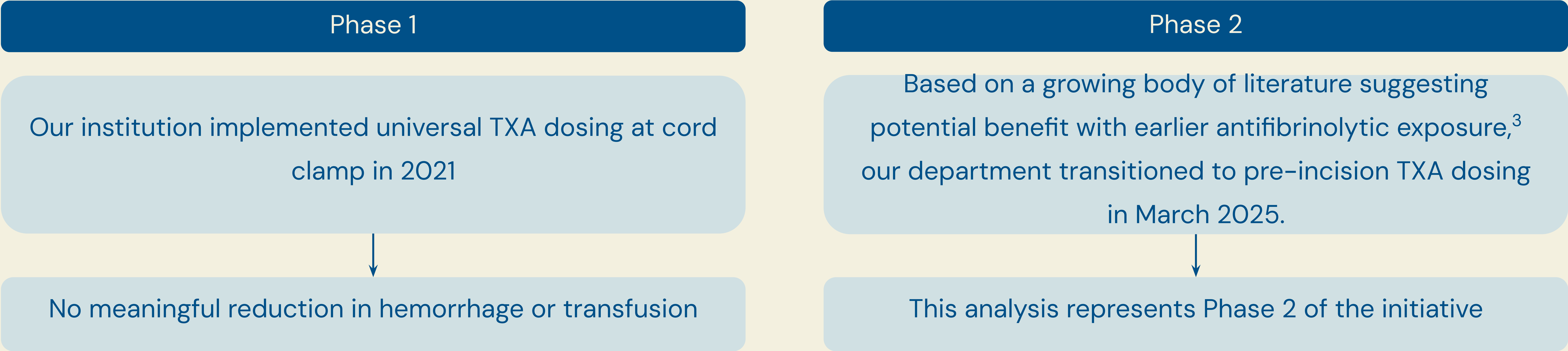


Effect of Sequential Tranexamic Acid Timing Strategies on Postpartum Hemorrhage After Cesarean Delivery: A Multi-Phase Quality Improvement Evaluation

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Background and Hypothesis

- Postpartum hemorrhage (PPH) remains a leading cause of pregnancy-related morbidity and mortality.¹
- Prophylactic TXA has demonstrated variable benefit in cesarean delivery, with outcomes differing by timing and clinical context.²



Study Design and Methods

We conducted a single-center retrospective analysis of cesarean deliveries from January 2020 to September 2025 across three sequential practice periods:

No routine TXA

TXA administered at umbilical cord clamp

TXA administered 10–15 minutes prior to skin incision

Primary Outcomes

Median Quantitative Blood Loss (QBL) and Postpartum Hemorrhage (PPH; QBL >1000 mL)

Secondary Outcomes

Additional uterotonic , Red blood cell transfusion, and ICU admission.

Analysis

Continuous variables were compared using ANOVA with Tukey post hoc testing, and categorical variables using chi-square or Fisher's exact tests.

*All TXA doses were 1 g IV

Results

5,454 cesarean deliveries

Median Quantitative Blood Loss differed modestly across groups (832 mL [IQR 593–1158] no TXA; 866 mL [617–1217] TCC; 833 mL [587–1163] TBI; p=0.022), driven by slightly higher blood loss in the TCC group.

Rates of Postpartum hemorrhage (QBL > 1000) were similar (34.8%, 38.2%, and 35.5%, respectively; p=0.056).

Additional uterotonic use differed significantly, with higher utilization in the TCC group and lower utilization in the TBI group (25.5%, 32.8%, and 14.6%, respectively; p< 0.001).

Red blood cell transfusion by postoperative day two and overall transfusion rates were higher in TXA groups compared with no TXA (p=0.016 and p=0.013), although mean units transfused did not differ (p=0.462).

ICU admission rates were low and similar across groups (p=0.166)

Outcome	No TXA (N = 1819)	TXA at Cord Clamp (TCC) (N = 3150)	TXA Before Skin Incision (TBI) (N = 485)	p-value
Quantitative Blood Loss median (IQR)	832 (593, 1158)	866 (617, 1217)	833 (587, 1163)	0.022*
Postpartum hemorrhage (QBL > 1000) # (%)	589 (34.8%)	1188 (38.2%)	172 (35.5%)	0.056
Additional uterotonic agents for excessive bleeding # (%)	464 (25.5%)	1034 (32.8%)	71 (14.6%)	<0.001
Admitted to ICU # (%)	29 (1.6%)	32 (1.0%)	4 (0.8%)	0.166
Red-cell transfusion by day 2 # (%)	101 (5.6%)	215 (6.8%)	44 (9.1%)	0.016
Blood transfusion # (%)	106 (5.8%)	228 (7.2%)	46 (9.5%)	0.013
No. of red-cell units transfused Mean ± SD	0.17 ± 1.0	0.17 ± 0.7	0.21 ± 0.8	0.462

*Tukey’s multiple comparisons show that TXA at cord clamp is significantly larger than No TXA and the other pairwise comparisons are not significantly different.

Conclusion and Discussion

- Consistent with Phase 1, **advancing TXA administration from cord clamp to pre-incision was not associated with meaningful reductions in QBL or PPH** in this early Phase 2 analysis.
- Observed differences likely reflect underlying patient risk and surgical complexity rather than treatment effect.
- These findings support a risk-stratified rather than universal approach to prophylactic TXA use in cesarean delivery.

References:

1. Cresswell, J., et al. Lancet Glob Health. 2025;13:e626–e634.
2. Rohwer, C., et al Cochrane Database Syst Rev. 2024;11:CD016278.
3. Gayet-Ageron, A., et al. Lancet. 2018;391:125–132.