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Administration of low-molecular weight heparin following caesarean section for the prevention of venous thromboembolism

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Introduction

Pulmonary embolism (PE) remains a leading cause of maternal death in the UK. Pregnancy carries a five to six fold increase in incidence of PE. Caesarean section carries a further 10-20 fold increase in incidence of PE,[1] with the peak risk being in the first few days following delivery. PE in the puerperium is fatal in 15%, and of these two-thirds die within 30 minutes of the embolic event.[2]

A 2010 audit carried out on our delivery suite found 87-97% of patients received prophylactic low-molecular weight heparin (LMWH) at the correct dose, time and duration. At this time, the initial dose was administered by the anaesthetist in theatre.

In 2013, updated AAGBI guidance recommended LMWH to be administered four hours following spinal or epidural catheter removal. A 2013 audit following this updated guidance found only 34% of patients received LMWH at the correct time. We conducted a further complete audit cycle to assess and improve performance against Trust guidance.

Methods

An initial audit was carried out on 50 caesarean sections in March 2020. Data was collected retrospectively from electronic and paper records. Data was used to answer six questions (see below) and was judged against Trust guidance (based on AAGBI 2013 guidance). A leniency of 30 minutes was given in regards to administration of LMWH.

Following this initial audit, an action plan was implemented in order to improve performance. This included staff education, departmental presentation, and a timestamped reminder sticker placed in the patients' notes for post-natal ward staff. A re- audit was carried out in November 2020 using identical methodology.

Results

Domain	Initial audit	Re-audit
VTE score documented	100%	100%
VTE score correct	90%	96%
Correct LMWH dose prescribed	92%	96%
Correct LMWH time prescribed	84%	86%
Correct LMWH duration prescribed	96%	96%
LMWH administered as prescribed	68%	68%
Elective caesarean section – late administration	42%	33%
Emergency caesarean section – late administration	22%	31%

Discussion

The main outlier in the data relates specifically to administration of LMWH. Whilst performance has improved since the 2013 audit, we did not find any improvement between audit and re-audit, despite implementing an action plan. This suggests our action plan did not address the underlying factors causing delayed administration of LMWH. There were some marginal improvements in the other domains.

We plan to continue our current measures, and in addition, we plan to discuss these findings at a multi-disciplinary meeting with post-natal ward managers, to discuss possible solutions.

References

1. Jacobsen AF, Skjeldestad FE, Sandset PM. Ante- and postnatal risk factors of venous thrombosis: a hospital-based case-control study. J Thromb Haemost 2008; 6: 905-12.
2.Rutherford SE, Phelan JP. Deep venous thrombosis and pulmonary embolism in pregnancy. Obstet Gynecol Clin North Am 1991; 18: 345 -70.