

Audit of the appropriateness of dalteparin dose for venous thromboembolism (VTE) prophylaxis in dialysis patients and patients with severe renal impairment

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Background

Hospital-acquired venous thromboembolism (VTE) is a common and preventable problem. Dalteparin is the choice of low-molecular weight heparin (LMWH) for VTE prophylaxis in Sunderland Royal Hospital. There is limited evidence and guidelines regarding the exact dose to prescribe for patients with renal impairment^[1]. The trust renal consultants' advice and a regional VTE guideline were used as references^[2]. Based on the advice from the trust renal consultant's advice for VTE prophylaxis, patients with severe renal impairment (eGFR <30ml/min/1.73m²) should receive 5000 units daily and patients receiving dialysis should receive 2500 units daily.

Objectives

- To find out whether patients are prescribed the correct dose of dalteparin according to renal consultant's advice.
- To determine whether incorrect prescribing is being identified and corrected during admission.

Method

This was a retrospective audit from 1st September 2020 to 31st September 2020. Patients who received dialysis and patients with severe renal impairment in Sunderland Royal Hospital (SRH) were included in this audit. Data was extracted using the hospital data generator (Data LaunchPad). Eligible patients were identified through using the electronic prescribing system (Meditech Version 6). This audit did not require ethical approval but was approved by the Departmental Research and Audit Group.

Results

As shown in chart 1, 73.1% (n=19) of dialysis patients were prescribed with 2500 units dose of dalteparin and 26.9% (n=7) of them were prescribed 5000 units.

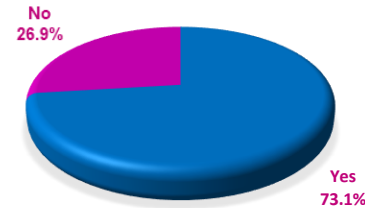


Chart 1: Percentage of dialysis patients dosed according to renal consultant's advice

Chart 2 showed that among the seven patients dosed with 5000 units, two cases (28.6%) were raised by the ward pharmacist and one case (14.3%) was raised by the staff nurse to the prescriber for not being prescribed according to the renal consultants' advice. The dose of dalteparin was corrected for all three patients during admission.

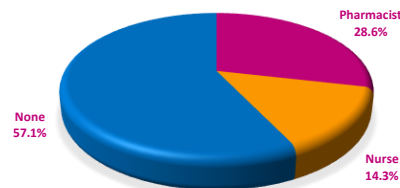


Chart 2: Percentage of concerns raised due to prescribed dose not adhering to the renal consultant's advice

Chart 3 showed that 62.7% (n=52) of the patients with severe renal impairment were prescribed 5000 units according to the recommended advice and 37.3% (n=31) were prescribed a reduced dose of dalteparin as shown in chart 3.

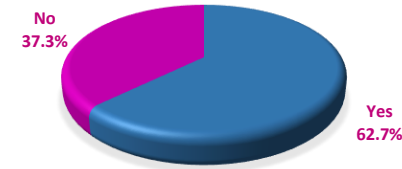


Chart 3: Percentage of patients dosed according to renal consultant's advice in patients with eGFR < 30 ml/min/1.73m²

Discussion

- There were factors that could lead to the prescriber considering dose reduction for dalteparin such as low platelet counts, low body weight <50kg, high bleeding risk etc.
- The evidence to support the dose reduction in these groups of patients is limited and there was no clear guidance on the exact dose to be prescribed.
- According to the NICE guideline, dose reduction for patients with severe renal impairment may be needed based on multidisciplinary or senior opinions^[1].
- Patients who received a reduced dose of prophylactic dalteparin could increase their risk of thrombosis due to potentially insufficient anticoagulation.
- At the same time, for patients who received a higher prophylactic dose of dalteparin, the risk of bleeding could be increased due to the accumulation of dalteparin.

Effect on Practice

- There was no VTE prophylaxis prescribing guideline in the hospital which means that the prescribers do not have a local trust guideline to follow when prescribing.
- The trust decided to switch from dalteparin to enoxaparin by 1st February 2021. The switch is complete and enoxaparin is the choice of LMWH for prophylaxis of VTE.
- A predefined electronic prescribing set is being developed to assist with the appropriate prescribing set of LMWH.
- A clinical guideline will be reviewed and update any changes in respect to the new LMWH enoxaparin especially in high risk patients.

Reference

- Recommendations | Venous thromboembolism in over 16s: reducing the risk of hospital-acquired deep vein thrombosis or pulmonary embolism | Guidance | NICE [Internet]. Nice.org.uk. 2018 [cited 24 September 2020]. Available from: <https://www.nice.org.uk/guidance/ng89/chapter/Recommendations#intervention-s-for-people-with-renal-impairment>
- Dalteparin Prescribing Information for Primary Care [Internet]. Hull & East Riding Prescribing Committee. 2019 [cited 2 February 2021]. Available from: <https://www.hey.nhs.uk/wp/wp-content/uploads/2016/03/dalteparin.pdf>