ESC, Easy as 1,2,3: Neonatal Abstinence Syndrome

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Disclosures

• I have no relevant financial disclosures

An Update on the Burden of Neonatal Abstinence Syndrome in the United States


Data collected from 2016 Kids’ Inpatient Database by the HCUP, 4200 US hospitals
Jan 1, 2016-Dec 31 2016
32128 neonates w/ NAS from weighted sample (0.8%) vs 21732 in 2012
More likely to be boys, white, southern US, Medicaid, and poor (p< .001)
LOS Mean/Median: 16.5/12 days
Total Cost Mean/Median: ~$80000/$39000
Annual US Cost Burden of NAS

Neonatal Abstinence Syndrome

• Increase in cases and cost due to increase in opioid use/abuse
• Long hospitalizations
  - Costly
  - Financial stress
  - Work absenteeism for families
  - Over-medicalization of neonates
• Eat, Sleep, Console (ESC) • symptom-based, simpler assessment tool
  - Emphasizes non-pharmacologic care
  - Encourage "rooming-in"
  - Decrease morphine use (other pharmacologic treatment)
• Most rapid increase in opioids is in rural settings and care provided at community hospitals

Improving Care for Infants With Neonatal Abstinence Syndrome: A Multicenter, Community Hospital–Based Study

• Multidisciplinary QI approach from Jan 2017 - Dec 2018
  • 2 community hospitals in Washington
    - 13 pediatric bed, 35 level III NICU beds
    - 9 pediatric beds, 13 level II SCN beds
  • Rooming-in initiated in 2015, prior to intervention
  • Primary Outcomes:
    - Decrease LOS by 20%
    - Decrease scheduled morphine use to < 20%
Patient Demographics

- 304 patients
  - 149 pre-intervention
  - 155 post-intervention
  - 26 missing data
- Predominantly
  - Term
  - Female
  - Public insurance
  - White
- No sig diff pre vs post

Timeline & Summary of Interventions
Results

- Length of stay (days) over 2 years
  - Pre-intervention: 9 days
  - Post-intervention: 6.2 days
  - 32% reduction
  - LOS excluding social holds: 4.9 days

- Percentage of infants requiring morphine treatment over 2 years
  - Pre-intervention: 57%
  - Post-intervention: 23%
  - 60% reduction

- Patient charges:
  - ~33k vs ~23k

- No serious safety events pre or post

- Re-admissions within 30 days: only Hosp 1
  - 1 pre vs 2 post

Limitations

- Re-admissions at other institutions
- Cost reduction not actual costs, though reasonable proxy
- Did not achieve primary outcome of morphine use < 20%
- Unable to track relevant data:
  - Breastfeeding rates
  - Parental presence at bedside
  - Frequency of 1x morphine dosing
- Hosp 1 – NICU did not adopt ESC, so may increase morphine use
Future Research in NAS
A Core Outcome Set for Neonatal Opioid Withdrawal Syndrome
Lauren E. Kelly, Rhia Shen, Sanya Marfatia, Emily Coppleton, Aiyi Hong, Kim Schwieger, Karen Simpson, Xuan Ma, Lauren M. Johnson, and Emily Coppleton
Published: July 2020, DOI: 10.1136/archdischild-2019-318090

- International multidisciplinary steering committee
- Evidence-informed and consensus-based core outcome set
- Reduce heterogeneity between studies and facilitate EBM
- Improve research quality and consistently enabling comparison of studies with meaningful outcomes to improve care in NAS
- Use future research to test validity of NOWS-COS to increase generalizability and impact

Core Outcome Set

- Pharmacologic Treatment required to manage withdrawal (yes vs no)
- Total dose of opioid treatment received to manage withdrawal (mg)
- Duration of treatment received (days)
- Adjuvant therapy (yes vs no)
- Difficulties feeding (yes vs no)
- Consolability (yes vs no)
- Time to adequate symptom control (h)
- Parent-infant bonding (yes or no)
- Duration of time hospitalized (calendar days)- all levels of care
- Receiving breast milk at discharge (yes or no)
- Weight gain from birth at discharge (g/kg/day)
- Readmission to hospital for withdrawal concerns (yes or no)
- Neurodevelopment

Take-home points

- NAS is a MAJOR public health crisis
- Majority of care of NAS infants happens in rural/community settings but available research has focused on children’s hospitals
- ESC continues to demonstrate decreases in LOS, morphine/opioid exposure of neonates, and hospital costs
- QI initiatives can be implemented to provide quality care of neonates with NAS in community setting with sustained improvement in outcomes
- More standardized research needed
Thank you!