Guidelines for the Safe Administration of Low Molecular Weight Heparins (LMWH) in Adults Transferred to ELFT Community Health Services

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| 1 | Jan 2023 | Fatima Hafesji, Lead Pharmacist Tower Hamlets Community Health Services | Final | Incorporated and reviewed as a trust wide CHS guideline by Fatima Hafesji, Lead Pharmacist Tower Hamlets CHS. MDT policy review in collaboration with ELFT CHS Policies Alignment Group January 2023.1. Document title changed from Procedural Guidelines for the Safe Administration of Low Molecular Weight Heparins (LMWH) in Patients Transferred to the Care of Bedfordshire Community Health Services (CHS) to Guidelines for the Safe Administration of Low Molecular Weight Heparins (LMWH) in Patients Transferred to ELFT Adult Community Health Services
2. Section 1, definitions updated to include MAR chart.
3. Purpose & scope updated in relation to application as a trust wide CHS guidance.
4. Section 3 – New addition of associated policies
5. Section 6 – checking for contra-indications updated.
6. Section 9 – ‘Amending the time of administration (dose-time)’ updated.
7. Section 10 – ‘What to do after amending the time of administration’ updated to include process in systematic order
8. Section 11 – New addition ‘Accountability’
9. Section 12 – New addition ‘Incident reporting’
10. Section 13 – New addition ‘ Audit & Monitoring’
11. Section 14 – ‘References’ updated
12. Appendix 1 – Table ‘Treatment doses of low molecular weight heparins’ reviewed and updated
13. Appendix 2 – Title ‘Rationale for amending the dose-time of low molecular weight heparins, changed to ‘Flow chart for amending the dose-time of low molecular weight heparins in ELFT Adult Community Health Services’. Flow chart steps reviewed and updated to reflect process to be followed.
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**1.0 Definitions**

|  |  |
| --- | --- |
| Term | Meaning |
| LMWH | Low Molecular Weight Heparin  |
| Dose-time | The time of day the LMWH is scheduled to be administered |
| MAR chart | Medicines Administration Record chart |
| VTE | Venous Thromboembolism |
| INR | International Normalised Ratio |

**2.0 Purpose & Scope**

The purpose of these guidelines is to ensure that doses of Low Molecular Weight Heparins (LMWHs) are not omitted or delayed because of the time of day the doses are scheduled for patients whose care is transferred to adult Community Health Services in East London Foundation Trust.

It aims to empower nurses to check the treatment dose, check for contraindications and change the time of administration (dose-time) where applicable, thereby reducing the risk of delayed or omitted doses.

The LMWHs that these guidelines apply to are:

* Dalteparin (Fragmin®)
* Tinzaparin (Innohep®)
* Enoxaparin (Clexane®)

**3.0 Associated Policies**

* Procedural Guidelines for the Administration of Medicines by Staff in Community Health Services
* Policy for Transcribing Medication Administration Records in ELFT Community Health Services
* ELFT Medicines Policy
* ELFT Incident Policy

**4.0 Responsibilities**

**The Trust:** to recognise the need for this guideline and accept liability for changes made to dose-time of LMWHs.

**Community Nurse:** to follow these guidelines when there is need to change dose-time to reduce risk of omitted or delayed doses, and to check for contra-indications to LMWHs when patients are referred for continuing care.

**5.0 Clinical Risks**

Changing the timing of treatment doses of LMWH is outside the product licences of all licensed products available in the UK

There are theoretical risks that if a LMWH treatment dose is given excessively early, a patient’s risk of bleeding may increase or if a dose is delayed excessively, a VTE may extend or re-form. This is however difficult to prove, due to an absence of evidence.

**6.0 Checking for Contra-Indications**

Staff administering treatment doses of LMWHs should be aware of pharmacological or clinical contraindications to their use.

Circumstances when the use of LMWHs may be contraindicated can include but are not limited to:

* Active bleeding
* Acquired bleeding disorder such as acute liver failure
* Concurrent use of anticoagulants known to increase risk of bleeding, (however, these may be used together during warfarin induction phase of treatment, until INR reaches target range and will be under the recommendation of a prescriber)
* Concurrent use of antiplatelet and other interacting medicines
* Lumbar puncture/epidural/spinal anaesthesia within the previous four hours or expected within the next 12 hours.

The [BNF](https://bnf.nice.org.uk/) and [Summary of Product Characteristics (SPC)](https://www.medicines.org.uk/emc/) for the LMWH should be consulted for a full list of contraindications.

**7.0 Prophylactic Doses of LMWH**

There is no requirement to check prophylactic doses of LMWH as these are not based on body weight.

**8.0 Checking Treatment Doses of LMWHs:**

National Patient Safety Agency (NPSA) guidance1 requires essential information such as dose, weight, renal function, indication and duration of treatment to be communicated at transfer of care (e.g. by discharge letter/summary) and used to ensure that future doses are safe.

On transfer of care for administration of treatment doses of LMWHs, hospitals are expected to provide information on the patient’s body weight and renal function used to determine the dosage.

Dose checks based on patient’s body weight and renal function are expected to be checked by healthcare professionals who review, dispense or administer treatment doses of LMWHs when this information is readily available to them.

Community nurses should check the following from discharge communication before administering a dose of LMWH:

1. Indication – whether the LMWH is for prophylaxis or treatment
2. Duration of therapy
3. Weight of patient
4. Renal function
5. Strength of syringe required
6. Volume of syringe required
7. Check dose in international units (IU) and in millilitres (mL)
8. Check dose against body weight
9. Route and frequency of administration

If information on the patient’s body weight and renal function is not made available, reasonable steps should be taken to find out the information required.

A reference table of treatment doses for all the preparations is available in [Appendix 1](#_Appendix_1_Treatment)

**9.0 Amending the time of administration (dose-time)**

It is common practice in acute hospitals to initiate LMWH doses at 6pm (18:00 hours). This is to allow at least 12 hours before any invasive procedure is carried out.

Some nurses in the community setting have developed a culture of shifting the time of the dose, day-by-day using a perceived ‘window of safety’ to achieve an operationally achievable or convenient dose-time.

Dose times should be altered only when there are risk factors that increase the risks that doses may be delayed or omitted.

## 9.1 Amending the Dose-time for Tinzaparin

The *“new”* dose time should be 24 hours after the first injection, plus or minus six hours. All subsequent doses should be given at the “new” time until Tinzaparin is discontinued or the direction expires.

*Example:* A patient is discharged from hospital and has been having the dose of Tinzaparin at 18.00h. For future convenience a change in the time of dose administration is required. It has been decided the new dose will be given at 12.00h (i.e. 24 hours after the first injection minus six hours).

## 9.2 Amending the Dose-time for Enoxaparin and Dalteparin

Amendments can happen on a maximum of two occasions for a patient, by up to a maximum of two hours per occasion from the initial hospital administration time.

The two occasions may be on two consecutive days to achieve a total dose-time shift of 4 hours over 2 days.

Subsequent doses should be continued at the amended dose-time until the LMWH is discontinued or the direction expires

**10.0 What to do after amending the time of administration**

* Record the amendment(s), of dose-time on the MAR Chart to ensure that staff administering subsequent doses maintain continuity
* Ensure the change of dose time is clearly documented on the MAR chart, signed and dated.
* Void and cross out any pre-existing transcriptions on the MAR chart for the LMWH. Refer to the ELFT transcribing policy for further guidance if unclear.
* Administer the LMWH in accordance with trust policy.
* Record the administration on the MAR Chart.
* Record the amendment in the patient’s electronic clinical record e.g. EMIS or SystmOne and the reason for the amendment.
* Ensure that the amendment is also verbally communicated in the team handover so that all members of the nursing team are aware of the change and rationale.

**11.0 Accountability**

Nurses are deemed competent to administer medicines by virtue of their qualification. The safe administration of medicines is an essential competence for admission to the Nursing and Midwifery Council register.

All staff are accountable for their own actions in the administration of medicines. They must be prepared to exercise professional judgement in any situation and be able to substantiate their actions/inactions. They must: 5

* Be aware of the indications, action(s), usual dosage, usual route(s), side effects, interactions, contra-indications and correct storage of the medicines to be administered.
* Ensure they are competent to administer medicines, maintain competence and address any deficits in their knowledge/skills.
* Be aware of their limits and know when to refer for further advice

**12.0 Incident Reporting**

Patient safety incidents are any unintended or unexpected incident which could have, or did, lead to harm for one or more patients receiving healthcare. All Patient Safety Incidents should be reported on DATIX regardless of whether harm was caused to the patient or not.

* As part of the ongoing evaluation of the patient’s care and treatment, the effects of medicines on the patient must be observed and documented. The effects and side effects of the treatment and any variances to expected outcomes must be reported to the Prescriber/MDT and on DATIX.
* Where adverse drug reactions are experienced advice should be sought from the prescriber/ out of hours services/pharmacy or management.
* Details of the reaction should be documented in the patient’s electronic clinical records, reported on DATIX and through the [MHRA Yellow Card system](https://yellowcard.mhra.gov.uk/).
* Any error in the administration or supervision of medicines must be recorded in the patient’s electronic clinical records, reported immediately to the Prescriber and the Senior Nurse or Senior HCP on duty.
* Appropriate action must be taken to ensure patient safety.
* The patient/relative/carer must be advised of the error as part of Duty of Candour and the patient’s condition monitored and recorded as appropriate.

**13.0 Audit & Monitoring**

* Clinical records including MAR charts and documentation on electronic clinical systems such as EMIS & SystmONE must be completed at the time of the administration/refusal or as soon as possible thereafter and must be clear, legible and auditable.
* Transcribing of LMWHs is audited as part of the trust Medicines Management audit cycle.

**14.0 References**

1. National Patient Safety Agency [NPSA/2010/RRR014](https://webarchive.nationalarchives.gov.uk/20171030124651/http%3A/www.nrls.npsa.nhs.uk/resources/type/alerts/?entryid45=75208) Reducing treatment dose errors with low molecular weight heparins
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3. Medicine Information Letter from Sanofi, 23/12/19. Reference: 00056109
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5. Medicine Information Letter from Pfizer, May 19 2017. Reference:GB17-004438
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8. Summaries of Product Characteristics Dalteparin (Fragmin®) [https://www.medicines.org.uk/emc/dalteparin](https://www.medicines.org.uk/emc/search?q=%22dalteparin+sodium%22) (Accessed July 2022)
9. BNF Monograph Tinzaparin Sodium (Innohep ®) <https://bnf.nice.org.uk/drugs/tinzaparin-sodium/> (Accessed July 2022)
10. BNF Monograph Enoxaparin Sodium (Clexane ®) <https://bnf.nice.org.uk/drugs/enoxaparin-sodium/> (Accessed July 2022)
11. BNF Monograph Dalteparin Sodium (Fragmin ®) <https://bnf.nice.org.uk/drugs/dalteparin-sodium/> (Accessed July 2022)
12. What factors should be considered when using low molecular weight heparin (LMWH) to treat venous thromboembolism in patients with high body weight? Specialist (June 2020) Pharmacy Service NHS UK (Accessed July 2022)
13. Low molecular weight heparins - should treatment doses be used in patients with renal impairment? (March 2020) Specialist Pharmacy Service NHS UK(Accessed July 2022)
14. Yellow Card reporting <https://yellowcard.mhra.gov.uk/>

# Appendix 1: Treatment doses of Low Molecular Weight Heparins (LMWHs)

|  |  |  |  |
| --- | --- | --- | --- |
| **Low Molecular Weight Heparin** | **Tinzaparin (9)** | **Dalteparin (11)** | **Enoxaparin (10)** |
| **Brand Name**  | **Innohep®** | **Fragmin®** | **Clexane®** |
| **Dose to treat thrombosis in adults** | **175 IU/kg bodyweight once daily**

|  |  |  |
| --- | --- | --- |
| Weight in kg | International unitsIU | Injection Volume mls from 20,000 IU/ml solution |
| 32-37 | 6,000 | 0.30 |
| 38-42 | 7,000 | 0.35 |
| 43-48 | 8,000 | 0.40 |
| 49-54 | 9,000 | 0.45 |
| 55-59 | 10,000 | 0.50 |
| 60-65 | 11,000 | 0.55 |
| 66-71 | 12,000 | 0.60 |
| 72-77 | 13,000 | 0.65 |
| 78-82 | 14,000 | 0.70 |
| 83-88 | 15,000 | 0.75 |
| 89-94 | 16,000 | 0.80 |
| 95-99 | 17,000 | 0.85 |
| 100-105 | 18,000 | 0.90 |

 | **200 IU/kg total body weight once daily**

|  |  |
| --- | --- |
| Weight in kg | Dose in IU |
| <46 | 7,500 |
| 46-56 | 10,000 |
| 57-68 | 12,500 |
| 69-82 | 15,000 |
| 83 and over | 18,000 |

The single daily dose should not exceed 18,000 unitsMaximum dose of 18,000 IU was used in patient weighing up to 132kg in the CLOT study For patients with increased risk of bleeding 100 IU/kg body weight may be used. twice daily | **1•5 mg/kg (one point five mg/kg) until oral anticoagulation has been established.** 1.5mg/Kg is equivalent to 150 International Units (IU)/kg No dosage adjustments are recommended in obesity or low body weightEnoxaparin sodium can be administered SC either as a once daily injection of 150 IU/kg (1.5 mg/kg) or as twice daily injections of 100 IU/kg (1 mg/kg). |
| **Route of administration**  | Subcutaneously, once daily | Subcutaneously, once daily | Subcutaneously once daily preferred for community teams |
| **Preparations** | **Pre-filled syringe 20,000 IU/ml:**0.4 ml (8,000 anti- Factor Xa IU)0.5 ml (10,000 anti-Factor Xa IU)0.6 ml (12,000 anti-Factor Xa IU)0.7 ml (14,000 anti-Factor Xa IU)0.8 ml (16,000 anti-Factor Xa IU)0.9 ml (18,000 anti-Factor Xa IU)**Vials**20,000 IU/ml in 2 ml multidose glass vial 10,000 IU/ml in 2ml multidose glass vial | **Pre-filled syringes:**2,500 IU/0.2ml5,000 IU/0.2ml7,500 IU/0.3ml 10,000 IU/0.4ml12,500 IU/0.5ml 15,000 IU/0.6ml 18,000 IU/0.72ml **Ampoules/Vials** 10,000 IU/1 ml Ampoule 10,000 IU/4ml Ampoule100,000 IU/4ml Multidose-Vial**Graduated Syringe**10,000 IU/ml | **Pre-filled syringes:**2,000 IU (20mg) in 0.2 mL 4,000 IU (40mg) in 0.4 mL 6,000 IU (60mg) in 0.6 mL8,000 IU (80mg) in 0.8 mL 10,000 IU (100mg) in 1 mL**Forte Pre-filled Syringes**12,000 IU (120mg) in 0.8ml15,000 IU (150mg) in 1ml**Vial**30,000 IU (300 mg/3ml) Multidose vial |
| **Patients with renal impairment:**See [SPC](https://www.medicines.org.uk/emc/) for most up-to-date information | Risk of bleeding may be increased; use with caution in elderly and avoid if age over 90 years; unfractionated heparin may be preferable.Tinzaparin is not recommended in patients with severe renal impairment (CrCl<30 ml/min), as dosage in this population has not been established.  | Dalteparin should be used with caution in patients with renal impairment as they have an increased risk of bleeding complications.For patients with an increased risk of bleeding, it is recommended that dalteparin is administered according to the twice daily regimen. 13Please refer to the SPC for further guidance. | Risk of bleeding increased; reduce dose if eGFR less than 30 mL/minute/1.73 m2.Enoxaparin sodium is not recommended for patients with end stage renal disease (CrCl <15 ml/min) due to lack of data in this population. 13  |
| **Elderly Patients** | No dose reduction is needed in elderly patients with normal renal function. Renal function should be assessed, to estimate creatinine clearance levels .The manufacturer recommends caution in elderly patients with renal impairment. | Fragmin® has been used safely in elderly patients without the need for dosage adjustment | For all indications except STEMI, no dose reduction is necessary in the elderly patients, unless kidney function is impaired  |

# Appendix 2: Flow chart for amending the ‘dose-time’ of Low Molecular

# Weight Heparins (LMWHs) in ELFT Adult Community Health Services



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