

Guidelines for Oxytocin Administration after Birth: AWHONN Practice Brief Number 2

An official practice brief from the Association of Women's Health, Obstetric and Neonatal Nurses

AWHONN 2000 L Street, NW, Suite 740, Washington, DC 20036, (800) 673-8499

AWHONN periodically updates practice briefs. For the latest version go to <http://www.AWHONN.org>. The information herein is designed to aid nurses in providing evidenced-based care to women and newborns. These recommendations should not be construed as dictating an exclusive course of treatment or procedure. Variations in practice may be warranted based on the needs of the individual patient, resources, and limitations unique to the institution or type of practice.

Recommendation

AWHONN recommends oxytocin administration for management of third stage of labor for all births.

Magnitude of the Problem

- Each year, approximately 125,000 women in the United States (or 2.9% of all births) experience postpartum hemorrhage (Callaghan, Kuklina, & Berg, 2010).
- Every year there are 14 million cases of postpartum hemorrhage worldwide (United States Agency for International Development [USAID], 2010).
- Postpartum hemorrhage occurs in more than 10% of all births and accounts for 25% of maternal deaths (World Health Organization [WHO], 2006).
- Oxytocin is routinely administered to prevent and treat postpartum hemorrhage (Butwick, Coleman, Cohen, Riley, & Carvalho, 2010; Dyer, Butwick, & Carvalho, 2011; King, Douglas, Unger, Wong, & King, 2010).

Oxytocin Doses and Administration

- Oxytocin should be administered only by the intramuscular (IM) or intravenous (IV) route, not by IV push (Butwick et al., 2010; Devikarani & Harsoor, 2013; George, McKeen, Chaplin, & McLeod, 2010; King et al., 2010).
- Ideal dose and infusion rates have yet to be established in the literature (Dyer, Butwick, & Carvalho, 2011; Westoff, Cotter, & Tolosa, 2013).

Oxytocin Administration Guidelines

IV Oxytocin Warning. The accidental administration of IV fluid oxytocin instead of plain IV fluid has been documented and is preventable (Simpson & Knox, 2009). As a high alert medication, IV

oxytocin pre-mixed bags should be prominently and clearly labeled and stored separately to prevent a 1000 milliliter bag with oxytocin being mistaken for a plain 1000 milliliter bag used for IV fluid resuscitation bolus.

As a high alert medication, IV oxytocin pre-mixed bags should be

- Infused via an IV infusion pump to control oxytocin administration
- Prominently and clearly labeled with bright colored labeling
- Stored separately to prevent a 1000 milliliter IV bag with oxytocin being mistaken for a plain 1000 milliliter bag used for IV fluid resuscitation bolus

Administration Options. Administer IV oxytocin by providing a bolus dose followed by a total minimum infusion time of 4 hours after birth. For women who are at high risk for a postpartum hemorrhage or who have had cesarean births, continuation beyond 4 hours is recommended. Rate and duration should be titrated according to uterine tone and bleeding.

Option 1

- Oxytocin 20 units in 1 liter normal saline (NS) or lactated Ringer's (LR) solution
- Initial bolus rate 1000 ml/hour bolus for 30 minutes (equals 10 units) followed by a maintenance rate 125 ml/hour over 3.5 hours (equals remaining 10 units)

Option 2

- Some facilities supply only one standard pre-mixed concentration of IV fluid with oxytocin

Table 1: Various Guidelines and Studies Using Oxytocin

Research Studies	Oxytocin Concentration	Fluid Volume	Rate
George et al., 2010	15u	1000 ml	1000 ml/hr
Devikarani et al., 2010	20u	1000 ml	600 ml/hr for a few minutes
	20u	1000 ml	60–120 ml/hr
King et al., 2010	40u	500 ml	Bolus
	20u	1000 ml	125 ml/hr
Books			
Cunningham et al., 2014	20u	1000 ml	600–1200 ml/hr for a few minutes
	20u	1000 ml	60–120 ml/hr
Ricci et al., 2013	20–40u	1000 ml	
Simpson & Creehan, 2013	10–40u	500–1000 ml	50 mu/min
	20u	1000 ml	150 ml/hr
Trioano et al., 2012	10–40u	1000 ml	20–50 mu/min
	20u	1000 ml	60–150 ml/hr
Guidelines			
California Maternal Quality Care Collaborative, 2010	10–40u	1000 ml	500 ml/hr if bleeding, titrate to uterine tone
J.P.H. Pharmaceuticals, 2007	10–40u	1000 ml	Adjust rate to sustain contractions

used for both intrapartum labor induction and postpartum third stage management. For those facilities that have only, for example, 30 units in 500 ml of NS or LR solution, set the infusion pump rate to 334 ml/hour for 30 minutes (10 units in 167 ml), then reduce the rate to 95 ml/hour (remaining 20 units) over 3.5 hours.

Option 3

- Give oxytocin 10 units IM in women without IV access.

Active Management of the Third Stage of Labor (AMTSL)

- Women who are at low risk for postpartum hemorrhage and wish to avoid routine administration of postpartum oxytocin should be advised that active management of the third stage of labor has been shown to reduce the risk of PPH; if a woman still chooses not to have oxytocin administered, her informed decision to follow physiological or expectant management of the third stage should be

supported (National Institute for Health and Care Experience, 2014).

- AMTSL consists of administration of uterotonic agents, controlled cord traction, and uterine massage after the delivery of the placenta (International Confederation of Midwives & International Federation of Gynaecologists and Obstetricians, 2003).
- AMTSL reduces the risk of postpartum hemorrhage (Soltani, Hutchon, & Poulouse, 2010).
- Researchers found no difference in amount of blood loss or incidence of retained placenta when oxytocin was given at the time of the delivery of the anterior shoulder compared to administration after the delivery of the placenta (Soltani et al., 2010).
- In a study on the effectiveness of the individual components of AMTSL, IV oxytocin reduced the risk of postpartum hemorrhage by 70% compared to IM administration, although the route of administration had no greater effect when combined with cord traction and uterine massage (Sheldon, Durocher, Winikoff, Blum, & Trussell, 2013).
- Of all the AMTSL interventions, uterotonics are the most effective element in preventing PPH (WHO, 2012). Women should be offered

uterotonics after birth (Gizzo et al., 2013). Oxytocin is recommended as the first uterotonic of choice (WHO, 2012).

Suggested Equipment

- IV infusion pump
- Liters of NS or LR solution
- Vials of oxytocin and syringes (for IM administration)
- Have other uterotonics on hand such as methylergonovine (Methergine), misoprostol (Cytotec), and carboprost (Hemabate).

REFERENCES

- Butwick, A. J., Coleman, L., Cohen, S. E., Riley, E. T., & Carvalho, B. (2010). Minimum effective bolus dose of oxytocin during elective caesarean delivery. *British Journal of Anaesthesia*, 104(3), 338–343.
- Callaghan, W. M., Kuklina, E. V., & Berg, C. J. (2010). Trends in postpartum hemorrhage: United States, 1994–2006. *American Journal of Obstetrics and Gynecology*, 202(4), 353.e1–353.e6. doi:10.1016/j.ajog.2010.01.011
- California Maternal Quality Care Collaborative. (2010). *OB hemorrhage toolkit*. Stanford, CA: Author. Retrieved from: https://www.cmqcc.org/ob_hemorrhage
- Cunningham, F., Leveno, K., Bloom, S., Spong, C. Y., & Dashe, J., Hoffman, B.L., . . . Sheffield, J. S. (Eds.). (2014). *Williams obstetrics*. (24th Ed.). New York: McGraw-Hill Professional Publishing.
- Devikarani, D., & Harsoor, S. S. (2010). Are we using right dose of oxytocin? *Indian Journal of Anaesthesia*, 54(5), 371–373.
- Dyer, R. A., Butwick, A. J., & Carvalho, B. (2011). Oxytocin for labour and caesarean delivery: Implications for the anaesthesiologist. *Current Opinions in Anaesthesiology*, 24(3), 255–261. doi:10.1097/ACO.0b013e328345331c
- George, R. B., McKeen, D., Chaplin, A. C., & McLeod, L. (2010). Up-down determination of the ED90 of oxytocin infusions for the prevention of postpartum uterine atony in parturients undergoing caesarean delivery. *Canadian Journal of Anesthesia*, 57, 578–582.
- Gizzo, S., Patrelli, T.S., Gangi, S.D., Carrozzini, M., Saccardi, C., & Zambon, A. (2013). Which uterotonic is better to prevent postpartum hemorrhage. Latest news in terms of clinical efficacy, side effects, and contradictions: A systemic review. *Reproductive Sciences*, 20, 1011–1019.
- International Confederation of Midwives & International Federation of Gynaecologists and Obstetricians. (2003). Joint statement: Management of the third stage of labour to prevent post-partum haemorrhage. Retrieved from <http://www.figo.org/files/figo-corp/docs/PPH%20Joint%20Statement.pdf>
- J.P.H. Pharmaceuticals. (2007). Pitocin. Prescribing information. Retrieved from <http://www.parsterileproducts.com/products/brands/pitocin.php>
- King, K. J., Douglas, M. J., Unger, W., Wong, A., & King, R. A. (2010). Five unit bolus oxytocin at cesarean delivery in women at risk of atony: A randomized double blind controlled trial. *Anesthesia and Analgesia*, 111(6), 1460–1466.
- National Institute for Health and Care Experience. (2014). *Intrapartum care overview*. London, UK: Author. Retrieved from <http://pathways.nice.org.uk/pathways/intrapartum-care?no=1#path=view%3A/pathways/intrapartum-care/normal-labour-and-birth.xml&content=view-index>
- Ricci, S. S., Kyle, T., & Carmen, S. (2013). *Essentials of maternity, newborn, and women's health nursing*. Philadelphia, PA: Lippincott. Williams, and Wilkins.
- Sheldon, W. R., Durocher, J., Winikoff, B., Blum, J. & Trussell, J. (2013). How effective are the components of active management of the third stage of labor? *BMC Pregnancy and Childbirth*, 13(46), 1–8.
- Simpson, K. R., & Creehan, P. A. (2013). *AWHONN perinatal nursing*. (4th ed.). Philadelphia, PA: Lippincott. Williams, and Wilkins.
- Simpson, K. R., & Knox, G. E. (2009). Oxytocin as a high-alert medication: Implications for perinatal patient safety. *American Journal of Maternal Child Nursing*, 34(1), 8–15.
- Sultani, H., Hutchon, D. R., & Poulouse, T. A. (2010). Timing of prophylactic uterotonics for the third stage of labour after vaginal birth. *Cochrane Database of Systematic Reviews*, 8, CD006173. doi:10.1002/14651858.CD006173.pub2
- Trioano, N. H., Chez, B. F., & Harvey, C. J. (2012). *AWHONN high risk and critical care obstetrics*. Philadelphia, PA: Lippincott, Williams, and Wilkins.
- United States Agency for International Development. (2010). Active management of the third stage of labor for prevention of postpartum hemorrhage: A fact sheet for policy makers and program managers. Retrieved from <http://www.k4health.org/toolkits/pc-mnh/active-management-third-stage-labor-amtsl-prevention-post-partum-hemorrhage-fact>
- Westoff, G., Cotter, A. M., & Tolosa, J. E. (2013). Prophylactic oxytocin for the third stage of labour to prevent postpartum haemorrhage. *Cochrane Database of Systematic Reviews*, 10, CD001808. doi:10.1002/14651858.CD001808.pub2
- World Health Organization. (2006). Prevention of postpartum haemorrhage by active management of third stage of labour. MPS technical update. Geneva, Switzerland: Author. Retrieved from http://www.who.int/maternal_child_adolescent/documents/postpartum/en/
- World Health Organization. (2012). *WHO recommendations for the prevention and treatment of postpartum haemorrhage*. Geneva, Switzerland: World Health Organization. Retrieved from http://apps.who.int/iris/bitstream/10665/75411/1/9789241548502_eng.pdf