An Overview of Clinical Tools to Assess Infants born to Mothers with Substance Abuse

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Scope of the Problem

- One baby born each hour in the US with signs of neonatal abstinence.
- ~13,500 babies born with NAS from noniatrogenic causes in 2009
  - 5 fold ↑ # women using opioids during pregnancy
  - 3 fold ↑ in babies diagnoses with NAS
- Cost of care for those infants was $720 million
  - Cost per baby ~ $53,000 in 2009
  - Normal newborn cost - $870 - $1700 for 1-2 day stay
  (Ross-Roussos & Reisfeld, 2013)

Length of Stay (LOS)

- Data from a retrospective review of approximately 21,000 (2000-2009) the LOS was 16 days (Patrick et al, 2012).
- LOS is varied because optimal treatment for NAS has not been identified (Sarkar & Dunn, 2004).
- 60-80% of these babies will require pharmacologic management (Sarkar & Dunn, 2004).
- Assessment tools are used to guide pharmacologic treatment.

Assessment Tools

- Number of tools
  - Lipsit (Lipsit, 1975)
  - Neonatal Withdrawal Inventory (Green & Suffet, 1981)
  - Neonatal Narcotic Withdrawal Index (Zahorodny, 1998)
  - Neonatal Abstinence Scoring Tool (Finnegan, et al, 1975)
- Concerns with all tools
  - Subjective
  - No one believes the score
  - Big Problem – Pharmacologic treatment is based on the scores

Lipsitz Neonatal Drug Withdrawal Scoring System

- 11 item scale
- Each symptom scored 0-3 by severity
- Score of 4 = recommended starting point for pharmacologic therapy

Subjective ratings
4 items list yes/no outcome responses
? Recommended by AAP(1998)

Neonatal Withdrawal Inventory

- 8 point checklist of 7 NAS symptoms
- 4 point behavioral distress scale
- Pharmacotherapy initiated after 1st score of 8

- Originally tested on infants exposed to methadone
- Compared to the Finnegan
  - Reliability
  - Sensitivity
  - Specificity
**Neonatal Withdrawal Inventory**

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**Neonatal Narcotic Withdrawal Index (NNWI)**

- 17 item tool with range of scores 0-5
  - **Score 0-2**
    - Tachypnea, crying, tremors, muscle tone, temp, vomiting
  - **Score 0-1**
    - Sneezing, seizures, stuffy nose, diarrhea
  - **Score 2-4**
    - Sweating, poor suck, wt loss > 10%BW
  - **Score 5**
    - Skin abrasions, yawning, wt loss > 15% BW

**Neonatal Abstinence Scoring Tool (Finnegan Tool)**

- Diagnostic tool
- Divided into 3 systems with 21 total items
  - CNS disturbances
  - Metabolic, vasomotor and respiratory
  - Gastrointestinal
- Scoring Interval
  - Every 3-4 hours
  - Dynamic scoring tool
  - Includes everything that happened during that 3-4 hour period

**Inter-Observable Reliability Program**

- Define each item on the tool
- Everyone learns the definitions and uses them when scoring the baby
- Periodically two staff members score the baby at the same time independently
- Independent scores are compared to determine their inter-observer reliability
  - There can be a disagreement with 2 items to maintain reliability in using the tool
  - When there are disagreements, the item is discussed and the baby is given an agreed upon score

**Finnegan**

- Most comprehensive tool
- Too complex for some to use routinely
- Newly released training DVD with definitions
- Train to 90% reliability
Accuracy in Assessing Infants for NAS (D’Apolito & Finnegan, 2010)

• Know item definitions
• Monitor inter-observer reliability frequently
• Re-educate if reliabilities are low

Conclusions

• The ideal assessment tool should be published and include item definitions and a protocol for administering the tool.
• Nurses need education and training to achieve competency and inter-observer reliability in the use of a selected tool.
• Tool-specific materials should be used to standardize training and improve accuracy in assessments.

Conclusions

• Nurses caring for infants at risk for neonatal abstinence syndrome should be knowledgeable about the tools used to evaluate these infants and guide their treatment.
• Competent and knowledgeable nurses play a critical role in improving outcomes for infants with neonatal abstinence syndrome.