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Aim Statement:
• Explore effectiveness of oral sucrose for the relief of procedural pain in premature infants.

Theory:
• Pain is a complex perceptual experience influenced by physiologic and psychological factors unique to the individual (Melzack & Wall, 1965). Infants have the anatomic and functional requirements for pain processing by 20 weeks gestational age.

• Gate-control theory holds that the spinal cord has a "gating" mechanism that inhibits or promotes transmission of peripheral nerve impulses to the brain. The opening and closing of the gate to pain information can be influenced by a number of factors which include pharmacological and non-pharmacological interventions.

ORAL SUCROSE: 24% - 50%, use 0.1-0.2 ml orally 2 minutes before procedure

• Typically, the sucrose is delivered via a sugar-coated pacifier. Research findings are not as conclusive concerning the use of sucrose for procedural pain in newborns. Pain measurement scales are typically developed and used with term infants. Lack of reliable and valid instruments to measure preterm infant pain may confound findings related to the use of sucrose for pain relief.

Findings:
• Typically, the sucrose is delivered via a sugar-coated pacifier. Research findings are not as conclusive concerning the use of sucrose for procedural pain in newborns. Pain measurement scales are typically developed and used with term infants. Lack of reliable and valid instruments to measure preterm infant pain may confound findings related to the use of sucrose for pain relief.

<table>
<thead>
<tr>
<th>Pain Tool</th>
<th>Age Level</th>
<th>Indicators</th>
<th>Pain Stimulus</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRIES</td>
<td>Full-term neonate</td>
<td>Crying, oxygen, saturation, heart rate, blood pressure, expression, sleeplessness</td>
<td>Post-operative pain</td>
</tr>
<tr>
<td>N-PASS (Neonatal Pain, Agitation, Sedation Scale)</td>
<td>Preterm-Term</td>
<td>Crying/irritability, behavior state, facial expression, extremities/tone, vital signs, both pain and sedation are assessed</td>
<td>Chronic and procedural</td>
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</tbody>
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Many questions were raised:
• Are the pain tools used in Newborn Nursery and NICU reliable and valid?
• Are the pain tools used in the NICU appropriate for preterm infants?
• Do cultural/ethnic responses to pain exist?
• When could oral sucrose be used for in the NICU and/or Newborn nursery for situations other than pain relief?
• Are there reliable and valid measures to document effective pain control?

Next Steps:
• Identify acute pain conditions in hospitalized neonates that would benefit from the use of oral sucrose to alleviate pain.
• Examine pharmacologic and other non-pharmacologic methods of pain relief in neonates.
• Determine effective methods to deliver sucrose for pain relief.
• Verify validity and reliability of N-PASS and CRIES Scoring Tools.

Literature review:
• Preterm infants perceive and feel pain (D’Apolito, 2006). Infants in the NICU need effective pain management during frequent painful procedures (Mitchell & Waltman, 2003). Research findings support the theory that sucrose relieves procedural pain through the body’s endogenous opioid system providing natural anesthesia (Barr et al., 1995; Nikfar, Abdollahi, Etemad, & Shrifzadeh, 1997). Sucrose as analgesic has been shown to be effective for procedural pain such as heel sticks and circumcision pain in term newborns (Greenberg).