



CLINICAL PRACTICE GUIDELINE: MOBILITY WITH A DEEP VEIN THROMBOSIS (DVT)

AUTHORIZATION:
Integrated Professional
Practice Council

Date Released:
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Page 1 of 10

1.0 FOCUS: Mobilization with a Deep Vein Thrombosis (DVT).

The purpose of this clinical practice guideline (CPG) is to ensure that new knowledge is integrated across Fraser Health and to standardize evidence based mobilization strategies in patients with a DVT.

2.0 BACKGROUND

DVT occurs in a diverse patient population with risk factors including, but not limited to, immobility, surgery, trauma, acute medical illness and malignancy. In the past, there have been recommendations of strict bed rest for a variable time after acute DVT and after the start of anticoagulation. More recently, research has shown that there is no difference between ambulation and bed rest on either the development of a (Pulmonary Embolism) PE ^(2, 8, and 9) or on the progression or development of a new DVT ⁽⁵⁾. Furthermore, the complications and cost of prescribed bed rest are well documented and early ambulation in preference to initial bed rest has been strongly recommended ⁽⁹⁾.

3.0 DEFINITIONS

Activity as Tolerated (AAT): *An order given by the physician indicating that the person can be active on the ward as tolerated by the person.*

Anticoagulation Therapy for Prophylaxis: *The therapeutic use of anticoagulants to discourage/prevent the formation of blood clots (eg. Low dose subcutaneous heparin or low molecular weight heparin).*

Anticoagulation Therapy for Treatment: *The therapeutic use of anticoagulants to prevent the extension/progression of an existing clot or thrombus (eg. Treatment doses of intravenous heparin, subcutaneous low molecular weight heparin and warfarin). **Please see the anticoagulation appendix for more details.***

Deep Vein Thrombosis (DVT): *A blood clot in a deep vein causing partial or complete blockage of blood flow.*

Informed Consent: *The process for obtaining voluntary agreement to health care based on full knowledge of the proposed health care and on the person's capability to make an informed decision. The health care provider's responsibility is to make every reasonable effort to give relevant information in a way that is best understood by the person and then obtain informed consent.*



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Page 2 of 10

Mobilization: *In this context it refers to the person moving around ie transferring to a chair, ambulating around the ward.*

Pulmonary Embolism (PE): *A blood clot in a pulmonary artery or one of its branches.*

Interdisciplinary team: *A team of health care providers that represent more than one profession.*

4.0 EXPECTED OUTCOMES

- 1) Activity will be encouraged as tolerated once anticoagulation therapy for treatment has been started.
- 2) An individualized plan of care will be developed by the interdisciplinary team as required.

5.0 ASSESSMENT

Once a person with a DVT or suspected DVT is referred to physiotherapy:

- 1) Check the chart to see if the person has been started on anticoagulation therapy for treatment.
 - *If it is not clear whether the patient is on anticoagulation therapy for prophylaxis or treatment, then check with the Pharmacist or Physician.*
 - *If the person has not been started on anticoagulation therapy for treatment then all mobility orders need to be checked with the physician. This should be done immediately as mobilization is generally more beneficial than detrimental.*
 - *Rarely (eg. renal failure/ bariatric patients), a person may be put on IV heparin instead of Low Molecular Weight Heparin (LMWH). In this instance check mobility orders with the physician. If you are not sure what anticoagulation the person is on, check with the Physician or Pharmacist (See the anticoagulation appendix for more details).*
 - *Rarely (eg. Cancer Patients), a persons DVT may be progressing despite being on anticoagulation therapy for treatment, in this case, check mobility orders with the physician.*
- 2) Check the chart to make sure there are no activity restrictions.

If a patient is already on anticoagulation therapy for treatment (eg post-op patient) and a DVT is suspected or confirmed, there is no need to stop mobilization unless there are specific physician orders to do so.



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April 12, 2013

Page 3 of 10

6.0 INTERVENTIONS

- 1) Interventions where a patient has contraindications to anticoagulation therapy for treatment:
 - a) This guideline should not be used and all mobility issues/orders should go through the physician.
- 2) Interventions where there is a suspected or diagnosed P.E.
 - a) This guideline should not be used and all mobility issues/orders should go through the physician.
- 3) Interventions where the patient has started anticoagulation therapy for treatment:
 - a) Assess mobility (Persons should be monitored for significant/substantial/major change in symptoms such as pain, swelling, color, sudden shortness of breath). Any changes should be reported to the physician for further investigation.
 - b) Once mobility has been assessed, the inter-disciplinary team should continue with mobility as indicated and the patient should be encouraged to be as active as possible.*

ⓔ) * It is recommended that patients with DVT also wear compression stockings (30-40 mm Hg) in order to decrease the incidence of post-thrombotic syndrome.

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7.0 DOCUMENTATION

Ongoing documentation in the health record is required as per the College of Physical Therapists of British Columbia (CPTBC) Guidelines.

8.0 EDUCATION

Engage in dialogue with the person/decision-maker during the process of all care and treatment. If mobility is clinically indicated, provide information and advice for informed consent including:

- 1) Benefits and potential risk of mobilization with DVT

- 2) Symptoms to report to the interdisciplinary team such as shortness of breath, chest pain, haemoptysis or changes in pain etc.

9.0 EVALUATION

Evaluation of the interventions will be based on the symptoms and clinical re-assessment of the person by all health care practitioners involved with their care.

10.0 MONITORING

- 1) Reviews of the literature should take place on a yearly basis to ensure the CPG is updated.
- 2) To assess the impact of the CPG implementation, multi-site reviews of the practice of physiotherapists in regards to mobilizing patients with a DVT should be done before and after implementation.

11.0 REFERENCES

1. Anderson, et al. (2009). Ambulation after deep vein thrombosis: A systematic review. *Physiotherapy Canada*, 61(3): 133-140.
2. Aschwanden M, et al. (2001). Acute deep vein thrombosis: early mobilization does not increase the frequency of pulmonary embolism. *Thromb Haemostasis*, 85:42-6.
3. Blattler W & Partsch H (2003). Leg compression and ambulation is better than bed rest for the treatment of acute deep venous thrombosis. *Int Angiol*, (3): 393-400.
4. Henke PK, et al. (2007). Proximate versus nonproximate risk factor associated primary deep venous thrombosis: Clinical spectrum and outcomes. *Journal of Vasc Surgery*, 45, 5, 998-1007.
5. Junger M, et al. (2006). Mobilization versus immobilization in the treatment of acute proximal deep venous thrombosis: a prospective, randomised, open, multicentre trial. *Curr Med Res Opin*, 22 (3): 593-602.
6. Manganaro A, et al, (2008). A retrospective analysis of hospitalized patients with documented deep-venous thrombosis and their risk of pulmonary embolism. *Angiology*, 59, 5, 599-603.
7. Schellong SM, et al. (1999). Bed rest in deep vein thrombosis and the incidence of scintigraphic pulmonary embolism. *Thromb Haemostasis*, 82:127-9.



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Date Released:
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Date Revised:
April 12, 2013

Page 5 of 10

8. Trujillo-Santos J, et al. (2005). Bed rest or ambulation in the initial treatment of patients with acute deep vein thrombosis or pulmonary embolism. *Am Col Chest Phys*, 127, 1630-1636.
9. Gay V, et al. (2009) Influence of bedrest or ambulation in the clinical treatment of acute deep vein thrombosis on patient outcomes: a review and synthesis of the literature. *MEDSURG Nursing*, 18 (5): 293-9
10. Kearon C, et al. (2008). Antithrombotic therapy for venous thromboembolic disease. *Chest (Antithrombotic and thrombolytic therapy 8th ed: ACCP Guidelines Supplement point 1.14.1.)*, 133, 454s-545s.
11. [Tosone NC et al. \(2012\) Development of guideline for treatment of deep and superficial venous thrombosis in the emergency department. *Advanced Emergency Nursing Journal*, 34\(2\): 133-146.](#)
11. (Dr. William Geerts, personal communication, August 6, 2009)
12. (Dr. Harry Hong, personal communication, December 15th 2009)
13. (Dr. Joe Giustino, personal communication, December 23rd, 24th, 2009)
14. (Dr. Sean Brown, personal communication, December 10th 2009)
15. (Sue Corrigan, personal communication, December 11th 2009)
16. (Dr. Edward Lawson, personal communication, December 12th 2009)
17. (Michael Junger, personal communication, January 21st 2010)



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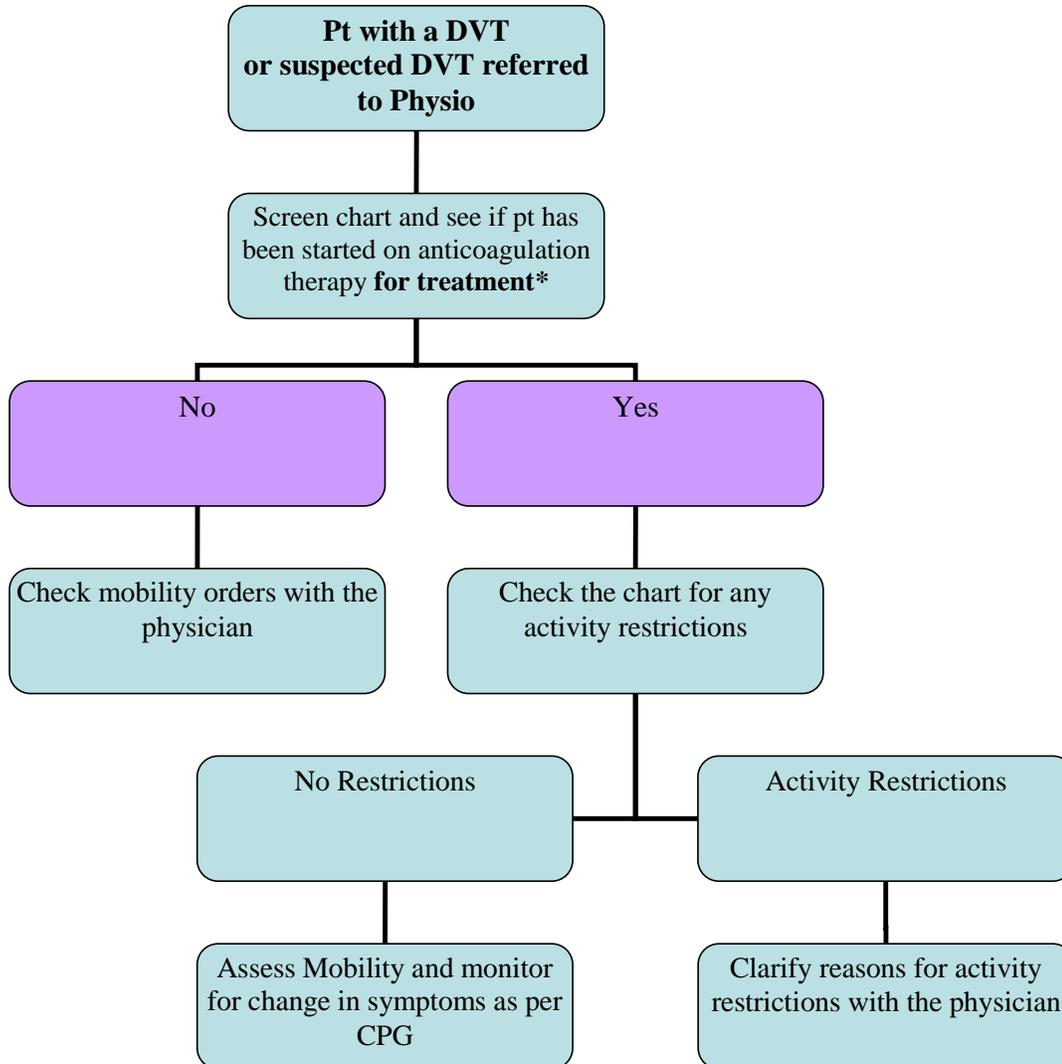
Date Released:
June 3, 2010
Date Revised:
April 12, 2013

Page 6 of 10

12.0 APPENDICES

1. Mobilization with DVT: Clinician Algorithm
2. Anticoagulation Appendix
3. Frequently Asked Questions
4. Summary of main articles (separate document)

Mobilization with DVT: Clinician Algorithm



*if you are not sure if the patient is on anticoagulation therapy for prophylaxis or treatment you should check with the pharmacist or physician and refer to the anticoagulation appendix for more details



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AUTHORIZATION:
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Date Released:
June 3, 2010
Date Revised:
April 12, 2013

Page 8 of 10

APPENDIX ON ANTICOAGULATION

What is Anticoagulation?

Anticoagulation involves the use of a drug to interfere with the clotting mechanism of the blood to a limited degree to prevent or treat thrombosis and embolism. It is used for treatment and prevention of DVT and PE, prevention of stroke in patients with atrial fibrillation, artificial heart valves, cardiac thrombus, ischemic heart disease, and during procedures like cardiac catheterization

What is an Anticoagulant?

A drug that reduces clotting of the blood. Anticoagulants are used to prevent clot formation or to prevent a clot that has formed from enlarging.

Although these drugs are sometimes called blood thinners, they don't actually make the blood any thinner than normal but instead they inhibit the formation of clotting factors to a controlled degree so the blood does not clot as easily. These drugs do not dissolve clots that have already formed but they do stop an existing clot from getting worse.

What are the Common Types of Anticoagulants:

Coumarins (Vitamin K antagonists, eg. Warfarin/Coumadin®)

Oral anticoagulants that act by antagonizing the effects of Vitamin K on the production of several of the clotting factors by the liver. It takes at least 72 hours (and usually 5-7 days) for the anticoagulation effect to develop fully. Therefore, in cases where immediate effect is required, treatment doses of LMWH or IV heparin should be given at the same time until full anticoagulation with warfarin has been achieved. Warfarin increases the risk of bleeding, especially in the elderly.

Unfractionated Heparin (UFC)

A biological substance (usually made from pig intestines) that activates antithrombin, which inactivates several of the clotting factors in the blood. Heparin can be injected intravenously or subcutaneously (it degrades when taken by mouth) and has a half life of 1-2 hours.

Low molecular weight heparin (LMWH) (enoxaparin/Lovenox®, dalteparin/Fragmin®, tinzaparin/Innohep®, nadroparin/Fraxiparine®, rivaroxaban/Xarelto®)

Derived from UFH yielding smaller sized molecules. Does not require monitoring of the APTT coagulation parameter as they have more predictable plasma levels and fewer side effects (if given on a weight-adjusted basis). LMWH primarily targets anti-factor Xa and has a half life of 4-6 hours. Xarelto® is a newer oral anticoagulant being used in some areas for TJR patients as



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Date Released:
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Date Revised:
April 12, 2013

Page 9 of 10

a prophylactic treatment. Since the dose is fixed (once a day 10 mg tablet) it is only used as a prophylactic treatment and the patient would be changed to another LMWH for treatment anticoagulation.

Direct thrombin inhibitors (argatroban, lepirudin, bivalirudin and dabigatran)

A class of anticoagulants that inhibits the key enzyme thrombin. Some are in clinical use, while others are undergoing clinical development and are expected to replace heparin (and derivatives) and warfarin in various clinical scenarios. The intravenous direct thrombin inhibitors (argatroban, bivalirudin and lepirudin) are sometimes used in coronary artery procedures or as anticoagulation in heparin-induced thrombocytopenia (HIT). The oral direct thrombin inhibitor (dabigatran) is currently approved for use as thromboprophylaxis in patients with hip or knee arthroplasty.

What is the difference between anticoagulation therapy for prophylaxis and anticoagulation therapy for treatment?

Therapy for prophylaxis reduces the formation of blood clots while therapy for treatment prevents the extension/progression of an existing clot. Examples of therapy for prophylaxis are low dose heparin and LMWH. Examples of therapy for treatment are IV heparin, full dose LMWH and warfarin.

For LMWH, the therapeutic dose is greater than the prophylaxis dose (about 3 times greater). For example, LMWH in a fixed low dose (such as dalteparin/Fragmin®, 5000 units once a day) is an effective and safe form of prophylaxis in medical and surgical patients at risk of VTE. If these patients have a suspected DVT or PE, the dalteparin dose will be increased to a treatment dose (200 units/kg/day) and warfarin is generally added. For some patients (such as those with active cancer or pregnant women), LMWH is continued in treatment dose long term rather than converting over to warfarin.

In patients undergoing general surgery and in high-risk medical patients, low doses of LMWH administered subcutaneously once daily are at least as effective and safe as low-dose UFH administered subcutaneously 2 or 3 times daily. LMWH has become the anticoagulant of choice for the prevention of venous thrombosis following major orthopedic surgery and in anticoagulant-eligible patients after major trauma. The risk of bleeding with LMWH is small and comparable to that with low-dose heparin.

Additional Terminology

APTT (Activated Partial Thromboplastin Time)

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Page 10 of 10

A performance indicator measuring the efficacy of both the "intrinsic" and the common coagulation pathways. Apart from detecting abnormalities in blood clotting, it is also used to monitor the treatment effects with regular heparin. The normal range is 25-40 sec and the therapeutic range is 75-99 seconds. The blood sample for APTT should generally be taken 4-6 hours after starting a heparin infusion or changing the dosing regimen.

INR (International Normalized Ratio)

A lab test that is used to monitor the treatment effects for warfarin and to help detect some of the abnormalities in blood clotting. It involves a mathematical correction of the prothrombin time for differences in the sensitivity of the thromboplastin reagents used in various labs. The target INR for DVT, PE and AF is 2.0-3.0 and for an artificial cardiac valve is 2.5-3.5. The risk of bleeding/bruising increases with an INR > 3.5.

FREQUENTLY ASKED QUESTIONS

Why do we need this guideline?

- It has been a long-held belief within the field of physiotherapy that it was unsafe to mobilize a patient with a DVT for risk of them developing a pulmonary embolus.
- A review of the current literature does not support this belief. In fact, the evidence shows there is no increased incidence of DVT progression or PE development in patients with an existing DVT who are mobilized as opposed to having them on bedrest.
- The literature suggests that the benefit exceeds any possible risk to mobilizing a patient with a DVT.

When a person with a DVT is given anticoagulation therapy, what exactly does the anticoagulation do? Does it 'dissolve' the clot?

- The purpose of the anticoagulation is to prevent further extension of the existing clot and to prevent new clots from forming.
- The anticoagulation therapy does **NOT** dissolve the existing clot.
- It may take weeks to months for the clot to be reabsorbed completely. In fact, many patients with a DVT are monitored in the community by pharmacists over a period of months.

How long does a patient with a DVT need to be on anticoagulation for it to be safe to mobilize them?

- Patients receiving **Low Molecular Weight Heparin** (enoxaparin/Lovenox®, dalteparin/Fragmin®, tinzaparin/Innohep®, nadroparin/Fraxiparine®) can be mobilized **right away**.
- Patients receiving **IV heparin** may to be anticoagulated for a minimum of 24 hours and the PTT needs to be 70-99 to be in therapeutic range.
- Patients receiving **warfarin** can take anywhere from 5-7 days for the anticoagulation effect to develop fully. Therefore, in cases where immediate effect is required, full-dose LMWH or heparin are usually given at the same time (for "bridging therapy" until full anticoagulation with warfarin has been achieved).
- Patients on anticoagulation for prophylaxis, who develop a DVT, need to be changed to some kind of anticoagulation for treatment before it is safe to mobilize them. See the anticoagulation guidelines and the CPG for details.