Oxytocin Administration for Management of Third Stage of Labor

**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 never be administered via 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**
- Administration:
  - Oxytocin 20 units in 1 liter normal saline (NS) or lactated Ringer’s (LR) solution
  - Initial bolus rate (500-1000 ml/hour) for 30 minutes followed by a maintenance rate of 125 ml/hour for the next 3.5 hours
- Provide a minimum infusion time of 4 hours after delivery.
- Give oxytocin 10 units intramuscularly (IM) in women without intravenous (IV) access.
- For woman 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.

**Active Management of the Third Stage of Labor (AMTSL)**
- 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).
Suggested Equipment:
- IV infusion pump to for control over oxytocin administration
- Liters of NS or LR solution
- Vials of oxytocin and syringes
- Have other uterotonics on hand such as methylergonovine (Methergine), misoprostol (Cytotec), and carboprost (Hemabate).

Table 1. Specific Recommendations for Oxytocin Use

<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>
<tr>
<td>Books</td>
<td></td>
<td></td>
<td></td>
</tr>
<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>
</tr>
<tr>
<td>Guidelines</td>
<td></td>
<td></td>
<td></td>
</tr>
<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>

References


