

Treatment Patterns in Abnormal Postpartum Uterine Bleeding or Hemorrhage (2016–2022)

Kara M. Rood¹, Candice Yong², Patricia I. Carney², Brian Seal², Seungyoung Hwang², Roy M. Brooks³

¹The Ohio State University-Wexner Medical Center, Columbus, OH; ²Organon & Co., Jersey City, NJ; ³Capital Women’s Care, Laurel, MD & Holy Cross Hospital, Silver Spring, MD

Poster No. 898

Background

- Postpartum hemorrhage (PPH) is the leading cause of maternal morbidity and mortality worldwide accounting for ~25% of the deaths annually¹
- Although PPH is largely deemed preventable with timely recognition and treatment, the rate of PPH in the US has increased from 2.7% in the year 2000 to 4.3% in 2019²
- Uterotonic (UT) medications are the first-line of treatment to reduce the blood loss during childbirth involving PPH, and uterine balloon tamponade (UBT) is often used in patients who do not respond to UTs^{3,4,5}
- WHO guidelines for use of tranexamic acid (TXA) in PPH management were updated after the 2017 publication of the WOMAN trial^{6,7}

Study Aim, Design, and Outcomes

- This retrospective, observational study aimed to describe rates of abnormal postpartum uterine bleeding/PPH over time and treatment patterns for UTs, TXA, and other interventions among hospital births involving abnormal postpartum uterine bleeding or PPH
- Data for all births in patients ≥15 years old associated with abnormal postpartum uterine bleeding or PPH in the US Premier Hospital Database (Jan 2016–Mar 2022) were included
- Abnormal bleeding or PPH was defined as follows:
 - Second-line use of UT beyond oxytocin (i.e., carboprost, methylergonovine, misoprostol ≥800 µg), or TXA was a proxy for abnormal postpartum uterine bleeding
 - PPH was defined by ≥1 International Classification of Diseases (ICD) 10 code

ICD-10 Diagnosis Code	Description
O72.0	Third-stage hemorrhage
O72.1	Other immediate postpartum hemorrhage

ICD, International Classification of Diseases

- Descriptive results for diagnosis rates, treatment patterns, and combination therapy over time are presented

Study Population

- A total of 787,964 patients (14.7%) were diagnosed with PPH and/or received second-line UTs

- Patients had a mean age±SD of 29.0±6.0 years and 50.7% were non-Hispanic White; 34.1% underwent a cesarean section

Patient Disposition

Total number of unique inpatient admissions with delivery (Jan 2016–Mar 2022)
N=5,520,565

Age ≥ 15 at delivery
N=5,510,540

Excluded: Deliveries with any codes indicating abortion, ectopic pregnancy, hydatidiform mole, or other abnormal products of conception
N=5,500,832

Excluded: Deliveries with <20 weeks or unknown gestation period
N=5,345,753

Number of patients with PPH diagnosis OR use of second-line uterotonic/TXA beyond oxytocin
N=787,964 (14.7%)

Baseline Characteristics

Parameters	Full cohort (N = 787,964)
Mean maternal age ± SD, years	29.0 ± 6.0
Race/ Ethnicity, n (%)	
Hispanic	150,763 (19.1)
Non-Hispanic Asian	41,047 (5.2)
Non-Hispanic Black	113,891 (14.5)
Non-Hispanic White	399,445 (50.7)
Patient insurance type, n (%)	
Medicaid – traditional	116,343 (14.8)
Medicaid – managed care	238,068 (30.2)
Managed care	295,320 (37.5)

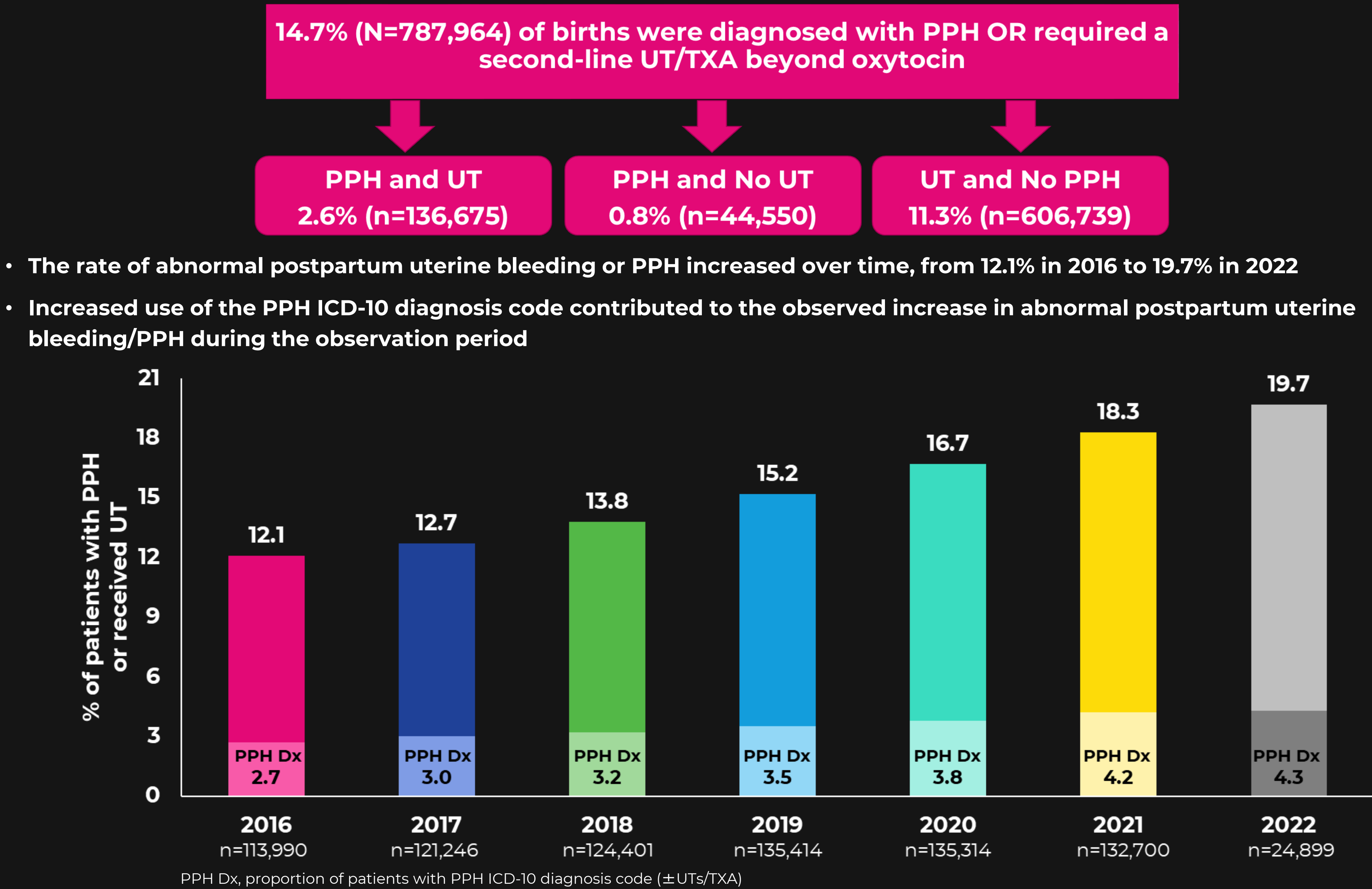
Delivery method, n (%)

Cesarean section	268,997 (34.1)
Vaginal	518,050 (65.7)
Unknown	917 (0.1)

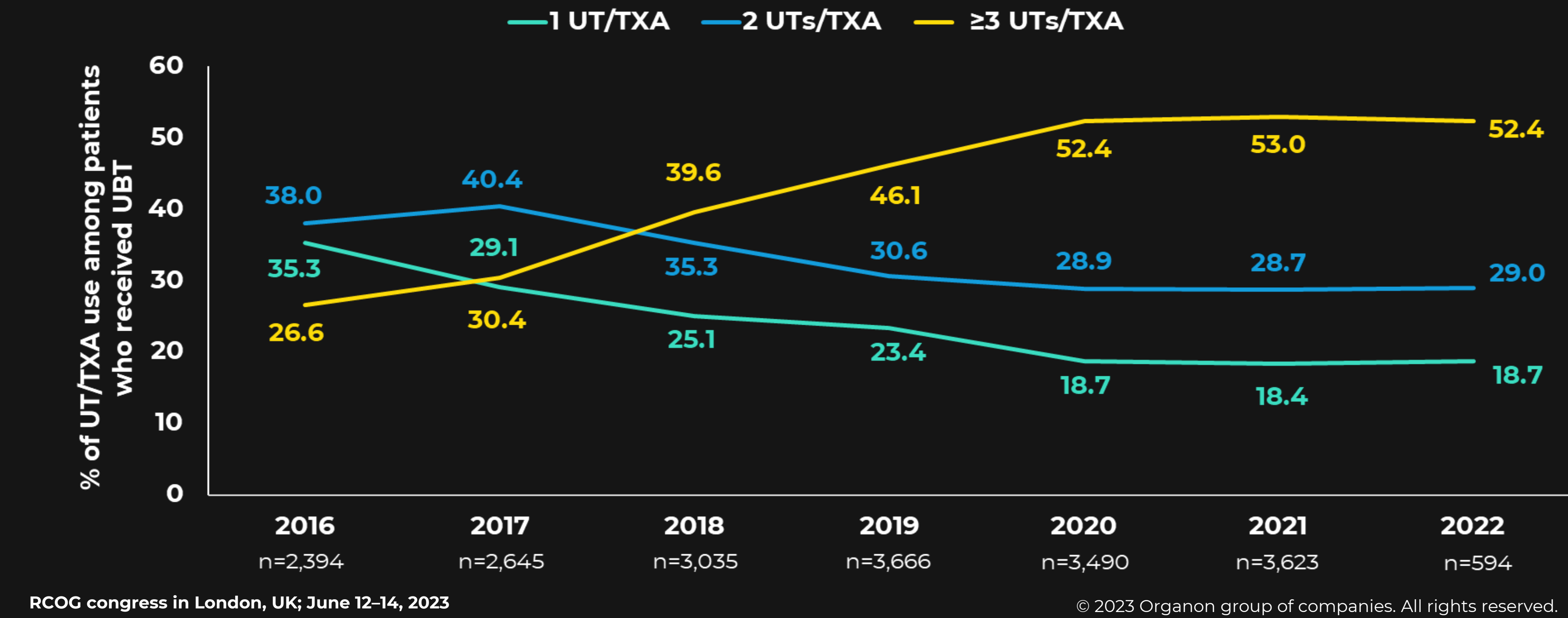
Oxytocin use, n (%)	748,604 (95.0)
----------------------------	----------------

SD, standard deviation

- Among the 14.7% of patients with PPH or second-line UT usage, most were treated with UTs/TXA without a PPH diagnosis code



- Among patients who received both UBT and pharmacologic therapy, combination therapy with 3 or more UTs/TXA increased from 26.6% in 2016 to 52.4% in 2022



Conclusions

- Factoring both the diagnosis codes and second-line UT use, the observed rate of abnormal postpartum uterine bleeding or PPH was higher than previously reported in the literature and increased from 12% in 2016 to 20% in 2022
- Treatment patterns evolved during the observation period, with decreasing use of methylergonovine and increasing use of TXA and combination therapy; increased TXA use coincided with the WOMAN trial and guideline updates

Additional Results

- Use of TXA increased substantially over time, from 0.3% in 2016 to 27.8% in 2022
- Methylergonovine showed a pattern of decreasing use over time, from 53.3% in 2016 to 46.1% in 2022
- Use of misoprostol ≥800 µg (48.9% in 2016, 46.2% in 2022) and carboprost (14.6% in 2016, 15.0% in 2022) remained relatively stable over the study period

Uterotonics and/or TXA , %	2016 n=113,990	2017 n=121,246	2018 n=124,401	2019 n=135,414	2020 n=135,314	2021 n=132,700	2022 n=24,899
TXA	0.3	1.5	6.1	11.9	17.3	23.4	27.8
Methylergonovine maleate	53.3	54.9	53.5	52.5	50.8	48.3	46.1
Carboprost	14.6	15.6	15.9	15.7	15.3	15.2	15.0
Misoprostol (≥ 800 µg)	48.9	46.2	47.5	46.6	46.6	46.4	46.2

TXA, tranexamic acid

- Combination therapy with 2 or more UTs/TXA increased over the time, from 19.6% in 2016 to 28.9% in 2022

UT combinations and/or TXA , %	2016 n=113,990	2017 n=121,246	2018 n=124,401	2019 n=135,414	2020 n=135,314	2021 n=132,700	2022 n=24,899
0 UT/TXA	6.0	6.6	5.8	5.5	5.3	5.1	4.5
1 UT/TXA	74.4	72.8	71.4	69.7	68.3	66.8	66.6
2 UTs/TXA	16.1	16.6	17.6	18.3	19.1	19.7	20.0
≥ 3 UTs/TXA	3.5	4.0	5.2	6.4	7.3	8.4	8.9

TXA, tranexamic acid; UT, uterotonic

- Nonsurgical treatment with uterine balloon tamponade was relatively stable during the observation period, ranging from 2.4% in 2016-2017 to 2.9% in 2019 and 2021
- Rates of hysterectomy were 0.6% in 2016-2020, and 0.5% in 2021-2022

Interventions, %	2016 n=113,990	2017 n=121,246	2018 n=124,401	2019 n=135,414	2020 n=135,314	2021 n=132,700	2022 n=24,899
Nonsurgical treatment							
Uterine balloon tamponade	2.4	2.4	2.6	2.9	2.7	2.9	2.5
Uterine packing	2.9	2.1	2.3	2.0	1.9	1.7	1.4
Surgical intervention							
Uterine artery embolization	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Hysterectomy	0.6	0.6	0.6	0.6	0.6	0.5	0.5

References

- Amanuel T et al. Health Serv Res Manag Epidemiol. 2021;26:8.
- Corbetta Rastelli CM et al. Obstet Gynecol. 2023;141(1):152-161.
- Gallos I et al. Health Technol Assess. 2019 Feb;23(9):1-356.
- Escobar MF et al. Int J Gynaecol Obstet. 2022 Mar;157:3-50.
- World Health Organization. <https://pubmed.ncbi.nlm.nih.gov/33909382/>
- Woman trial collaborators. Lancet 2017;389:2105-16.
- World Health Organization. <https://apps.who.int/iris/bitstream/handle/10665/259379/WHO-RHR-17.21-eng.pdf>

Disclosures & Funding Statement

- K Rood: RUBY Investigator, Advisory Board participation, paid consultant (Organon); Advisory Board participation (Cooper Surgical)
- C Yong, PI Carney, B Seal, S Hwang: Organon employee and stock/shareholder
- RM Brooks: paid consultant (Organon)
- This study was funded by Organon & Co.
- Medical writing support was funded by Organon and provided by Cathryn M. Carter (Organon, Jersey City, NJ, USA) and Shridevi Venkataramani (PhD, Tata Consultancy Services, India)