Tranexamic Acid Use in Postpartum Hemorrhage

Jordan Cathell

Margaret H. Rollins School of Nursing

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Dr. Blankenship, DNP, RN and T. Lagano, RN.

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Postpartum hemorrhage is a fear that becomes a quick reality for many mothers in the world. Postpartum hemorrhage (PPH) is the top contributor to maternal morbidity and mortality (Obermeyer et al., 2022). PPH is known as a quantitative blood loss of 1000mL or greater or any significant blood loss occurring with symptoms of hypovolemia within 24 hours post birth, either vaginal or cesarean (Liu et al., 2023). Postpartum hemorrhage is most common after birth while still in the hospital recovering. Hemorrhaging after birth can be caused by uterine tone, retained tissue, trauma or thrombin/coagulation disorders (Liu et al., 2023). This has prompted many protocols to be formed and put in place to support and direct the immediate care in preventing and stopping PPH. These measures have started to use a more upcoming medication in obstetrics known as tranexamic acid. Tranexamic acid can treat coagulation during PPH or before bleeding even begins. The use of tranexamic acid has influenced nursing care to promptly manage events of post-partum hemorrhage through established protocols, aiding in client's safety, education, and optimizing maternal outcomes.

Tranexamic acid (TXA) is an antifibrinolytic that has been proven to prevent bleeding in severe cases. TXA inhibits plasminogen activation, which is central for fibrinolysis, allowing for clotting formation to continue and take place during hemorrhagic events (Cai et al., 2019). By TXA blocking fibrinolysis this gives way for a clot to mesh and block a vulnerable area of increased bleeding in the body and provide crucial time for medical workers to stabilize patients. Due to TXA's properties and its success with trauma use, it has begun growing popularity in the use of postpartum hemorrhage for this reason (Murrin et al., 2025).

There was a World Maternal Antifibrinolytic (WOMAN) trial that wanted to test the effects of TXA on PPH and if it would decrease the chances of death. The trial included 20,000

women who were administered 1gram of TXA or a placebo to those who faced PPH. Results showed that death from hemorrhage was significantly decreased in those who received TXA versus those who had the placebo (Cai et al., 2019). Other findings in the same study supported administering prophylactic TXA at 1g over 10 minutes as soon as indicated and within at least 3 hours post birth otherwise effects will not be as desired (Obermeyer et al., 2022). If given within the 3-hour window, maternal mortality was found to decrease 31% overall (Liu et al., 2023). If postpartum hemorrhage does not subside after 30 minutes of administering the initial dose, then another dose may be repeated but it is recommended not to exceed the amount of 2g within a 24-hour period (Liu et al., 2023). The earlier the use of TXA before birth may reduce PPH from occurring due to promoting clotting at the first sign and concern of bleeding.

The WOMAN trial not only reveal these findings with TXA, but also a decrease in hysterectomies from PPH (Sterling et al., 2023). Hysterectomies take place during PPH to rid of the bleeding in total if it is occurring from the uterus and cannot be stopped on time, but TXA's action would assist in slowing and reducing the need of the procedure in emergent events. A hysterectomy would be last resort in these cases because it can affect a woman greatly by permanent sterilization and the emotional impact of removing female reproductive anatomy. In addition, a double-blind study in 2021 revealed that prophylactic TXA with cesarean deliveries had a 16% reduction in PPH (Jones et al., 2023). More studies in United States' hospitals are beginning to experiment with TXA being administered at different parts of the third stage of labor. This includes administering TXA when the umbilical cord is being clamped during a cesarean section or right after a vaginal birth in patients with severe anemia (Murrin et al., 2025). These findings can help determine if prophylactic TXA has an effect on special populations to control PPH. With reducing blood loss with TXA, this will also tremendously affect and cut the

need for blood transfusions related to PPH (Obermeyer et al., 2022). Correct administration of TXA on time will aid in stopping the body from bleeding out, therefore it will shrink the need of multiple units of blood for massive hemorrhages. TXA has a half-life of 2 hours once administered but can take up to 24 hours to be excreted from the body through the renal system (Obermeyer et al., 2022). Since TXA is excreted through the renal system in the urine, it is advised to run renal function labs to detect any impairments (Cai et al., 2019). With the duration of TXA in the body, this medication should help control PPH during critical hours when it occurs the most around 30 minutes after birth. These findings are initiating protocols and modifying how treatment for postpartum hemorrhage is managed with the increased use of TXA.

Postpartum hemorrhage is normally managed through protocols utilizing uterotonics. Uterotonics are first line treatment to control bleeding such as oxytocin and methylergonovine (Practice bulletin, 2017). These medications help the uterus cramp down and close off open blood vessels from where the placenta was attached on the uterine wall. TXA is gaining recommendation since the WOMAN trial to be used in conjunction to those first line drugs. TXA can be given with these uterotonics and pain medications like ibuprofen due to no recorded interactions between these drugs (Obermeyer et al., 2022). However, in the US, since TXA is still undergoing testing and studies related to postpartum use, primary steps should still be continued then use TXA if there is failure to cease hemorrhage (Obermeyer et al., 2022). Research has shown that when a single agent or oxytocin fails to reduce bleeding while the uterus cramps down, TXA may be given in support to reduce bleeding in the meantime (Jones et al., 2023). These medications are thought to be used in conjunction with one another to offer support as a last effort. Until TXA is approved, it cannot be used as the first or sole treatment to halt PPH but incorporated as needed (Obermeyer et al., 2022). Even though it is still in process

of being evaluated, it is recommended that the medication be readily available on floors for nurses and doctors to administer. Without having TXA easily accessible, this can delay treatment and be detrimental to the effectiveness of the mother's outcome (Obermeyer et al., 2022).

Nursing care and practices are being impacted by the increased use of TXA and the growing usage in the United States. Nurses and response teams need to stay educated on the signs and symptoms of postpartum hemorrhage and the types of medication that may be administered in practice (Jones et al., 2023). Knowing newer medications such as TXA and its action can influence care for the patient during a postpartum hemorrhage during a time that is crucial and can be lifesaving. With recognizing and proper diagnosing of PPH this can lead to efficient administration of medication including route, dose and timing to clients (Obermeyer et al., 2022). This can include first line treatment and interventions during postpartum care while bleeding and switching to the use of TXA if findings reveal that a coagulation disorder could be present or that blood loss is occurring too rapidly from other physiological conditions (Obermeyer et al., 2022). All options should be utilized if safe and will benefit maternal outcome.

Recognizing how TXA works during pregnancy and before labor is key before administration. This will help nurses and doctors make a judgmental decision and conduct interventions as they race the clock to stop hemorrhaging or block it from occurring. Pregnancy is a time that multiple adverse effects may occur with the hypercoagulation state and administering TXA promotes clotting but can potentially cause an increased risk for thromboembolic effects (Obermeyer et al., 2022). The possible risks from TXA based on its action can include deep vein thrombosis, myocardial infarction, stroke, seizure, or even a pulmonary embolism (Obermeyer et al., 2022). Yet, studies continue to reveal that TXA during

PPH has no heightened risk or cases of these thrombolytic events (Obermeyer et al., 2022). With TXA not having the associated risks, this promotes the safe usage during postpartum as an effort to save the mother's life from excessive bleeding post birth. However, obstetric team members need to constantly monitor for any changes that could result in a PPH.

Before pregnancy it is best practice to assess the potential mother for risk factors that would indicate a high chance for postpartum hemorrhage (Obermeyer et al., 2022). Nurses should recognize that mothers who have had post-partum hemorrhage with past pregnancies, issues with uterine tone, retained placental fragments, or documented blood disorders should be monitored closely through pregnancy, the birthing process and postpartum (Practice bulletin, 2017). Obtaining a full medical history and knowing the client before giving TXA can help guide in the decision of administering to prevent or manage PPH. This will also allow for healthcare professionals involved in the mother's care to have extra resources on hand and medical supplies close by in case of an obstetric emergency and saving time (Obermeyer et al., 2022). Nursing care of individuals in these situations can be evaluated with the postpartum risk assessment tool which aids in identifying 60-85% of patients who will experience PPH (Practice bulletin, 2017). Even if a mother doesn't hemorrhage after the assessment, this allows for professionals to take extra precautions including having TXA readily available since it is not a popular medication and may be needed in special circumstances.

Tranexamic acid use is starting to grow more in the United States as studies and results continue to prove reduction in postpartum hemorrhage. TXA can be administered either prophylactically or within 3 hours after birth to support the body's clotting ability and refrain from excessive bleeding. Protocols are using TXA in addition to first line drugs until more studies proceed to reveal the effectiveness in obstetrics. With the increased use in postpartum,

more care team members and nurses need training and education on the action of TXA. Healthcare professionals are also screening patients for risk factors related to PPH and if TXA would benefit them. Overall, tranexamic acid is an upcoming medication that is optimizing maternal outcomes and preventing mothers from succumbing to postpartum hemorrhage.

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