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NHS Foundation Trust

# Analysing LMWH requirements for VTE prophylaxis in pregnant women with antithrombin deficiency

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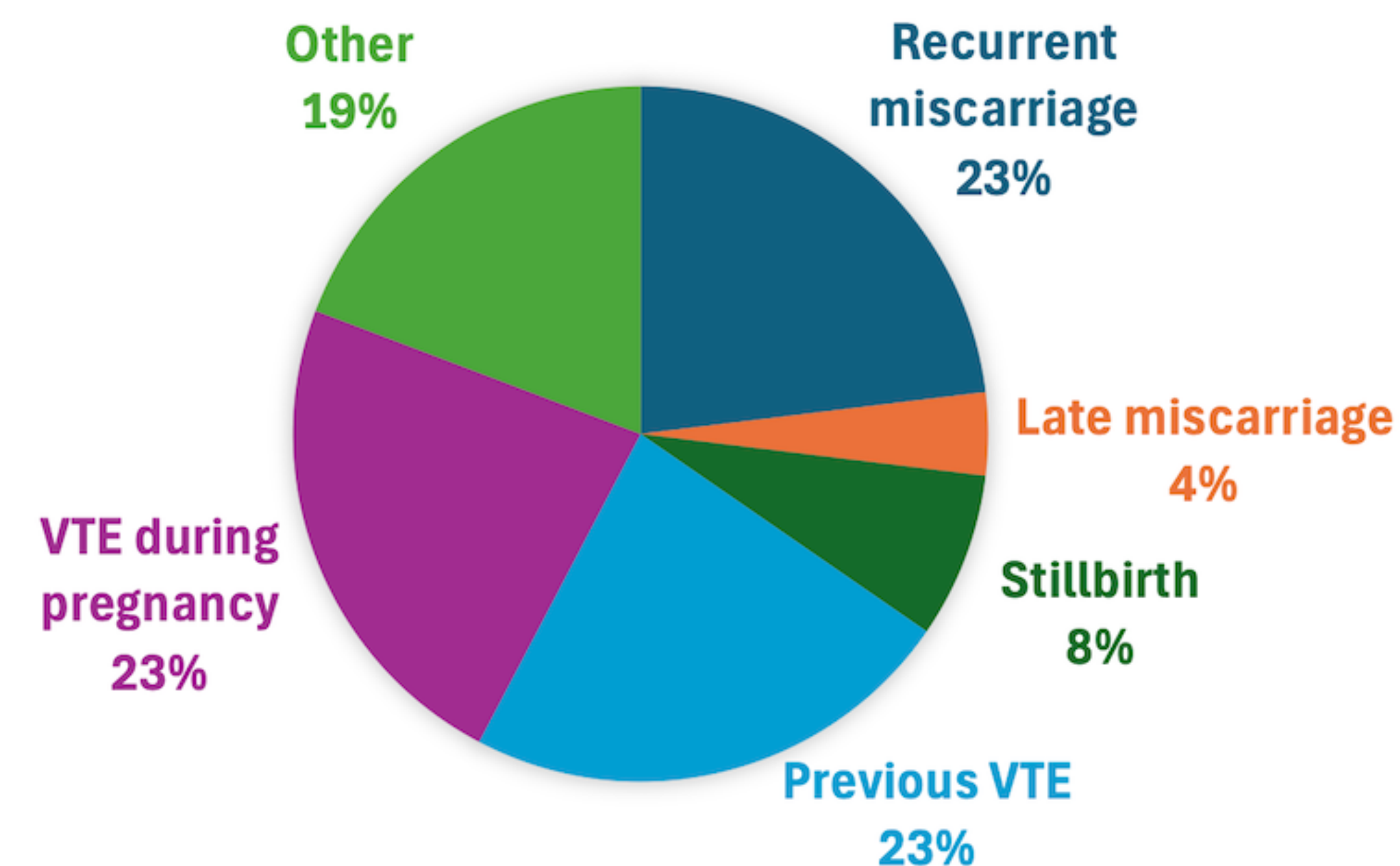
## Background

- Pregnancy is a hypercoagulable state which puts pregnant women higher risk of venous thromboembolisms (VTEs), with VTE events being the leading cause of maternal morbidity and mortality.
- This VTE risk is further elevated in those with coagulation disorders such as antithrombin deficiency.
- Low molecular weight heparin (LMWH) is the first-line prophylactic treatment however it requires antithrombin to exert its effects; enhancing antithrombin activity to inhibit thrombin formation thereby exhibiting an anticoagulant effect.

## Methods

- The aim of the audit was to evaluate current LMWH dosing protocols in clinical practice for VTE prophylaxis in pregnancy.
- The data source used was patient records from the Rosie Hospital via EPIC of pregnant women who had antithrombin levels measured in the last ten years.
- Data collected included: LMWH dosage, anti-Xa levels, frequency of VTE events, and overall compliance with RCOG guidelines.
- This was supported by a literature review conducted through OVID-MEDLINE, 2020-2024.

## REASONS WHY PREGNANT WOMEN HAD ANTITHROMBIN LEVELS MEASURED



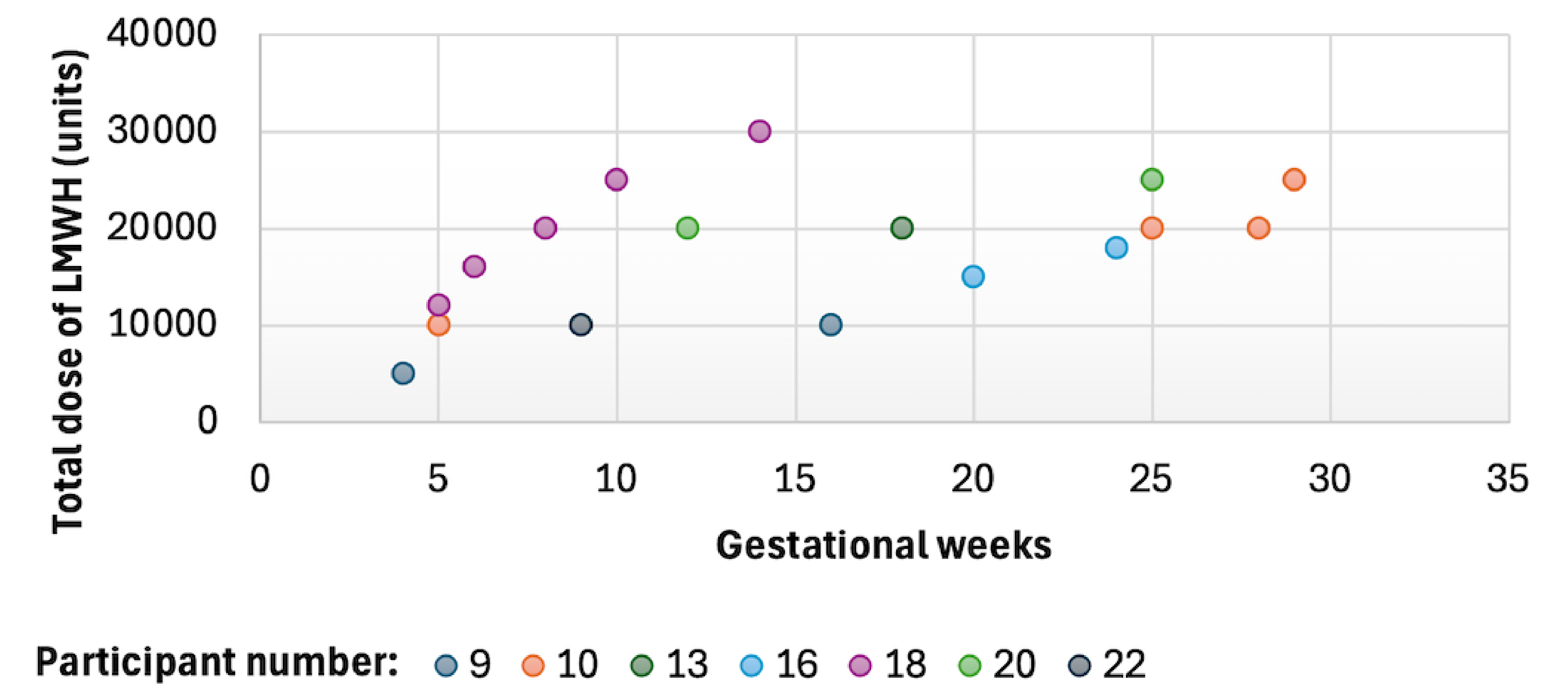
## Results

- **100% of women received a higher dose of LMWH.**
  - The standard dose is 5000 units LMWH, yet these women required dose increases ranging from 100-500%. There does not seem to be a linear correlation with weight.
  - All women received their first dose of dalteparin before twenty weeks gestation but there seems to be a trial and error method with regards to how much and when to increase the dose.
  - We suggest re-evaluating the dose requirements at regular intervals. For example, considering adjustments at certain gestational weeks will allow for more consistency in further data collection.
- **100% of women were managed in collaboration with a haematologist.**
  - All women had a live birth and did not experience further VTE events after treatment was commenced, confirming that the treatment plan they were on was successful.
  - They all received individualised care having at least three appointments at the obstetric-haematology clinic throughout their pregnancy.
- **86% of women had their anti-Xa levels measured and recorded.**
  - We recommend clearly documenting why and when dosing regimens are altered.

## Conclusions

- A VTE event is a serious presentation, especially during pregnancy, which emphasises the importance of clear and specific management guidelines.
- **Mechanisms of VTE prophylaxis are much more complex in pregnant women with antithrombin deficiency therefore it is crucial to improve information and establish guidelines to reduce this uncertainty.**
- Twenty-six participants who had their antithrombin levels measured were reviewed but only seven women had antithrombin deficiency. This was significantly fewer participants than initially hoped, making it a low power study.
- The literature is also sparse which highlights the need for more research to be conducted to understand how antithrombin deficiency affects patients during pregnancy.
- **Overall, higher doses of LMWH were needed to achieve optimal therapeutic anticoagulation. This is in line with RCOG guidelines.**
- Dosing regimens varied between the participants as well as throughout an individual's pregnancy.
- **Re-evaluating dose requirements at regular intervals with clear documentation as to why an increase was required would be helpful in observing trends, striving to refine current guidelines.**

## LMWH DOSAGE ADJUSTMENTS DURING A SINGLE PREGNANCY



## References

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