Inter-Observable Reliability of the Modified Finnegan Score in a Population of Neonatal and Pediatric Nurses

Cathy Retskin, MSN, RNC
DNP Candidate Walden University

Mary Ellen Wright, MSN, APRN, CPNP
PhD Candidate Florida Atlantic University

copyright 2014 Retskin and Wright
History of Mission Hospital Neonatal Abstinence Syndrome/Neonatal Withdrawal Initiatives

Number of Babies Treated per Year at Mission Hospital

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Babies Treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>20</td>
</tr>
<tr>
<td>2011</td>
<td>60</td>
</tr>
<tr>
<td>2012</td>
<td>100</td>
</tr>
<tr>
<td>2013*</td>
<td>120</td>
</tr>
</tbody>
</table>
Timeline of Mission Health NAS Initiative

Years of Effort

Aim: To provide consistent, comprehensive, caring approaches to infants and families affected by NAS
Collaboration on National, State, Regional and Local Levels

NC DHHS NAS Initiative

Community Collaborative

Community Subcommittee

Prevention Subcommittee

Inpatient NAS Teams

NAS Steering Committee

Coordination of Care
- Working on patient experience after discharge.

Family Planning Through MAHEC

PQCNC

iNICQ

Pharmacologic Management Team

Non-Pharmacologic Management Team
Opportunities to Standardize Care Processes

• Retrospective cohort comparison pre and post implementation of clinical practice guideline.
• Conclusion: Decrease in Finnegan Scores
  Decrease in Length of Stay

Identification
Evaluation
Treatment
Discharge
Mission Process Mapping
Just One Example
Details not visible: Point just to show broad view of mapping
All Areas had Opportunities for Improvement

Formed Sub-Committees to address the opportunities in the areas of identification, evaluation, treatment and discharge.

Steering committee coordinates the overall initiative with reports from the sub-committees.

Example of initiative derived from looking at evaluation:

Inter-Observer Reliability (IOR) of the Modified Finnegan of Nurses from Mother/Baby, Pediatrics, PICU, NICU and nurses in the region.
Evaluation
Inter-Observer Reliability of Modified Finnegan Score

Origin of study: Comments being made at provider meetings “Depends on what shift of nurses and who is doing the Finnegan. . .”

Impression that there was variability without evidence.

The purpose of the study was to determine if there is inter-observer reliability (IOR) of the Finnegan Neonatal Abstinence Scoring Tool (FNAST) among nurses caring for infants with neonatal abstinence syndrome (NAS) in the NICU, Mother/Baby and PEDS/PICU units and regional nurses.
## Description of Nurses in Study
### Education Level, Years Experience, Certification
Total n=122

<table>
<thead>
<tr>
<th>Education Level</th>
<th>NICU</th>
<th>Mother/Baby</th>
<th>PEDS/PICU</th>
<th>Total</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diploma</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>9</td>
<td>7.3</td>
</tr>
<tr>
<td>LPN</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>2.4</td>
</tr>
<tr>
<td>ADN</td>
<td>3</td>
<td>27</td>
<td>15</td>
<td>47</td>
<td>38.2</td>
</tr>
<tr>
<td>BSN</td>
<td>4</td>
<td>28</td>
<td>28</td>
<td>58</td>
<td>47.2</td>
</tr>
<tr>
<td>MSN</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>4.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10</td>
<td>65</td>
<td>47</td>
<td>122</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years of Experience</th>
<th>NICU</th>
<th>Mother/Baby</th>
<th>PEDS/PICU</th>
<th>Total</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>1</td>
<td>35</td>
<td>31</td>
<td>66</td>
<td>54.0</td>
</tr>
<tr>
<td>6-10</td>
<td>0</td>
<td>10</td>
<td>6</td>
<td>17</td>
<td>13.9</td>
</tr>
<tr>
<td>11-16</td>
<td>1</td>
<td>10</td>
<td>5</td>
<td>16</td>
<td>13.2</td>
</tr>
<tr>
<td>16-60</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>5.0</td>
</tr>
<tr>
<td>21+</td>
<td>6</td>
<td>7</td>
<td>4</td>
<td>17</td>
<td>13.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10</td>
<td>65</td>
<td>47</td>
<td>122</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Certification</th>
<th>NICU</th>
<th>Mother/Baby</th>
<th>PEDS/PICU</th>
<th>Total</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>4</td>
<td>21</td>
<td>30</td>
<td>37</td>
<td>46.2</td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>44</td>
<td>17</td>
<td>66</td>
<td>52.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10</td>
<td>65</td>
<td>47</td>
<td>122</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Methods

An interactive DVD developed by Karen D’Apolito, PhD, APRN, NNP-BC and Loretta Finnegan, MD on the IOR of the FNAST was used with permission.
Methods

• IRB approval, Mission Research Institute and Nursing Research Council Approval obtained.
• Potential participants for this reliability study would come from nursing staff in the NICU, Mother/Baby, and PEDS/PICU units and nurses in the region.
• Participation in the study was conducted through annual education, staff meetings, Care Partners and regional member hospitals.
• Consent to participate was obtained.
• Vignette was shown, and the nurses were asked to score using the Modified Finnegan Scoring System for Neonatal Abstinence Syndrome.
• Comparison was made to the expert score and Inter-Class Correlation for IOR was calculated using SPSS.
Results

Inter-class Correlation Coefficient (ICC) was evaluated using two-way mixed effects model where people effects are random and measures effects are fixed. Values of 0.60 to 0.80 are often used as minimal standards.

- ICC average measure 0.996 (total score)
- The results demonstrated inter-observer reliability in total score.

<table>
<thead>
<tr>
<th></th>
<th>Intraclass Correlation$^{\text{b}}$</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Single Measures</td>
<td>.694$^{\text{a}}$</td>
<td>.568</td>
</tr>
<tr>
<td>Average Measures</td>
<td>.996$^{\text{c}}$</td>
<td>.994</td>
</tr>
</tbody>
</table>
IOR in Sections of the FNAST

The least inter-observer reliability was in the area of the Central Nervous System with ICC at 0.603.

Question: Is that consistent in different tests of IOR? We may want as a collaborative to compare those findings.

<table>
<thead>
<tr>
<th>FNAST Section</th>
<th>Intraclass Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Nervous System</td>
<td>0.603</td>
</tr>
<tr>
<td>Metabolic, vasomotor, and respirator</td>
<td>0.851</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>0.944</td>
</tr>
</tbody>
</table>
Discussion

Study offered opportunity for education.

Modified Finnegan Scoring was added to orientation, continuing education for existing nurses.

Medical Resident education on Modified Finnegan scoring.

Sharing with providers the results and standardization.
Standardizing the Environment of Finnegan Scoring
Work currently underway

Score in **standard environment**

- Quiet
- Minimize noxious lights
- After feeding
- In mothers arms?
Education to Move to Standardization of Creating the Environment for Modified Finnegan

• Adding the standardization of creating the environment for scoring through:

Nursing Education
Orientation
Resident Education
Physician Service Line Provider Meetings
Quality Rounds
Huddles
Newsletters
### Informing Standardization through Work of Sub-Committees

<table>
<thead>
<tr>
<th>Identification Subcommittees</th>
<th>Treatment – Pharmacologic sub-Committee</th>
<th>Evaluation</th>
<th>Discharge Subcommittee</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD-9 codes Screening Toxicology</td>
<td>Non-Pharmacologic Sub – Committee</td>
<td>Creating Environment for M- Finnegan</td>
<td>Discharge criteria</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Completed IOR of M-Finnegan</td>
<td>Standardize education</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Community Follow-up</td>
</tr>
</tbody>
</table>

**Policy and Procedures**
“The nice thing about teamwork is that you always have others on your side”
Margaret Carty
References


