

FIBRINOGEN CONCENTRATE IN THE MANAGEMENT OF CRITICAL BLEEDING

This LOP is developed to guide clinical practice at the Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this LOP.

1. AIM

- To rapidly correct fibrinogen deficit in critically bleeding woman

2. PATIENT

- Woman with ongoing critical bleeding with a fibrinogen deficit demonstrated by rotational thromboelastometry (ROTEM)

3. STAFF

- Medical, midwifery and nursing staff

4. EQUIPMENT

- ROTEM analyser
- Infusion pump
- Refrigerator

5. CLINICAL PRACTICE

- Activate Critical Bleeding Protocol (CBP) in woman with critical bleeding
- Notify Blood Bank of the clinical situation and activation of the CBP
- Perform ROTEM
- Refer to critical bleeding pathway
- Administer fibrinogen concentrate when indicated by a reduced FIBTEM A5 (as per critical bleeding pathway dosing schedule)
- Repeat ROTEM after product administration

6. DOCUMENTATION

- Medical Record
- Anaesthetic Chart
- Fibrinogen Concentrate Audit form

7. EDUCATIONAL NOTES

- Fibrinogen is a key part of the coagulation system, due to its role in platelet aggregation and formation of initial fibrin clot¹. Particularly in obstetrics, severe bleeding with low fibrinogen is associated with severe postpartum haemorrhage and significant morbidity and mortality^{2,3}. The early correction of hypofibrinogenemia has been identified as an important step in management of obstetric haemorrhage^{2,3,4}. Fibrinogen concentrate in its current form has been licensed since 1985 for use in correction of low fibrinogen⁵. Several guidelines worldwide suggest the use of fibrinogen concentrate in the management of massive haemorrhage⁵. It has been used in trauma, cardiac surgery, and obstetrics safely

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- There are often delays in the administration of products to correct hypofibrinogenemia due to the process of thawing products and transport around the hospital. Fibrinogen concentrate can be kept in a refrigerator in the operating theatre, mixed and administered rapidly. Doses with the equivalent amount of fibrinogen to cryoprecipitate and FFP can be given efficiently¹.
- Using ROTEM to identify hypofibrinogenemia rapidly and subsequently administering fibrinogen concentrate allows early correction of any fibrinogen deficit in critical bleeding⁵. This should prevent the overuse of other blood products and associated complications⁶.

8. RELATED POLICIES / PROCEDURES / CLINICAL PRACTICE LOP

- Critical Bleeding Protocol (POWH CLIN072)
- General Surgical/Obstetric Haemorrhage ROTEM transfusion algorithm
- Postpartum Haemorrhage – Prevention and Management

9. RISK RATING

- High

10. NATIONAL STANDARD

- National Blood Authority Patient Blood Management (PBM) Guidelines Standard 7.

11. REFERENCES

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2. Collis RE, Collins PW. Haemostatic management of obstetric haemorrhage. *Anaesthesia*. 2015 Jan;70 Suppl 1:78-86, e27-8. doi: 10.1111/anae.12913. PMID: 25440400.
3. McDonnell N, Browning R. How to replace fibrinogen in postpartum haemorrhage situations? (Hint: Don't use FFP!). *Int J Obstet Anesth*. 2018 02; 33:4–7.
4. Collis R, Kenyon C, Roberts T, McNamara H. When does obstetric coagulopathy occur and how do I manage it? *Int J Obstet Anesth*. 2021 Mar 26;102979.
5. Kozek-Langenecker S, Fries D, Spahn D, Zacharowski K. III. Fibrinogen concentrate: clinical reality and cautious Cochrane recommendation. *Br J Anaesth*. 2014 May;112(5):784–7.
6. Sahin A, Ozkan S. Treatment of Obstetric Hemorrhage with Fibrinogen Concentrate. *Med Sci Monit*. 2019 Mar 10; 25:1814–21.

REVISION & APPROVAL HISTORY

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