Guidelines for Oxytocin Administration after Birth

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 IV 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 premixed concentration of IV fluid with oxytocin 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, & Poulose, 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).

Table 1. Various Guidelines and Studies Using Oxytocin

<table>
<thead>
<tr>
<th>Research Studies</th>
<th>Oxytocin Concentration</th>
<th>Fluid Volume</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>George et al., 2010</td>
<td>15u</td>
<td>1000ml</td>
<td>1000ml/hr</td>
</tr>
<tr>
<td>Devikarani et al., 2010</td>
<td>20u</td>
<td>1000ml</td>
<td>600ml/hr for a few minutes</td>
</tr>
<tr>
<td></td>
<td>20u</td>
<td>1000ml</td>
<td>60–120ml/hr</td>
</tr>
<tr>
<td>King et al., 2010</td>
<td>40u</td>
<td>500ml</td>
<td>Bolus</td>
</tr>
<tr>
<td></td>
<td>20u</td>
<td>1000ml</td>
<td>125ml/hr</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Books</th>
<th>Oxytocin Concentration</th>
<th>Fluid Volume</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cunningham et al., 2014</td>
<td>20u</td>
<td>1000ml</td>
<td>600–1200ml/hr for a few minutes</td>
</tr>
<tr>
<td></td>
<td>20u</td>
<td>1000ml</td>
<td>60–120ml/hr</td>
</tr>
<tr>
<td>Ricci et al., 2013</td>
<td>20–40u</td>
<td>1000ml</td>
<td></td>
</tr>
<tr>
<td>Simpson &amp; Creehan, 2013</td>
<td>10–40u</td>
<td>500–1000ml</td>
<td>50mu/min</td>
</tr>
<tr>
<td></td>
<td>20u</td>
<td>1000ml</td>
<td>150ml/hr</td>
</tr>
<tr>
<td>Trioano et al., 2012</td>
<td>10–40u</td>
<td>1000ml</td>
<td>20–50mu/min</td>
</tr>
<tr>
<td></td>
<td>20u</td>
<td>1000ml</td>
<td>60–150ml/hr</td>
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<th>Guidelines</th>
<th>Oxytocin Concentration</th>
<th>Fluid Volume</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Maternal Quality Care Collaborative, 2010</td>
<td>10–40u</td>
<td>1000ml</td>
<td>500ml/hr if bleeding, titrate to uterine tone</td>
</tr>
<tr>
<td>J.P.H. Pharmaceuticals, 2007</td>
<td>10–40u</td>
<td>1000ml</td>
<td>Adjust rate to sustain contractions</td>
</tr>
</tbody>
</table>

This practice recommendation was developed by the AWHONN Postpartum Hemorrhage Project Quality Improvement Panel. The information 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.

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References


United States Agency for International Development. (2010). Active management of the third stage of labor for preven-
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