Fresh Frozen Plasma Utilization and Factor Deficiency Coagulopathy in Severe Postpartum Hemorrhage from 2016 to 2024: A Retrospective Cohort Study

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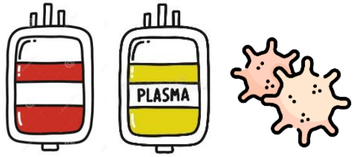
Postpartum hemorrhage (PPH)
4-5% deliveries
1-2% req. transfusion[1]

Current recommendations for fresh frozen plasma (FFP):
1. Elevated PT, PTT, INR > 1.5[2]
2. Clinical suspicion[3]
3. Severe hypovolemia[4]

Consequences of early, formulaic, and liberal use of FFP:

Unnecessary transfusion
in patients with normal hemostasis[5]



Increased risk of adverse outcomes[6]
30-day post-op mortality, venous thromboembolism (VTE), pulmonary embolism (PE), etc.

Aim: Describe institutional FFP usage for PPH since 2016 and associated adverse outcomes

1.Bienstock JL. N Engl J Med. 2021.
2.Leal R. Transfus Med. 2023.
3.Mavrides E. BJOG: Int J Obstet Gynaecol. 2017.
4.Surbek D. Arch Gynecol Obstet. 2020.
5.Collins PW. Br J Anaesth. 2017.
6.Choi UE. Anesth Analg. 2024.

Methods

Inclusion Criteria:

Patients who received transfusion during delivery Jan 1, 2016 – May 31, 2024

Comparison Groups:

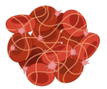
1. No elevated INR, +FFP
2. No elevated INR, no FFP

Postpartum Outcomes:

- EBL
- Products
- Uterotonic, Bakri, uterine artery embolization, hysterectomy
- Length of stay

Time from Delivery:

- Time to first pRBC
- Time to first FFP
- Time to first INR



Adverse Outcomes:

- Transfusion reaction
- ICU admission
- Intubation
- Venous thromboembolism (VTE)
- Acute kidney injury (AKI)

Results

N = 530
PPH who received transfusion

↓

N = 489 (92%)
<u>without</u> elevated INR

↓

N = 180 (37%)
received FFP

Compared to those who did not receive FFP, patients **without elevated INR who received FFP** were associated with:

- ↑ **Preterm delivery**, 43.3% vs 31.1% **
- ↑ **Placenta accreta spectrum (PAS),** 17.3% vs 8.1% *
- ↑ **EBL,** 2716 [2000-3606] vs 1912 [1500-2280] ***
- ↑ **pRBC units**, 3 [1-4] vs 1[1-2] units ***
- ↓ **Time to pRBC transfusion**, 47 [20-91] vs 76 [41-101] min ***
- ↑ **Uterine artery embolization**, 16.7% vs 4.5% ***
- ↑ **Hysterectomy**, 28.3% vs 12.0% ***

<u>Time from Delivery:</u>

First postpartum FFP administered at median time **66 [37-114] min,** **<u>prior</u>** to availability of **first INR** at **102 [69-175] min**

<u>Adverse Outcomes (aOR):</u>†

- ↑ **ICU admission,** 9.76 [2.04-46.80], p<0.01
- ↑ **Transfusion reaction,** 6.12 [0.57-66.04], p<0.05
- ↑ **Composite,** 3.49 [1.62-7.52], p<0.01

†*Adjusting for EBL, preterm delivery, placenta previa, PAS*

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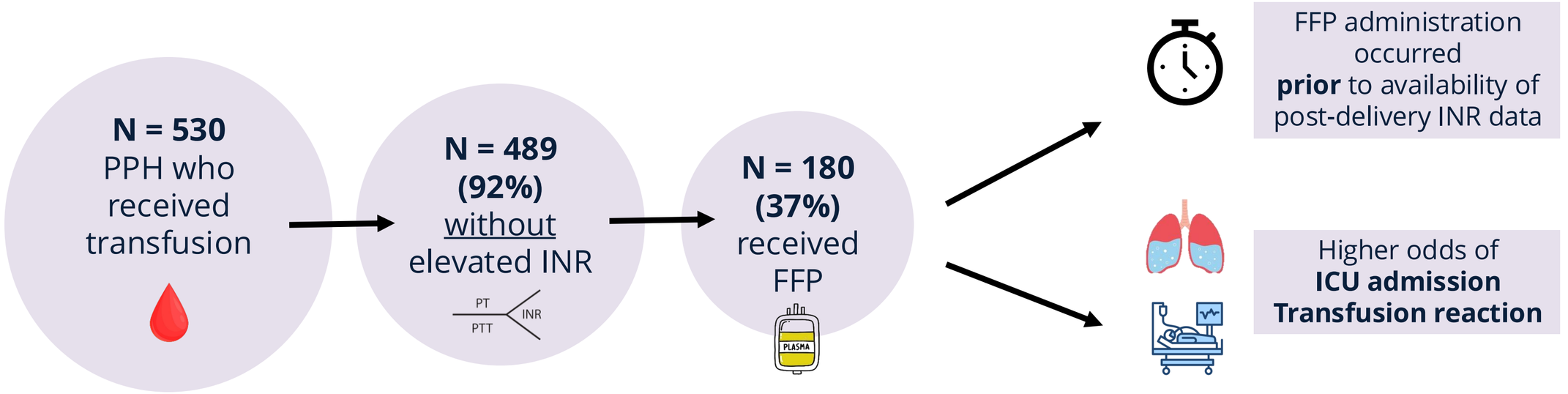
***p<0.0001
**p<0.001
*p<0.01

Conclusion



Limitations:

- Single institution
- Retrospective, cannot account for confounding

Significance:

- In practice, FFP administration for PPH is often **not** guided by explicit elevation in INR
- **Avoidance of FFP** in PPH without elevated INR may **reduce adverse outcomes**

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