Neonatal Abstinence Syndrome Scoring Models, are the Newer Models Better?

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Understanding NAS
A schematic illustration of the mechanism of opioid withdrawal in neonates.

Neonatal Abstinence Scoring
NAS Scoring Tools

- Original Finnegan - 32 items/scoring 1-5
  - Tx initiated for ≥ 8 on 3 consecutive scores
- Modified Finnegan - 21 items/scoring 1-5
  - Eliminated dehydration, levels of excoriation
  - General accepted treatment threshold:
    - ≥ 8 on 3 consecutive scores
    - ≥ 12 on 2 consecutive scores
    - Treatment threshold not validated (based off original Finnegan)
- Finnegan Symptom Prioritization
  - Utilizes Finnegan but focuses on symptom severity
- Eat, Sleeps, Consoles Model
  - Focuses on infant’s function (ability to eat, sleep or console related to NAS symptoms) and maximizing non-pharmacological care

Pitfalls of Scoring Tools

- Developed to assess withdrawal primarily from opiates
- Developed for use with fixed feeding schedules
- Reliable use requires training
- May not be as accurate for infants which are preterm or older than one month
- Insufficient validation of many of the tools, especially regarding threshold of treatment
- Subjective and difficult to use consistently
Modified Finnegan

• Comprehensive instrument which assigns a cumulative score based on observation of 21 items relating to symptoms of neonatal withdrawal.
• Non-pharmacological care intervention isn’t built into tool
• Does not look at infant’s function within an assigned score

SCORING AREAS

• CNS DISTURBANCES
• METABOLIC, VASOMOTOR AND RESPIRATORY DISTURBANCES
• GASTROINTESTINAL DISTURBANCES

Threshold for Pharmacologic Treatment

• Treatment threshold based off original Finnegan
• Rule of 24 is generally recognized
  • 8 or greater for 3 consecutive scores
  • 12 or greater for 2 consecutive scores
Newer Models for Consideration

- Finnegan Symptom Prioritization
- Eat, Sleep and Console Model of Care

Key concepts
- Evaluate symptoms based off infant’s ability to function
- Provision of non-pharmacological care

NAS Symptoms: Concerning or Not?

- It is important to be cognizant of all NAS symptoms
  - NAS symptoms may increase and become more severe leading to dysfunction in basic newborn abilities
  - While poor feeding, inconsolability, crying are considered “the concerning” symptoms, remember other NAS symptoms can potentiate or cause these symptoms
  - NAS symptoms are a sign that infant is experiencing withdrawal, withdrawal has the potential to escalate
  - Recognition of NAS symptoms allows for targeting of non-pharmacological measures
Finnegan Symptom Prioritization

Wachman

- Modified NAS Treatment Criteria
  - Traditionally Rx for: 2 NAS scores ≥ 8 or 1 score ≥ 12
  - Moved to team huddles and assessment of symptoms prior to tx
    - Huddles included parent, nurse, physician
    - Assessed infant’s withdrawal symptoms and intervened in predominance of:
      - Poor feeding
      - Excessive vomiting
      - Diarrhea
      - Poor consolability
      - Poor sleep
  - Assessed non-pharmacologic care
    - First intervention: increase non-pharmacological care
    - Second intervention: medications only after non-pharmacological care maximized and failed

Wachman

• Quality Improvement Project
  • PDSA cycle 1:
    • Non-pharmacologic Care Bundle
    • Prenatal parent meetings
    • Engaging parents in non-pharmacologic care/rooming in
    • Finnegan symptom prioritization
    • Changed pharm tx initiation from ≥8 x 2 or ≥12 x 1 to performing team huddle. Reviewed: poor feeding, excessive vomiting, diarrhea, poor consolability and/or poor sleep and assessed non-pharmacological care

Wachman

• Results:
  • Parental engagement key component of the QI bundle to improved outcomes
  • Improved outcomes occurred with non-pharmacologic bundle and Finnegan symptom prioritization. No signification change after in outcomes after switching to ESC
### NAS/NOWS Symptoms

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Eat, Sleep and Console Model of Care

Concepts in Eat, Sleep and Console NAS Model

• Development of Novel Function-based NAS Assessment and Management Approach
  • Can the baby eat?
  • Can the baby sleep?
  • Can the baby be consoled?
ESC Model of Care

• NAS Model of Care which incorporates ESC behaviors, non-pharmacologic care interventions (NPI), clustering of care and staff and parent/care giver assessments
• Each assessment provides opportunity to reinforce NPI
  • Affirms NPI in place
  • Provides avenue to educate on NPIs that can be increased

Assessments

• Assessments are done with infant’s waking and feedings
  • Assessment reflects time period from ESC assessment to ESC assessment (feeding to feeding)
  • Infant will be assessed on ESC behaviors of eating, sleeping and consoling. NAS symptoms/severity will be evaluated and determined to be/not to be contributing to infant’s inability to eat, sleep, console.
  • Assessment of all NPIs to assure all are maximized
ESC Behaviors: Eating

• Takes > 10 minutes to coordinate feeding with showing hunger cues due to NAS

  OR

• Breastfeeds < 10 min due to NAS (or other age-appropriate duration)

  OR

• Alternative Feeding < 10 ml due to NAS (or other age-appropriate volume)

ESC Behaviors: Eating

• Do not indicate Yes to poor feeding if factors are non-opioid related:
  • Prematurity
  • Transitional sleepiness
  • Spittiness in first 24 hours
  • Inability to latch due to infant/maternal anatomical factors
ESC Behaviors: Sleeping

• Sleeps < 1 hour due to NAS
  • Infant is unable to sleep for at least one hour, after feeding well due to NAS symptoms (fussiness, restlessness, increased startle, tremors)
  • Do not indicate Yes to poor sleep if related to non-opioid factors:
    • Symptoms of nicotine/SSRI withdrawal
    • Physiologic cluster feeding in initial few days of life
    • Intermittences in sleep for routine newborn testing

ESC Behaviors: Consoling

• Unable to Console
  • Takes > 10 min to console or cannot stay consoled for > 10 min due to NAS despite infant caregiver/provider best efforts to implement NPIs
  • Do not indicate Yes to inability to console if infant's difficulty consoling is related to non-opioid factors:
    • Caregiver non-responsiveness to hunger cues
    • Circumcision pain
Non-pharmacologic Interventions

- Rooming-in
- Parent/caregiver presence
- Holding by parent/caregiver/cuddler
- Skin to skin
- Safe swaddling
- Optimal feeding
- Quiet, low light environment
- Non-nutritive sucking
- Rhythmic movement
- Additional help
- Visitor limitation
- Clustering care
- Parent/caregiver self-care

ESC Plan of Care

- Parent/Caregiver Huddle:
  - Performed when infant receives Yes to any ESC item or 3 on consoling support
  - RN bedside huddle with parent/caregiver to formally review NPIs that can be increased.

- Full Care Team Huddle:
  - Performed when an infant receives a 2nd consecutive Yes for the same ESC item or 3 on consoling support
  - Formal huddle with parent/caregiver, infant’s RN and physician or associate provider to consider etiologies for symptoms and determine need of pharmacological treatment
Which Tool is Right?

• Not necessarily a “right” tool.
• Key is consistent use and standard education of tool
• Use of a non-pharmacological bundle along with NAS tool is essential
• Correlation with patient data, exam and scoring trends are a must