- prolonged travel
- immobility
- pregnancy
- hormone treatment, e.g. oestrogen-containing contraception or hormone replacement therapy
- varicose veins with phlebitis [3]
- dehydration

NB: testing for inherited forms of thrombophilia should not be performed routinely, as it does not influence initial management of DVT [4].

References:

[2] National Institute for Health and Clinical Excellence (NICE). Venous thromboembolic diseases. Clinical guideline CG144. London: NICE; 2012.

[3] National Institute for Health and Clinical Excellence (NICE); Venous thromboembolism: reducing the risk. Clinical guideline CG92. London: NICE; 2010.

[4] Scottish Intercollegiate Guidelines Network (SIGN). Prevention and management of venous thromboembolism. Guideline 122. Edinburgh: SIGN; 2010.

10 Consider differential diagnoses

Quick info:

Possible differential diagnoses for deep vein thrombosis (DVT) include [5]:

- physical trauma, e.g.:
  - calf muscle tear or strain
  - haematoma in the muscle
  - sprain or rupture of a leg tendon
  - fracture
- cardiovascular disorders, e.g.:
  - superficial thrombophlebitis
  - post-thrombotic syndrome
  - venous obstruction
  - congenital vascular abnormalities
  - vasculitis
  - heart failure
- other conditions include:
  - cellulitis
  - ruptured Baker's cyst
  - stasis oedema
  - obstruction of lymph drainage

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- septic arthritis
- cirrhosis
- nephrotic syndrome

- look for undiagnosed malignancy

Reference:
[5] Clinical Knowledge Summaries (CKS). Deep vein thrombosis. Version 1.2. Newcastle upon Tyne: CKS; 2009.

11 Refer to medical registrar / specialist

Quick info:
Contact 06 8734812 (on call medical consultant), Mon-Fri, 9-5, to discuss.
If outside these hours, call the medical registrar through the hospital switchboard.

12 Assess probability of DVT (Wells Score)

Quick info:
If deep vein thrombosis (DVT) is suspected, use the two-level DVT Wells score to estimate the clinical probability of DVT.

Calculate Wells Score

15 Urgent D-dimer and other blood tests

Quick info:
Collect blood and send to laboratory.
Mark as **'Urgent D-Dimer/ DVT Pathway':**

- urgent:
  - D-dimer
  - FBC
- non-urgent:
  - LFTs
  - Creatinine
  - Coag study
  - consider pregnancy test

Please state clearly on the form who is to be contacted with the result (e.g. requester's cell phone details).

16 Arrange USS and blood test without D-dimer

Quick info:
For diagnosis, arrange Ultrasound Scan (USS).
Procedure for arranging ultrasound scan:

- complete Ultrasound Request Form
- arrange urgent USS
- ensure patient takes a copy of the ultrasound request form

To assess suitability for anticoagulation therapy arrange the following bloods:

- FBC
- LFTs
- Creatinine

- Coag study

Consider pregnancy test in female patients.

DO NOT START WARFARIN UNTIL DVT CONFIRMED

Ultrasound Providers:
Ultrasound Scanning can be arranged through:

- Hawkes Bay Radiology ph: 06 873 1166 (Hastings) or 06 835 3306 (Greenmedows); Gisborne 06 8670736
- Onsite Ultrasound ph: 0800 991 119 (Hastings and Napier)
- Unity Specialists and Ultrasound ph: 06 2812797 (Hastings)

17 Interpreting D-dimer

Quick info:

Analyse D-dimer Results:

- **< 500 ng/mL**. This would be considered a negative result with a predictive value for a DVT of < 2%
- ≥ **500 ng/mL** increases the probability of a DVT and will necessitate the use of a scan

18 Positive D-dimer

Quick info:

Arrange ultrasound scan.

A positive D-dimer result means a deep vein thrombosis (DVT) could be present, but a positive result does not confirm the diagnosis of a DVT. The D-dimer should not be used as a diagnostic test as the Positive Predictive Value is only around 30%.

Other causes of a raised D-dimer include:

- infection
- inflammation
- trauma
- post surgery
- haemorrhage

19 Negative D-dimer

Quick info:

A negative result with a low probability Wells score virtually excludes a deep vein thrombosis (DVT).

In several series, the Negative Predictive Value is between 98-100%. Therefore <2% of patients with a negative result will have a DVT or PE.

Patients should be informed that a diagnosis of DVT may still become apparent during 3 months of follow-up.

Consider differential diagnosis.

20 Arrange ultrasound scan

Quick info:

If referring from primary care, complete the CPO referral form via Advance Form or paper form(see CPO Funding information below).

Scans are not routinely available at HBDHB outside normal working hours. First option should be through CPO pathway unless clinically indicated.

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Procedure for arranging ultrasound scan:

- print off and complete Ultrasound Request Form via Medtech
- arrange urgent USS
- ensure patient takes a copy of the ultrasound request form

Please state clearly on the form who is to be contacted with the result (e.g. requester's cell phone details)

DO NOT START WARFARIN UNTIL DVT CONFIRMED

Ultrasound Providers:

Ultrasound Scanning can be arranged through:

- Hawkes Bay Radiology ph: 06 873 1166 (Hastings) or 06 835 3306 (Greenmeadows); Gisborne 06 8670736
- Onsite Ultrasound ph: 0800 991 119 (Hastings and Napier)
- Unity Specialists and Ultrasound ph: 06 2812797 (Hastings)

CPO Funding For DVT Lower Limb:

- initial GP consultation with the patient incurs the usual practice charge
- once CPO initiated services are provided at no cost to the patient. This includes:
  - GP consultation and follow-up
  - ultrasound scan
  - practice nurse consultation
- patient is discharged from CPO once enoxaparin treatment is complete

21 Ongoing symptoms - review within 7 days

Quick info:

Diagnosis of deep vein thrombosis (DVT) is highly unlikely.
Advise patient to re-present if symptoms persist or new symptoms of shortness of breath and chest pain develop.
If symptoms persist, GP to review. Consider repeating D-dimer and arrange ultrasound if result is positive.

22 Scan/result expected today

Quick info:

No enoxaparin to be administered until scan result confirms deep vein thrombosis (DVT) later the same day.
DO NOT START WARFARIN UNTIL DVT CONFIRMED.

23 Scan/result not available today

Quick info:

If ultrasound not available same day:
Check blood test results (taken earlier today).
Check suitability for enoxaparin and ensure no contraindications to enoxaparin:

- START ENOXAPARIN (if appropriate) now and continue until scan result known
- ensure there is a plan in place for the patient to receive an adequate supply of clexane until scan result is known

Enoxaparin dosing:

- weigh patient
- calculate creatinine clearance using the Cockroft-Gault method
- if CrCl is less than 30ml/min, give 1mg/kg total daily dose. If total daily dose exceeds 150mg, use 0.66mg/kg bd (ref to Hulot et al. Clin Pharmacol Ther 2005; 77:542)
- if CrCl is over 30ml/min, give 1.5mg/kg total daily dose

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- maximum syringe size is 150mg, so if total daily dosage is higher than 150mg, then dosage should be recalculated to 1mg/kg bd
- see enoxaparin dosing chart

DO NOT START WARFARIN UNTIL DVT CONFIRMED.
Prescribe enoxaparin and complete special authority form (online via PMS or print and fax).
Contraindications to anti-coagulation therapy include:

- haemophilia or any other known bleeding disorders
- Heparin induced thrombocytopenia
- active bleeding
- platelets <75
- allergy to heparin

IF CONTRAINDICATIONS TO ENOXAPARIN, URGENT REFERAL to Medical Registrar / Specialist on-call.

26 Negative ultrasound

Quick info:
Possible differential diagnoses for deep vein thrombosis (DVT) include [5]:

- physical trauma, e.g:
  - calf muscle tear or strain
  - haematoma in the muscle
  - sprain or rupture of a leg tendon
  - fracture
- cardiovascular disorders, e.g:
  - superficial thrombophlebitis
  - post-thrombotic syndrome
  - venous obstruction
  - congenital vascular abnormalities
  - vasculitis
  - heart failure
- other conditions include:
  - cellulitis
  - ruptured Baker's cyst
  - stasis oedema
  - obstruction of lymph drainage
  - septic arthritis
  - cirrhosis
  - nephrotic syndrome
- look for undiagnosed malignancy

27 Dual antiplatelet therapy

Quick info:
Patients who are on both clopidogrel and aspirin, or ticagrelor and aspirin should be discussed with the on-call medical team prior to treatment.

29 Ongoing symptoms - review within 7 days

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Quick info:

Diagnosis of deep vein thrombosis (DVT) is highly unlikely.

Advise patient to re-present if symptoms persist or new symptoms of shortness of breath and chest pain develop.

If symptoms persist, GP to review. Consider repeating D-dimer and arrange ultrasound if positive.

30 Patient unsuitable for anticoagulation

Quick info:

Refer to on-call AAU specialist (Mon-Fri, 9-5, 06 8734812) if:

- heparin induced thrombocytopenia
- contraindications to anti-coagulation therapy include:
  - haemophilia or any other known bleeding disorders
  - active bleeding
  - platelets <75
- pregnancy

If outside these hours, call the medical registrar through the hospital switchboard on 06 8788109.

31 Enoxaparin / warfarin

Quick info:

Enoxaparin / warfarin:

- weigh patient
- calculate creatinine clearance using the Cockroft-Gault method
- if CrCl is over 30ml/min, give 1.5mg/kg total daily dose
- maximum syringe size is 150mg, so if total daily dosage is higher than 150mg, then dosage should be recalculated to 1mg/kg bd
- if CrCl is less than 30ml/min, give 1mg/kg total daily dose.
- see enoxaparin dosing chart
- for renal impairment patients, be aware of Low Molecular Weight Heparin alert
- Clexane handout

Warfarin:

Start warfarin once DVT has been confirmed on scan.

See Warfarin Nomogram

It is recommended to use only 1mg tablets for elderly/cognitively impaired patients.

Continue enoxaparin daily until INR within theraputic range (usually 2-3).

32 Enoxaparin / dabigatran

Quick info:

Enoxaparin:

- weigh patient
- calculate creatinine clearance using the Cockroft-Gault method
- If CrCl is over 30ml/min, give 1.5mg/kg total daily dose
- Maximum syringe size is 150mg, so if total daily dosage is higher than 150mg, then dosage should be recalculated to 1mg/kg bd
- If CrCl is less than 30ml/min, give 1mg/kg total daily dose
- see enoxaparin dosing chart

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- For renal impairment patients, be aware of Low Molecular Weight Heparin alert
- Clexane handout

Dabigatran:

Dabigatran is now licenced for use with DVTs.

Dabigatran treatment must commence post five days of enoxaparin treatment.

Dose = 150mg bd.

Dabigatran should not be used in women who are pregnant or breast-feeding, patients with a CrCl <30ml/min, or patients with active cancer. If the CrCl is < 30mL/min, patient should be treated with Warfarin.

The 110mg dose is not indicated for the treatment of DVT.

Data sheet

33 Refer to on-call medical registrar / specialist

Quick info:

Contact 06 8734812 or 027 7654459 (on call medical consultant), Mon-Fri, 9-5, to discuss.

If outside these hours, call the medical registrar through the hospital switchboard.

34 Ongoing management

Quick info:

Ongoing management:

- for trauma or surgical patients presenting with a DVT, three months treatment should be sufficient, with GP review at the end of this period to determine discontinuation
- for below knee DVTs, treat for three months and review before discontinuation

35 Refer to haematology

Quick info:

Refer to Haematologist for advice/assessment if:

- above knee DVT
- second event
- large, spontaneous clots

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Deep Vein Thrombosis (DVT) Provenance Certificate
Review and Republish

Overview

This document describes the provenance of Hawke's Bay District Health Board's **Deep Vein Thrombosis (DVT)** Pathway. It was developed September-October 2015 and first published in January 2016. A review of the Pathway was completed in April 2017. The next review is due April 2019.

The Collaborative Clinical Pathways programme is one initiative stemming from the *Transform and Sustain* agenda. The main aims of CCP are to:

- → Identify opportunities to improve how health and disability care is planned and delivered within the district to improve patient access to a wider range of health services that are both closer to home and reduce avoidable hospital admissions.
- → Provide health professionals throughout the Hawke's Bay district with best practice, evidence-based clinical pathways that are available at the point of care.

Outcomes we expect to achieve include faster access to definitive care, improved health equity and outcomes, better value from publically-funded resources, and better patient experience through clear expectations, improved access and greater health literacy. These outcomes are clearly aligned to the NZ healthcare *Triple Aim* and *Better, Sooner, More Convenient* policy directions.

Editorial methodology

This Pathway was based on high-quality information and known Best Practice guidelines from New Zealand and around the world including Map of Medicine editorial methodology. It was developed by individuals with front-line clinical experience (see Contributors section of this document) and has undergone consultation to gain feedback and input from the wider clinical community.

Map of Medicine Pathways are constantly updated in response to new evidence. Continuous evidence searching means that Pathways can be updated rapidly in response to any change in the information landscape. Indexed and grey literature is monitored for new evidence, and feedback is collected from users year-round. The information is triaged so that important changes to the information landscape are incorporated into the Pathways through the quarterly publication cycle.

An update to this Pathway is scheduled for 12 months after first publication. However, feedback is welcomed at any time, with important updates added at the earliest opportunity within the Map of Medicine publishing schedule (the third Friday of each month).

References

This Pathway has been developed according to the Map of Medicine editorial methodology. Its content is based on high-quality guidelines and practice-based knowledge provided by contributors with front-line clinical experience. Feedback on this Pathway was received from stakeholders during a consultation process.

1	Scottish Intercollegiate Guidelines Network (SIGN). *Prevention and management of venous thromboembolism. Guideline 122*. Edinburgh: SIGN; 2010
2	National Institute for Health and Clinical Excellence (NICE). *Venous thromboembolic diseases. Clinical guideline CG144.* London: NICE; 2012
3	National Institute for Health and Clinical Excellence (NICE); *Venous thromboembolism: reducing the risk. Clinical guideline CG92*. London: NICE; 2010
4	Clinical Knowledge Summaries (CKS). *Deep vein thrombosis. Version 1.2.* Newcastle upon Tyne: CKS; 2009.

Contributors

The following individuals completed the latest review of this care map:

- Alan Wright, General Practitioner, Hastings Health Centre (Primary Care Lead)
- Sharon Payne, Nurse Practitioner, HBDHB (Secondary Care Lead)

The following individuals contributed to this care map:

- Alan Wright, General Practitioner, Hastings Health Centre (Primary Care Lead)
- Sharon Payne, Nurse Practitioner, HBDHB (Secondary Care Lead)
- Sonya Harwood, Coordinated Primary Options Facilitator, Health Hawke's Bay
- Sara Salman, Pharmacist, HBDHB

Map editing and facilitation:

- Leigh White, Strategic Services, HBDHB (Facilitator)
- Louise Pattison, Health Hawke's Bay (Map of Medicine Editor)

Disclaimers