Title: Practice Patterns in Adherence to Neonatal Abstinence Guidelines: A Retrospective Chart Review

Robyn M. Gagnon, DNP
Bouve’ College of Health Sciences, Northeastern University, Rhode Island, RI, USA

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References:


**Abstract Summary:**
With the recent surge in the number infants diagnosed with Neonatal Abstinence Syndrome (NAS), this quality improvement project was completed to measure the number of deviations from NAS pharmacological management guidelines. The goal was to inform practice and to provide an opportunity for improvement through education or guideline modification.

**Learning Activity:**

<table>
<thead>
<tr>
<th>LEARNING OBJECTIVES</th>
<th>EXPANDED CONTENT OUTLINE</th>
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<tr>
<td>Learner will be able to define Neonatal Abstinence Syndrome (NAS).</td>
<td>Narcotic exposure predisposes the infant to the withdrawal, known as Neonatal Abstinence Syndrome (NAS).</td>
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<td>Learner will be able to identify areas for improvement in compliance with NAS guideline.</td>
<td>Areas for improvement in guideline adherence will be identified</td>
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<td>Learner will be able to describe educational opportunities that will lead to improved patient care and guideline modifications</td>
<td>Findings from this project will be used to determine the educational needs of prescribers, may lead to the implementation of consistent NAS management, and/or potential revision of the current guidelines.</td>
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**Abstract Text:**

**Background**

Newborn narcotic exposure occurs through two routes; maternal drug use during gestation or from iatrogenic causes. Narcotic exposure predisposes the infant to the withdrawal, known as Neonatal Abstinence Syndrome (NAS). NAS is evidenced by central and autonomic nervous system regulatory dysfunction, which frequently results in significant morbidity and prolonged hospital stays (Jansson, Velez & Harrow, 2009, p. 47). There has been a surge in the number of infants born chemically dependent to opioids, resulting in increased numbers of infants born with NAS. Additionally, medical advances have led to a number of infants suffering from NAS because of the need for opioid analgesia as part of their medical management. NAS can significantly impact the length of hospital stay as well as the cost of hospitalization. The average length of hospital stay from 2000-2009 for a newborn with NAS was 16.4 days, compared to 3.3 for newborns without NAS. Similarly, the average cost of hospital stays was $53,400 for infants with NAS, compared to $9,500 for infants without NAS (Patrick et al., 2012).

To date there is no accepted standard of care for the treatment of neonatal abstinence syndrome. This is partly due to the complex nature of withdrawal, and as such a specific medical or pharmacological intervention to manage or control symptoms has not been uniformly accepted (Kocherlakota, 2014). This leaves individual neonatal units who care for newborns with NAS to develop pharmacologic based guidelines to standardize their approach to treatment. Guidelines for the assessment and management of NAS often include quantifying symptoms using a standardized tool such as the Modified Finnegan Neonatal Abstinence Scoring Tool as well directives regarding non-pharmacologic and pharmacologic interventions (Holmes, 2016). (website) The Finnegan NAS tool quantifies the severity of NAS as well as provides a measure to determine the impact of interventions.

Anecdotal evidence from one neonatal intensive care unit (NICU) in the northeastern United States, suggests treatment of NAS is inconsistent and not aligned with the unit guideline (Vانfleet and NAS Committee, 2007). It is possible that deviating from a guideline interferes with achieving successful management and treatment of NAS, as consistency of care may be compromised. Findings from this
The project will be used to determine the educational needs of prescribers, may lead to the implementation of consistent NAS management, and/or potential revision of the current guidelines.

**Purpose and Goal**

The purpose of this quality improvement project is to measure the number of deviations from the institutional unit guideline, with regards to the pharmacological management of infants with NAS, from a single NICU. The goal is to inform practice and to provide an opportunity for improvement through education or guideline modification.

**Project Design**

**Design:** A retrospective chart review (RCR) will be used for this quality improvement project.

**Sample and Setting:** The sample will include infants 34 weeks gestation and greater with an ICD 9/10 code for Neonatal Abstinence Syndrome (NAS) from a single neonatal intensive care unit in the northeast US. The sample will consist of 50 infants with the diagnosis of NAS admitted to the NICU starting on July 1, 2014 and ending on February 28, 2017. Using the last 50 patients treated for NAS will allow the evaluation of current practice. Neonates with NAS are generally managed in our newborn nursery, so the sample being collected are NICU babies admitted for an additional diagnosis requiring intensive care.

**Data Collection:** To measure adherence to the NAS guideline, the number of deviations from the guideline per subject will be collected via chart query. Specifically, the type and dose of medication(s) ordered for treatment (Morphine versus Morphine and Phenobarbital) and appropriateness of dose adjustments (i.e. If they were made in accordance with the Finnegan tool scores) will be recorded.

**Variables:** Data collected will include gestational age, breastfeeding status, in utero narcotic exposure (determined by history and toxicology), iatrogenic narcotic exposure requiring treatment, additional maternal drug exposures that might impact severity of withdrawal, (i.e. maternal psychiatric medications or sedatives), day of life when onset of treatment with Morphine and/or Phenobarbital began, and length of stay. In addition to these demographic and baseline data, there will be 3, 48-hour data collection periods. The first 48-hour data collection will occur 24 hours prior to the NAS score prompting treatment with Morphine or Morphine plus Phenobarbital and 24 hours after the initiation of treatment. The second 48-hour data collection will occur 24 hours prior to the NAS score prompting treatment with Phenobarbital (if it not initiated with Morphine) and 24-hours after initiation. The third 48-hour data collection will be on day 7 of treatment during maintenance treatment. The purpose of looking at data on the seventh day is to obtain a random sampling of guideline compliance once treatment has started.

**Ethical Consideration**

IRB approval from Women and Infants Hospital of Rhode Island and Northeastern University was obtained prior to initiation of any research procedures. This is a retroactive chart review. Data will be reported in aggregate with no patient identifiers thus this study is presumed to be low risk for study subjects. As a result, a waiver for consent was requested.

**Data Management**

Data that aligns the subject with a unique study ID number for data checking procedures will be stored on a password-protected JumpDrive behind the hospital firewall and the JumpDrive will be secured in a locked cabinet in the PI’s office when not in use. Subjects will be de-identified and each subject will be assigned a unique study ID number. De-identified data will be collected on the PI’s personal computer that will be used to analyze the data. Accuracy of data will be assured through a process of double check
for every 5 subjects. PHI data identifiers will be destroyed once collected coded and all files will be deleted upon completion of this project.

Evaluation

Data analysis will be completed with descriptive statistics to describe our study sample and to measure the number guideline of deviations per subject, and in aggregate (using mean, median, mode, and frequencies).

Study Timeline:

Data collection is in progress and will be completed and analyzed by June 2017.