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An update to tranexamic acid (TXA) trends in the United States during the peripartum period, 2016 – 2021

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Introduction

- Results from the 2016 World Maternal Antifibrinolytic (WOMAN) trial found that patients who received tranexamic acid (TXA) during delivery had significantly lower rates of death and hysterectomy.
- In 2017, ACOG endorsed the consideration of TXA usage when traditional uterotonics fail during postpartum hemorrhage (PPH). Since then, TXA usage has become more mainstream for the treatment of PPH.
- New studies using TXA have both begun and been completed, including the TRAAP2 trial, MFMU TXA Study, WOMAN-2 Trial, and E-MOTIVE trials

Objective

Given the new studies and guidelines on TXA usage, we aimed to evaluate the change in usage of TXA during delivery both temporally and geographically within the United States. Secondary outcomes included perinatal outcomes.

Study Design

- **Design:** Retrospective cohort data
- **Population:** Admissions for delivery from July 2019 to June 2021 who delivered via vaginal or cesarean delivery from 20 hospitals within the Universal Health Services (UHS) network
- Rates of TXA usage were compared over time between the east, central, and western regions of the United States
- Additional nationwide inpatient data was extracted using Cerner Real World Data™ from 2016-2020

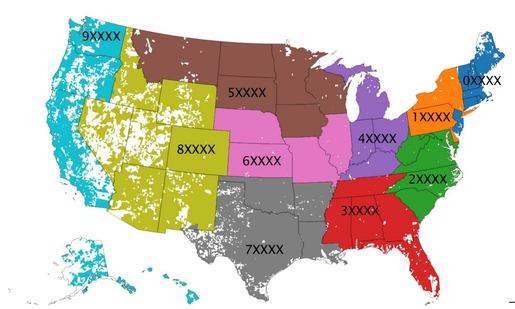
Key Findings

- Of 50,150 deliveries, 1,580 (3.2%) patients received TXA during the 2-year study period.
- Patients who received TXA during delivery were more likely to have a history of postpartum hemorrhage (P < 0.0001), chronic hypertension (P < 0.0001), preeclampsia (P < 0.0001), and/or diabetes (P = 0.004).
- Of the women who received TXA, 53.2% (840/1580) had an estimated blood loss (EBL) of less than 1000 mL.
- Perinatal outcomes, such as blood transfusion, EBL > 1000 mL, ICU admission, disseminated intravascular coagulation, placental abruption, and placental accreta significantly increased the odds of TXA use.
- Women who received TXA did not have an increased likelihood of venous thromboembolism compared to those who did not receive TXA (8 (0.5%) vs. 226 (0.5%), P = 0.774).

Results

	With TXA (n = 1,580)	Without TXA (n = 49,470)	P
Demographic variables			
Age	29.6 ± 6.14	28.6 ± 5.87	0.01
Body mass index	35.3 ± 24.3	36.2 ± 265.9	<.0001
Race			<.0001
White	679 (42.9%)	25,371 (51.3%)	
Black	291 (18.4%)	7,246 (14.6%)	
Asian	96 (6.1%)	2,179 (4.4%)	
Other/unknown	514 (32.5%)	14,674 (29.6%)	
Sector			<.0001
East	251 (15.9%)	9,631 (19.5%)	
Central	292 (18.5%)	13,990 (28.3%)	
West	1,037 (65.6%)	25,849 (52.3%)	
Maternal medical conditions			
Chronic hypertension	51 (3.2%)	875 (1.8%)	<.0001
Diabetes	93 (5.9%)	2,170 (4.4%)	0.004
Pregnancy-related variables			
Delivery type			<.0001
Vaginal	715 (45.3%)	32,057 (64.8%)	
Cesarean	854 (54.1%)	17,104 (34.6%)	
VBAC	11 (0.7%)	309 (0.6%)	
Gestational diabetes	144 (9.1%)	3,644 (7.4%)	0.009
History of PPH	320 (20.3%)	1,827 (3.7%)	<.0001
Preeclampsia	60 (3.8%)	1,151 (2.3%)	<.0001
Placenta previa	39 (2.5%)	297 (0.6%)	<.0001
Labor-related variables			
Gestational age, stratified			<.0001
28-34 weeks	52 (3.3%)	897 (1.8%)	
34 1/7 – 36 6/7	183 (11.6%)	3,384 (6.8%)	
> 37 weeks	1,330 (84.2%)	44,300 (89.6%)	
Antibiotics	1,323 (83.7%)	30,034 (60.7%)	<.0001
Platelets < 150,000	201 (12.7%)	3,920 (7.9%)	<.0001
Hematocrit < 32%	248 (15.7%)	6,539 (13.2%)	0.004
Mg for neuroprotection	213 (13.5%)	2,326 (4.7%)	<.0001
Misoprostol	928 (58.7%)	7,968 (16.1%)	<.0001
Oxytocin	1,544 (97.7%)	46,396 (93.8%)	<.0001
Artificial rupture of membrane	224 (14.2%)	6,499 (13.1%)	0.229
Spontaneous rupture of membrane	77 (4.9%)	2,961 (6.0%)	0.066
Male baby	788 (49.9%)	24,970 (50.5%)	0.638

Table 1. Patient characteristics in those with TXA and those without TXA (UHS)



Zip Code Region	% Births with TXA Use by Region
0	1.35%
1	17.65%
2	6.27%
3	0.12%
4	2.34%
5	5.41%
6	5.50%
7	4.40%
8	39.48%
9	12.81%
	4.66%
Total	

Figure 1. Births with TXA use by zip code region (Cerner Real-World™)

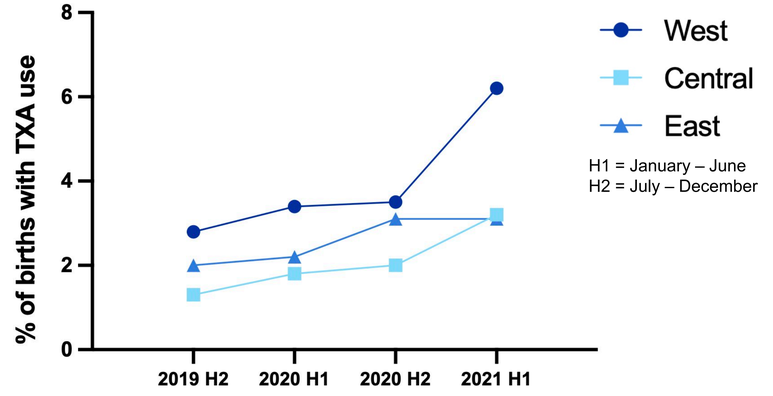


Figure 2. Rate of TXA use from 2019-2021 by region (UHS)

Perinatal outcomes	OR	95% CI	P	aOR[a]	95% CI	aP
Blood transfusion	12.54	9.97-15.78	<.0001	7.46	5.79-9.63	<.0001
EBL ≥ 1000 mL	1.08	1.07-1.10	<.0001	1.07	1.06-1.09	<.0001
ICU admission	16.41	8.38-32.13	<.0001	4.95	2.29-10.69	<.0001
Chorioamnionitis	2.69	1.88-3.84	<.0001	2.58	1.78-3.74	<.0001
DIC	83.91	22.24-316.58	<.0001	16.66	3.55-78.36	<.0001
Placental abruption	2.17	1.47-3.22	0.0005	1.76	1.17-2.64	0.006
Placental accreta	22.57	11.61-43.86	<.0001	10.54	5.07-21.89	<.0001
NICU admission	2.50	2.15-2.91	<.0001	1.82	1.55-2.15	<.0001
Vacuum-assisted delivery	0.98	0.77-1.23	0.84	1.04	0.82-1.32	0.73
Forceps-assisted delivery	1.85	1.11-3.07	0.029	1.62	0.96-2.73	0.069
Eclampsia	1.00	0.37-2.71	0.99	0.67	0.24-1.87	0.45
HELLP syndrome	6.65	3.87-11.43	0.002	3.07	1.72-5.49	<.0001

Table 2. Risk factors predicting odds of TXA use (UHS)

Conclusions

- As research and guidelines are updated with TXA as a treatment for postpartum hemorrhage, TXA usage has continued to increase nationally, especially in the western region of the United States.
- Patients who received TXA did not have an increased risk of venous thromboembolism.

References

- Cerner Real World Data™ encounters may include pharmacy, clinical and microbiology laboratory, admission, and billing information from affiliated patient care locations. All admissions, medication orders and dispensing, laboratory orders and specimens are date and time stamped, providing a temporal relationship between treatment patters and clinical information. Cerner Corporation has established Health Insurance Portability and Accountability Act-compliant operating policies to establish de-identification for Cerner Real-World.
- Ahmadzia, H. K., Hynds, E. B., Amdur, R. L., Gimovsky, A. C., James, A. H., & Luban, N. (2020). National trends in tranexamic acid use in the peripartum period, 2015-2019. Journal of thrombosis and thrombolysis, 50(3), 746–752. https://doi.org/10.1007/s11239-020-02141-4
- U.S. ZIP codes: Zip code map and ZIP code. United States Zip Codes. (n.d.). *https://www.unitedstateszipcodes.org/*