A North Shore/Long Island Jewish Quality Improvement Project To Increase Use of Fibrinogen Concentrate in Severe Obstetric Hemorrhage

Gilbert Shi MD, Seung Ho Yoon MD, Song Yun MD, Madina Gerasimov MD, Judith Aronsohn MD, Gregory Palleschi MD, Joseph Peña MD

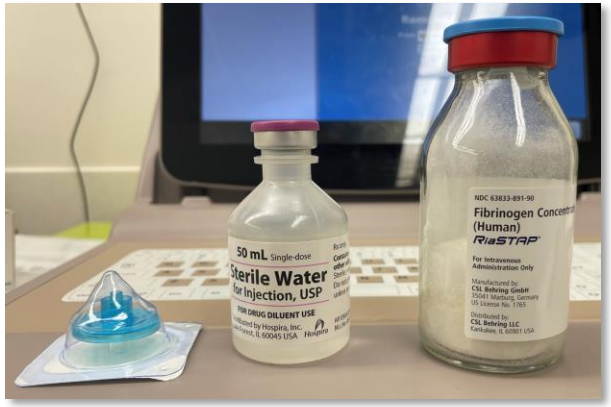
Department of Anesthesiology, Zucker School of Medicine at Hofstra-Northwell, New Hyde Park, NY

Introduction

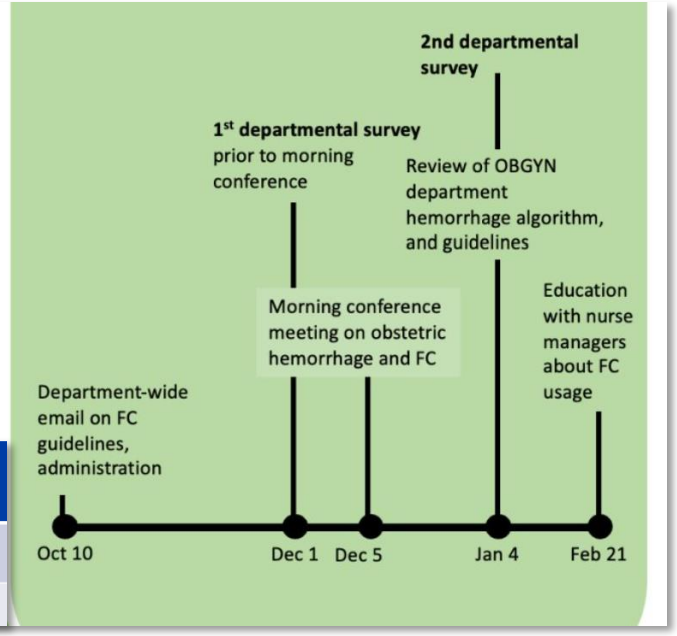
- Hemorrhage is a leading cause of obstetric morbidity and mortality.[1]
- Prompt management decreases mortality, whereas delayed recognition increases blood loss and coagulopathy.
- Fibrinogen levels are essential in the risk and progression of obstetric hemorrhage, as low fibrinogen is predictive of post-partum hemorrhage and an indicator of hemorrhage progression/severity.[2]
- The aim of this quality improvement project was to increase appropriate usage of fibrinogen concentrate (FC) in obstetric hemorrhage at NSUH and LIJ through multidisciplinary education and case review.

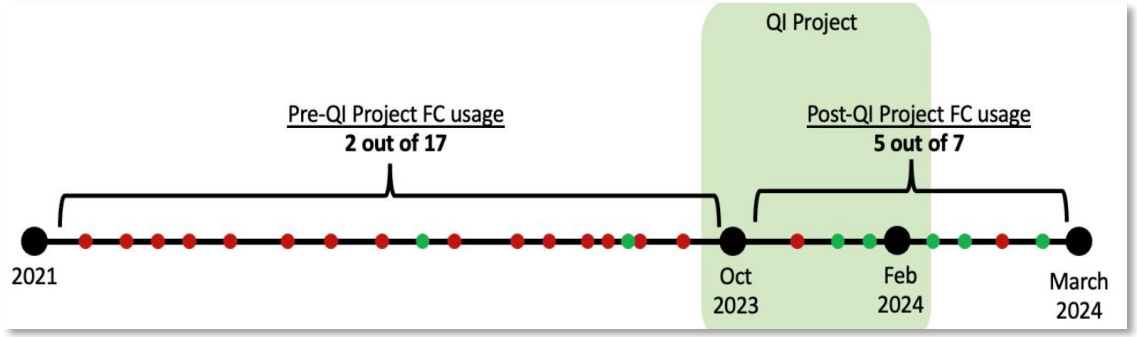
Methods

- The Plan-Do-Study-Act format was used to organize the methodology for this QI project.
- Baseline usage was determined via case review and surveys sent out by email to assess provider knowledge prior to the QI project.
- In the ensuing months, further emails, conferences, case reviews, and meetings across departments were implemented to increase staff awareness of FC guidelines, administration, and usage.
- Improvement was assessed by review of FC use in OB hemorrhage cases and follow up surveys.



	Dosing	Expected ↑ fibrinogen	Volume
CRYOPRECIPITATE	5U	25-50mg/dL	~150-200mL
FIBRINOGEN CONCENTRATE	1g	25-50mg/dL	50mL





Results

- In the calendar year prior to our QI intervention, the rate of FC usage in severe hemorrhage cases was 2/17 (12%).
- Over the 6 months following our education intervention, FC was used in 5 out of 7 severe hemorrhages (71%).
- On follow-up survey, providers demonstrated improved knowledge of the indications for fibrinogen concentrate and normal fibrinogen levels in pregnancy.

Discussion

- After the start of this QI project, appropriate FC use has more than doubled and we have observed improved provider knowledge regarding FC.
- The obstetric anesthesia department continues to track FC usage in cases of acquired hypofibrinogenemia including severe hemorrhage, disseminated intravascular coagulation (DIC) and massive transfusion protocol (MTP).
- Further steps will look at the cost comparison of the increased price of FC (relative to cryoprecipitate) versus savings from the earlier resolution of hemorrhage, and reduction of total blood products transfused.

References

1) The California Pregnancy-Associated Mortality Review. Report from 2002-2007 Maternal Death Reviews. Sacramento: California Department of Public Health, Maternal, Child and Adolescent Health Division. 2018
2) Charbit, B., et al (2007). The decrease of fibrinogen is an early predictor of the severity of postpartum hemorrhage. *Journal of thrombosis and haemostasis : JTH*, 5(2), 266–273. https://doi.org/10.1111/j.1538-7836.2007.02297.x