

**Shared Care Protocol for the  
Prescription and Supply of Low Molecular  
Weight Heparins**

**Version 5.2**

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## VERSION CONTROL SCHEDULE

### SCP for the prescription and supply of LMWH Version 5.2

Version Number	Issue Date	Revision Comment
2.0	May 2012	Original issue. Approved by Joint Medicines Management Committee (April 2012)
3.0	April 2013	Amended guideline for pre-op bridging therapy to include moderate and high VTE risk
3.1	August 2013	Unlicensed indication status removed from DVT / PE in Oncology patients with solid tumours as this is now a licensed indication
4.0	August 2015	Amended GMMMG and local traffic light status for use in pregnancy and for pre-operative bridging therapy.
5.0	March 2016	Amended local traffic light status for use in oncology patients on VTE inducing therapy; for treatment of DVT or PE in oncology patients undergoing cancer therapy or with metastatic disease; for treatment of DVT or PE in patients unable to stabilise on Warfarin or allergic or with contra-indication to Warfarin. Added new indication – thromboprophylaxis for high risk patients in lower limb plaster casts.
5.1	April 2016	Amended guidelines for VTE prophylaxis in pregnancy to reflect RCOG guidelines (Green-top Guideline 37a, April 2015)
5.2	September 2016	Amendment made to local traffic light status for treatment of DVT or PE in pregnancy ie full duration of post-natal treatment to be supplied by the Hospital.

## **Shared Care Protocol for the Prescription and Supply of Low Molecular Weight Heparins**

**N.B This is a locally developed shared care protocol which is generally consistent with the traffic light status (RAG) as published by Greater Manchester Medicines Management Group (GMMMG) but with agreed variations.**

### **Background**

Low Molecular Weight Heparins (LMWH) are used for the treatment and prevention of venous thromboembolism (VTE). Their availability has allowed the treatment of VTE on an outpatient basis, and the recent NICE guidelines concerning the prevention of VTE have led to an increase in the use of prophylactic LMWH. LMWHs are now widely used for a number of licensed and unlicensed indications, which includes perioperative 'bridging' anticoagulation in patients at moderate to high risk of thromboembolism.

**The LMWH of choice across Tameside and Glossop is Dalteparin (Fragmin™).**

### **Purpose and scope of the shared care protocol**

This shared care document has been developed to facilitate the safe and appropriate prescribing and supply of LMWH in primary and secondary care. It is aimed at all healthcare professionals involved in the prescribing, dispensing and monitoring of LMWH for patients in hospital and primary care. It aims to cover all indications, licensed and unlicensed.

### **Referral Criteria**

- GPs will not generally be asked to initiate therapy.
- Prescribing responsibility will only be transferred when it is agreed by the consultant and the patient's GP that the patient's condition is stable or predictable.
- Patients will typically be prescribed the first 14 days supply by secondary care (however see table for exceptions).

### **Exclusions from the shared care protocol**

Patients with the following conditions are excluded from this protocol:

- History of Heparin Induced Thrombocytopenia
- Significant hepatic impairment
- Thrombocytopenia with platelet count less than 100
- Severe hypertension
- Recent cerebral haemorrhage
- Recent neurosurgery or eye surgery
- Active gastric or duodenal ulceration or oesophageal varices
- Haemophilia and other inherited bleeding disorders
- Hypersensitivity to heparin, low molecular weight heparins or any other constituent
- Acute bacterial endocarditis
- Children under 16

### **Administration of Dalteparin**

In most circumstances the patient or a carer will be trained to administer the subcutaneous injection of Dalteparin. If this is not possible a referral will be made to the district nursing team to administer.

### **Monitoring Requirements**

- Baseline platelet count, prothrombin time, APTT, U&E, LFT, accurate body weight for patients requiring treatment dose Dalteparin (to be carried out by hospital).
- Repeat platelet count between days 5-7 and 10-14 to detect heparin-induced thrombocytopenia (not required in pregnant women on prophylactic treatment)
- At least monthly potassium levels in patients at high risk of hyperkalaemia (GP to arrange).
- Anti-Xa monitoring where indicated

### **Adverse Effects**

Most common side effects from LMWH are related to bleeding and the increased tendency to bleed. Localised pain, bruising and irritation at the injection site are common.

LMWH may cause hypoaldosteronism resulting in hyperkalaemia, but this is unlikely in the absence of an additional cause of hyperkalaemia.

Heparin-Induced thrombocytopenia can occur with LMWH. It usually presents between 5 and 14 days after starting therapy. This should be considered if platelet count falls below the normal range, or to less than 50% of baseline platelet count.

Other rare adverse effects include systemic allergic reactions including anaphylactic reactions, skin necrosis at the injection site, increase in liver enzymes, and osteoporosis with prolonged therapy.

### **Clinically relevant drug interactions**

Due to the increased risk of bleeding, avoid if possible drugs which affect haemostasis e.g. NSAIDs, Clopidogrel and Aspirin. If concomitant use cannot be avoided, use with caution.

## **Dalteparin for Treatment of DVT / PE**

Full anticoagulation of patients with a diagnosis (or working diagnosis) of DVT or PE using Dalteparin syringes containing 7,500iu/0.3ml, 10,000iu/0.4ml, 12,500iu/0.5ml, 15,000iu/0.6ml or 18,000iu/0.72ml (equivalent to 25,000iu/ml).

The categories of patients suitable for primary care continuation of prescription of Dalteparin for treatment of DVT / PE are as follows:

- Oncology patients with solid tumours. May also be used in place of Warfarin for patients undergoing chemotherapy that interacts with Warfarin.
- Patients in whom it has not been possible to stabilise on oral anticoagulant therapy (unlicensed indication).
- Patients with an allergy or other contra-indication to Warfarin.

## Dose and Route of Administration

Indication	Dose and Route	Duration	GMMMG Traffic Light	Local Traffic light
Initial treatment of active or suspected thromboembolic disease until definitive diagnosis is made and / or until anticoagulated within range	Under 46kg: 7500 iu s/c once daily 46-56kg: 10000 iu s/c once daily 57-68kg: 12500 iu s/c once daily 69-82kg: 15000 iu s/c once daily ≥83kg: 18000 iu s/c once daily	Short term, usually only a few days but occasionally longer depending on waiting time for scans	Red (Secondary care prescribing only)	Red (Secondary care prescribing only)
DVT or PE in oncology patients undergoing cancer therapy or with metastatic disease	Under 46kg: 7500 iu s/c once daily 46-56kg: 10000 iu s/c once daily 57-68kg: 12500 iu s/c once daily 69-82kg: 15000 iu s/c once daily ≥83kg: 18000 iu s/c once daily	Up to six months treatment suitable for shared care	Green (following specialist initiation)	Green (following specialist initiation)
DVT or PE in patient unable to stabilise on Warfarin or allergic or with contra-indication to Warfarin	Under 46kg: 7500 iu s/c once daily 46-56kg: 10000 iu s/c once daily 57-68kg: 12500 iu s/c once daily 69-82kg: 15000 iu s/c once daily ≥83kg: 18000 iu s/c once daily	As per intended duration of Warfarin. Usually: 3 to 6 months for DVT 6 months for PE OR as directed by initiating consultant	Green (following specialist initiation)	Green (following specialist initiation)
Treatment of DVT or PE in pregnancy	<b>Based on early pregnancy weight and does not need to change:</b> <ul style="list-style-type: none"> <li>Antenatal: 100 iu/kg s/c <b>twice daily</b> up to a maximum of 10000 iu <b>twice daily</b></li> <li>Postnatal: 200 iu/kg s/c <b>once daily</b> up to a maximum of 18000 iu <b>once daily (FULL POST-NATAL COURSE TO BE SUPPLIED BY HOSPITAL)</b></li> </ul>	Throughout pregnancy and for at least 6 weeks post-partum.	Red (Secondary care prescribing only)	Amber
Pre-operatively as replacement for Warfarin in patients at high risk of VTE (see Appendix 1)	Under 46kg: 7500 iu s/c once daily 46-56kg: 10000 iu s/c once daily 57-68kg: 12500 iu s/c once daily 69-82kg: 15000 iu s/c once daily ≥83kg: 18000 iu s/c once daily	Up to 5 days as directed by surgeon or anaesthetist	Red (Secondary care prescribing only)	Red (Secondary care prescribing only)

### **Initial prescription and monitoring**

The decision to prescribe Dalteparin will be made by the patient's clinical team at THFT. Baseline investigations will be undertaken and, if satisfactory, the patient will be commenced on treatment. At discharge, the patient will be given a 14 day supply of the drug. The patient's GP will be informed of the proposed management plan and monitoring arrangements.

### **Continuity of Supply**

A letter will be sent to the patient's GP by the THFT clinical team initiating Dalteparin treatment. The following information will be provided:

- Name of responsible consultant and contact details
- Indication for Dalteparin, patient's weight, dose prescribed and proposed duration of treatment
- Date treatment started
- Other relevant clinical information, including concurrent medication
- Baseline creatinine, platelet and potassium results
- Any specific instructions for the practice (including a copy of the shared care protocol where appropriate).

Treatment should only be discontinued by the GP after discussion with the responsible hospital clinician, other than in exceptional circumstances.

### **Primary care monitoring**

Once the patient has been accepted by their GP the responsibility for prescribing the Dalteparin and further monitoring of renal function and for hyperkalaemia (if appropriate), will pass to the GP.

Since the dose of Dalteparin for treatment of VTE is calculated based on weight, patients should be accurately re-weighed and dosage adjusted for treatment of VTE according to clinical judgement e.g. in the event of rapid weight loss. This does not apply to the treatment of DVT or PE in pregnancy, where the dose is based on early pregnancy weight and does not need to change.

## **Dalteparin for Prophylaxis of Venous Thromboembolism**

The patients who may be prescribed prophylactic Dalteparin by secondary care are:

- General surgical patients requiring extended thromboprophylaxis according to NICE and local guidelines.
- Orthopaedic patients requiring extended thromboprophylaxis:
  - 14 days post knee replacement
  - 35 days post hip replacement
- Oncology patients undergoing therapy with VTE inducing therapy such as Thalidomide or Lenalidomide.
- Pregnant women requiring thromboprophylaxis.
- Surgical patients as pre-operative replacement for Warfarin in patients at moderate risk of thromboembolism. Can be given for up to 5 days until the day of surgery, as instructed by the surgeon or anaesthetist.

- Thromboprophylaxis for high risk patients in lower limb plaster casts.

### Dose and Route of Administration

Indication	Dose and Route	Duration	GMMMG Traffic Light	Local Traffic light
Hip replacement postoperatively	5000 international units subcutaneously once daily	35 days in total after the operation	Red (Secondary care prescribing only)	Red (Secondary care prescribing only)
Knee replacement postoperatively	5000 international units subcutaneously once daily	14 days in total after the operation	Red (Secondary care prescribing only)	Red (Secondary care prescribing only)
General surgical patients postoperatively	5000 international units subcutaneously once daily	As directed by the surgeon, up to a maximum of 28 days after the operation.	Red (Secondary care prescribing only)	Red (Secondary care prescribing only)
Pre-operatively as replacement for Warfarin in patients at moderate risk of VTE (see Appendix 1)	5000 international units subcutaneously once daily	Up to 5 days as directed by surgeon or anaesthetist	Red (Secondary care prescribing only)	Red (Secondary care prescribing only)
Oncology patients on VTE inducing therapy	5000 international units subcutaneously once daily	As long as receiving VTE inducing therapy	Red (Secondary care prescribing only)	Red (Secondary care prescribing only)
Pregnant women requiring thromboprophylaxis <b>without</b> previous history of VTE	<b>Based on early pregnancy weight and does not need to change:</b> Under 50kg: 2500iu s/c once daily 50-90kg: 5000iu s/c once daily 91-130kg: 7500iu s/c once daily 131-170kg: 10000iu s/c once daily Over 170kg: 75iu/kg s/c once daily	<i>Depends on exact indication, as advised by obstetrician</i>	Red (Secondary care prescribing only)	Amber
Pregnant women with single previous VTE	<b>Based on early pregnancy weight and does not need to change:</b> Under 50kg: 2500iu s/c once daily 50-90kg: 5000iu s/c once daily 91-130kg: 7500iu s/c once daily 131-170kg: 10000iu s/c once	<i>Depends on exact indication, as advised by obstetrician</i>	Red (Secondary care prescribing only)	Amber

	daily Over 170kg: 75iu/kg s/c once daily			
Pregnant women with VTE associated with either antithrombin deficiency or APS, or with recurrent VTE	5000 international units s/c twice daily (This dose may be appropriate for women who are usually on long-term oral anticoagulants. In obese patients (>90kg), some obstetricians may prefer to prescribe the usual prophylactic dose in two divided doses).	<i>Antenatal plus up to 6 weeks post-partum</i>	Red (Secondary care prescribing only)	Amber
Thromboprophylaxis for high risk patients in lower limb plaster casts	5000 international units subcutaneously once daily	<i>As long as plaster cast in place</i>	Red (Secondary care prescribing only)	Red (Secondary care prescribing only)

### **Surgical patients discharged on extended thromboprophylaxis**

All orthopaedic and high risk surgical patients requiring extended thromboprophylaxis following discharge will be given sufficient Dalteparin on the discharge prescription to complete the full course.

### **Other patients on prophylactic Dalteparin**

All other patients will be given a prescription for a 14 day supply of prophylactic Dalteparin by the secondary care team responsible for their care. The patient's GP will be informed of the proposed management plan and monitoring arrangements.

### **Continuity of Supply**

A letter will be sent to the patient's GP by the THFT clinical team initiating Dalteparin treatment. The following information will be provided:

- Name of responsible consultant and contact details
- Indication for Dalteparin, patient's weight, dose prescribed and proposed duration of treatment
- Date treatment started
- Other relevant clinical information, including concurrent medication
- Baseline creatinine, platelet and potassium results
- Any specific instructions for the practice.

Treatment should only be discontinued by the GP after discussion with the responsible hospital clinician, other than in exceptional circumstances.

### **Primary care monitoring**

Once the patient has been accepted by their GP the responsibility for prescribing the Dalteparin and further monitoring of renal function and for hyperkalaemia (if appropriate), will pass to the GP.

## Summary of Responsibilities

### Responsibilities of the Hospital / Consultant

- Confirm the diagnosis and assess the need for long-term treatment with LMWH.
- Initiate treatment with Dalteparin and provide the first 14 days of treatment. The Consultant shall prescribe the full course for high risk surgical and orthopaedic patients requiring extended thromboprophylaxis post-operatively, and for oncology patients on VTE inducing therapy.
- Perform baseline tests: platelet count, prothrombin time, APTT, U&Es
- Instruct patient or carer on administration of Dalteparin (or arrange for district nurse to administer if this is not possible).
- Ensure patient is given adequate verbal and written information about Dalteparin i.e. what it is, why it is being used, potential adverse effects and what to do if they occur, arrangements for obtaining further prescriptions.
- Monitor for heparin-induced thrombocytopenia for the first 14 days of treatment.
- Make formal referral to the General Practitioner requesting shared care.
- Recommend the dose and duration of therapy, and frequency of monitoring.
- Provide advice and support to the primary care team if problems occur during treatment.
- Give direction as to when treatment should be discontinued.

### Responsibilities of the General Practitioner

- Accept referral from secondary care to take on continued prescribing of Dalteparin under this shared care agreement after first 14 days of treatment.
- Reinforce education provided by the hospital.
- Prescribe Dalteparin at the recommended dose and for the recommended duration.
- Monitor renal function and seek advice if deterioration becomes evident.
- Re-weigh patients on Dalteparin for treatment of VTE according to clinical judgement and change weight-adjusted doses as necessary (does not apply to the treatment of VTE in pregnancy).
- Report to and seek advice from the hospital specialist on any aspect of patient care that is of concern to the GP and may affect treatment.
- Stop treatment at the end of the treatment course or on the advice of the specialist.
- Report any abnormal results to the hospital specialist promptly, and seek advice regarding continuation of treatment.

## Appendix 1

### Summary of Perioperative Management of Anticoagulants

Patients undergoing planned surgery are risk-assessed, and their need for Dalteparin determined according to the following table [1].

Thrombo-embolic risk category	Clinical Indication for Warfarin Therapy			
	Mechanical Heart Valve	Atrial Fibrillation	Venous Thromboembolism	Bridging Recommendations
High	Any mitral valve prosthesis  Older aortic mechanical valve prosthesis (caged ball, tilting disc)	CHADS <sub>2</sub> score of 5 or 6  Recent (within 3 months) stroke or TIA  Rheumatic valvular heart disease	Recent VTE (within 3 months)  Severe thrombophilia (e.g. protein C, protein S or antithrombin deficiency), APS	Therapeutic dose of Dalteparin (see table in main body of document for weight-based dosing)
Moderate	Bileaflet aortic valve prosthesis and one of the following: AF, prior stroke or TIA, hypertension, diabetes, CCF, age >75 years	CHADS <sub>2</sub> score of 3 or 4	VTE in the last 3 to 12 months  Non – severe thrombophilic conditions  Recurrent VTE  Active malignancy	Prophylactic dose of Dalteparin (5000 units once daily)
Low	Bileaflet aortic valve prosthesis without AF and no other risk factors for stroke	CHADS <sub>2</sub> score of 0 – 2 (and no prior stroke or TIA)	Single VTE >12 months ago and no other risk factors	No requirement for Dalteparin bridging

AF = atrial fibrillation; APS = antiphospholipid syndrome; CCF = congestive cardiac failure; CHADS<sub>2</sub> = congestive heart failure - hypertension – Age > 75 – diabetes – stroke; TIA = transient ischaemic attack; VTE = venous thromboembolism.

#### Reference

1. Kitson R. Warfarin in the peri-operative period. Tameside Hospital NHS Foundation Trust. 2012