Evaluating the Effects of Changing the Treatment of Neonatal Abstinence Syndrome from Methadone to Morphine

Yuliya Oumarbaeva BS  
*USF MCOM- LVHN Campus*

Wendy J. Kowalski MD  
*Lehigh Valley Health Network, wendy_J.Kowalski@lvhn.org*

Warren E. Furry BSN, RN  
*Lehigh Valley Health Network, Warren_E.Furry@lvhn.org*

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Yuliya Oumarbaeva BS, Wendy Kowalski MD, Warren Furry BSN
Lehigh Valley Health Network, Allentown, PA

Background
Neonatal abstinence syndrome (NAS) is a withdrawal syndrome that develops as newborns experience an abrupt discontinuation of in utero exposure to abused drugs by the mother. With the growing opioid epidemic in the United States, NAS is a rapidly growing public health concern. Currently, methadone and morphine are the two most common pharmacological methods used to treat NAS. Methadone requires a longer taper, but can be completed at home if the environment is conducive. Morphine on the other hand is a faster taper, but must be completed in the hospital. Furthermore, iatrogenic administration of opioids during treatment may lead to further CNS damage. Therefore, physicians aim to limit total drug administration while maintaining adequate treatment and ensuring a safe transition to home off medications. To hopefully reduce the amount of neonatal opioid exposure, the Neonatal Intensive Care Unit (NICU) at Lehigh Valley Health Network (LVHN) changed the standard NAS treatment from a methadone protocol to a morphine based pathway. This project aims to compare the hospital length of stay (LOS), days of opioid exposure (DOE), and total opioid administration (mg/kg) using the two different standards of treatment.

AIMS
This project aims to compare the hospital length of stay (LOS), days of opioid exposure (DOE), and total opioid administration (mg/kg) using the two different standards of treatment.

SMART AIM: Reduce total days of drug exposure for NAS babies admitted to CC NICU from 55 days to less than 30 days by December 31, 2017.

Balancing AIM: LOS to not increase more than 30 days.

Intervention: New morphine based NAS protocol

Methodology
- Quality improvement project
- Retrospective and prospective chart review January 2014-December 2017
- Included all charts with diagnosis NAS code P 96
- One PDSA cycle completed
- Exclusion criteria:
  - no treatment with methadone or morphine
  - incomplete treatment due to medical illness
  - transfer to outside hospital prior to completion of treatment
- Analyzed averages of methadone and morphine: LOS, DOE, and total mg/kg opioid exposure using ANOVA

Results

<table>
<thead>
<tr>
<th>Chart Review</th>
<th>Number of charts analyzed</th>
<th>Days of morphine treatment</th>
<th>Number of charts flagged with NAS code</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>50</td>
<td>167</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>174</td>
<td>100</td>
</tr>
</tbody>
</table>

Conclusions

- Aim to continue improving quality and efficacy of care while understanding costs and constraints of the health care system.
- Moving from a methadone to a morphine based protocol
  - Reached goal of reducing DOE: on average decreased by 32 days (58%)
  - As a result, increased LOS by 17.2 days (167%)
- Future PDA cycles/interventions:
  - Compliance to pathway non-pharmacological measures
    - Ex: Increase breast feeding in moms who are not taking other illicit drugs
  - Compare LOS at LVHM with rooms vs. CC NICU rooms
  - Weaning faster than q24 for scores <3-4
  - Nurse re-education with parent/nurse dual scoring

References: