Neonatal Pain Management: Barriers to and Facilitators of data entry in the Better Outcomes Registry & Network (BORN) Ontario Information System

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Background – Neonatal Pain

**Effects of pain:**
Blood work causes pain, distress, and physiological changes

**Evidence:**
Breastfeeding (BF), Skin-to-Skin care (SSC), and sucrose reduce pain

**Epidemiology:**
All newborn infants have blood work for screening in the first days of life

**Need:**
Identify barriers and facilitators to capturing new data element

**Measurement tool:**
Pain management data element was added to the BIS in April 2014
New data element

Pain Relief Measures During Newborn Screening or Serum Bilirubin [PPC,NICU]

New pick list values:
- Breastfeeding
- Skin to skin
- Sucrose
- Other
- None
- Unknown
Purpose/Aims

To identify the barriers and facilitators to:

1) Data entry of the newborn pain management data element into the BORN information system (BIS), and
2) Implementation of pain treatment during newborn screening.

Why?

To ensure high quality data is available to identify gaps in practice for subsequent planning of practice improvements.
Design & Methods

Design
- Descriptive qualitative

Sampling and Data Collection
- Purposive sampling of nurse managers (or their delegates) in the province of Ontario from maternal/newborn hospitals
- E-mail invitations were sent to potential participants in blocks of 12
- Used a semi-structured interview guide
- Interviews continued until saturation of concepts

Data analysis
- Interviews were transcribed verbatim and conventional content analysis was completed
- Descriptive statistics to summarize demographic data
Participant flowchart

Total eligible level I/II maternal newborn sites in Ontario: N=88

No site contact (n=4): N=84

Total responses received: n=20
Total completed interviews: n=15
### Demographics

<table>
<thead>
<tr>
<th>Hospital site demographics</th>
<th>15 (100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health Region</strong></td>
<td></td>
</tr>
<tr>
<td>#1-4- SW and Central Ontario</td>
<td>5 (33%)</td>
</tr>
<tr>
<td>#5-8- Greater Toronto Area</td>
<td>4 (27%)</td>
</tr>
<tr>
<td>#9-11- Eastern and SE Ontario</td>
<td>2 (13%)</td>
</tr>
<tr>
<td>#12-14- Northern Ontario</td>
<td>4 (27%)</td>
</tr>
<tr>
<td><strong>Level of Care</strong></td>
<td></td>
</tr>
<tr>
<td>Level I</td>
<td>8 (53%)</td>
</tr>
<tr>
<td>Level II</td>
<td>7 (47%)</td>
</tr>
<tr>
<td><strong>Birth Volume</strong></td>
<td></td>
</tr>
<tr>
<td>101-500</td>
<td>5 (33%)</td>
</tr>
<tr>
<td>501-1000</td>
<td>6 (40%)</td>
</tr>
<tr>
<td>1001-2499</td>
<td>1 (7%)</td>
</tr>
<tr>
<td>2500-4000</td>
<td>3 (20%)</td>
</tr>
</tbody>
</table>
## Demographics cont’d

### Participant demographics

<table>
<thead>
<tr>
<th>Role</th>
<th>Number (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director</td>
<td>4 (25%)</td>
</tr>
<tr>
<td>Manager</td>
<td>5 (31%)</td>
</tr>
<tr>
<td>Resource Nurse/Nurse Educator</td>
<td>4 (25%)</td>
</tr>
<tr>
<td>Nurse Specialist</td>
<td>2 (13%)</td>
</tr>
<tr>
<td>Care Facilitator</td>
<td>1 (6%)</td>
</tr>
</tbody>
</table>

### Results

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes (n)</th>
<th>No (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant aware of new data element?</td>
<td>11 (73%)</td>
<td>4 (27%)</td>
</tr>
<tr>
<td>Self-reported use of any pain management at site</td>
<td>8 (53%)</td>
<td>5 (33%)</td>
</tr>
</tbody>
</table>
Results

BIS data entry and use

**Barriers**
- IT Issues
  - Lack of awareness & staff perception
- Time
  - Documentation
- Issues with element
  - Resources
- Non-nursing staff
  - Lack of communication

**Facilitators**
- User-Friendly system
- BORN support
- Documentation
- Knowing the patient
- Data Quality measures
- Low birth volume
- Staff attitude

Driving Practice Change

Pain management practice

**Barriers**
- Type of procedure
  - Patient health status
- Staff
  - Red Tape
- Unit factors
  - Lack of policies
- Parent factors
  - Lack of education & awareness
- Lack of education & awareness

**Facilitators**
- BFI
- Education
- Parent advocacy
  - Initiatives and management involvement
- BPGs, Guidelines, Policies
- Staff
- Unit factors
  - Traditions
  - Advantages for staff

Who enters the data

Advantages for staff

Driving Practice Change
Participant 009

“It’s an element in BORN which means we’ve now included it in our charting, which we should do but it gives you a kick-start right? Well if it’s on BORN we gotta have it in our charting. And once you have it in the charting, then the trigger is there for the staff right? They’re seeing it all the time [...]. If every time they’re pulling up their intervention screen they’re seeing this stuff, then they’re gonna remember right?"
Results- BIS entry

BIS data entry and use

**Barriers**
- IT Issues
- Time
- Issues with element
  - Non-nursing staff
  - Lack of awareness & staff perception

**Facilitators**
- User-Friendly system
- BORN support
- Documentation
  - Resources
  - Lack of communication
- Documentation
  - Data Quality measures
  - Knowing the patient

Who enters the data
- Low birth volume
- Staff attitude

Knowledge of patient
- Staff attitude
Participant 004

“I think sometimes the, the front line staff don’t necessarily understand the complete importance of BORN and you know kind of the real reason why it’s done and why it’s so important [...]. Because they are doing the actual hands-on work you know that’s their, they’re very task oriented [...]. So I think it’s hard sometimes to look at the big picture.”
Results- Pain Management Practice

Pain management practice

**Barriers**
- Type of procedure
- Patient health status
- Red Tape
- Unit factors
- Lack of policies
- Tradition
- Parent factors
- Lack of education & awareness
- Resources
- Staff

**Facilitators**
- BFI
- Education
- Parent advocacy
- Initiatives and management involvement
- Familiarity & Experience
- Type of Procedure
- Unit factors
- Advantages for staff
- Staff

BPGs, Guidelines, Policies

Education

BFI

Parent advocacy

Initiatives and management involvement

Familiarity & Experience

Type of Procedure

Unit factors

Advantages for staff

Staff
Results - Model

CONTEXT

BARRIERS  RESOURCES  FACILITATORS

BORN  CHEO  CHEO  uOttawa  Petite pour bébés  Be sweet to babies
Implications and Next Steps

- Disseminate study findings
  - Report distributed to all maternal/newborn hospitals in Ontario which will include strategies to address the identified barriers
  - Disseminate study findings through conference presentations, poster presentations, etc.
Acknowledgements

- All the participants who graciously agreed to participate in our study

- The Be Sweet to Babies research team
  Especially:
  - Dr. Denise Harrison
  - Jessica Reszel
  - Amanda Bowman

- BORN Ontario
  Especially:
  - Dr. Sandra Dunn, Knowledge Translation Specialist

- Canadian Institutes for Health Research (CIHR)
  - Health professional Student Research Award

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Student Research Assistant for Denise Harrison, RN, PhD
Chair in Nursing Care of Children, Youth and Families
Important references

- **Qualitative Description**

- **Data Saturation**
Visual coding scheme - themes and subthemes

Driving Practice Change

BIS data entry and use

- Barriers
  - Time
  - IT Issues
  - Issues with element
    - Lack of element clarity
    - "Must mandatory"
    - Location of element
  - Lack of communication
  - Resources
    - Lack of dedicated space
    - Lack of documentation
  - Documentation
  - Paper documentation
- Facilitators
  - User-Friendly system
  - BORN support
  - Who enters the data
  - Dedication space or tick box
  - Electronic charting
  - Data Quality measures
  - Knowing the patient
  - Low birth volume
  - Staff attitude

Pain management practice

- Barriers
  - Staff
  - Patient health status
  - Lab technicians
  - Lack of "comfort"
  - Ergonomics
  - Nursing
  - Role
  - Scope of Practice
- Facilitators
  - Resources
  - Red Tape
  - Parent factors
    - parent comfort
    - parent culture
  - Unit factors
  - Lack of education & awareness
  - Lack of policies
  - Type of procedure
  - Advantages for staff
  - Initiatives and management involvement
  - Ownership
  - BPGs, Guidelines, Policies
Survey Questions

1. Are you aware of the new pain management data elements that were added to the BORN Information System in April 2014?

2. Tell me about use of pain management for newborns in your hospital.  
   *Probe: For example, is BF, SSC or sucrose routinely used in your setting when newborn screening blood spot samples are drawn?*

3. Please tell me your estimate of the proportion of newborns born in your hospital who receive any pain management during the newborn screening blood sampling procedure (e.g. breastfeeding, skin-to-skin care, or sucrose).

4. If BF, SSC or sucrose were used during newborn screening, how/where would this be documented in the patient record?

5. Tell me about what has made it easy to enter the type of pain management used during newborn screening into the BORN Information System.

6. Tell me about what has made it difficult to enter the type of pain management used during newborn screening into the BORN Information System.

7. Do you have any suggestions for how we could improve the collection of data about pain management in newborns to support practice change?
La gestion de la douleur chez les nouveau-nés : En cadre avec l’Initiative Amis des bébés
Ces deux initiatives de meilleures pratiques sont compatibles, éthiques, et essentielles pour délivrer des soins de qualité et pour améliorer les résultats thérapeutiques chez les mères et les nouveau-nés.

De nombreuses recherches démontrent que l’allaitement maternel, le contact peau à peau (méthode kangourou), et les solutions sucrées réduisent la douleur chez les nourrissons durant les procédures douloureuses.

Favoriser l’allaitement maternel durant les prélèvements sanguins
- Efficace chez les nourrissons à terme ou presqu’à terme qui sont cliniquement stables et en mesure d’allaiter tout au long de la procédure.
- Commencer l’allaitement de 2 à 5 minutes avant l’intervention.
- Continuer l’allaitement tout au long de l’intervention.

Favoriser la méthode kangourou (MK) lors des prélèvements sanguins
- Efficace et recommandé pour les nouveau-nés à terme et prématurés qui sont incapable d’allaiter.
- Commencer la MK au moins 5 minutes avant l’intervention.
- Continuer la MK au cours de l’intervention.

Si l’allaitement maternel et la méthode kangourou ne sont pas dans la mesure du possible — Favoriser le sucreose avec ou sans sucre durant les prélèvements sanguins
Le sucrose est efficace chez les nourrissons jusqu’à l’âge d’un an.
- Dose suggérée : 0.1-0.2 mL au cours de la procédure.
- Commencez à administrer la dose (quelques gouttes) d’une à deux minutes avant le début de l’intervention et administrez le volume restant tout au long de l’intervention.
- Si l’utilisation d’une sucrose fait partie des soins de routine pour votre bébé, l’action de sucer peut avoir un effet analgésique en surplus.

Quant administré en petit quantité, le sucorese est un médicament pour la gestion de la douleur. À cette fin, le sucrose n’est pas une alimentation de remplacement ni un supplément nutritionnel.

Newborn Pain Management: Alignment with Baby-Friendly Initiative
These two best practice initiatives are compatible, ethically sound, and essential for quality care and maternal/newborn outcomes.

Research shows that breastfeeding, skin-to-skin contact and sweet solutions reduce pain in infants during painful procedures.

Supporting breastfeeding during bloodwork
- Effective in term or near term infants who can safely feed throughout the procedure.
- Have mom begin breastfeeding 2-5 minutes prior to procedure.
- Have mom continue feeding throughout procedure.

Supporting skin-to-skin contact during bloodwork
- Effective and recommended for term and preterm infants who are unable to breastfeed.
- Start skin-to-skin contact about 5 minutes prior to procedure.
- Continue throughout procedure.

If breastfeeding or skin-to-skin contact is not possible — Supporting sucrose with or without a pacifier during bloodwork
Oral sucrose is effective in infants up to 1 year.
- Suggested dose: 0.1-0.2 mL over the course of the procedure. Begin dose 1-2 minutes before the procedure.
- Rest of dose just prior to and throughout procedure.
- If a pacifier is a normal part of the baby’s care, oral nutritive sucking may have additional analgesic benefits.

Sucrose given in mini doses is a medication for newborn pain management. Sucrose used for this purpose is not a feeding replacement or supplement.
Sucrose policies

OBSTETRICS, GYNECOLOGY AND NEWBORN CARE

NB - SUCROSE ADMINISTRATION FOR THE MANAGEMENT OF NEONATAL/ PROCEDURAL PAIN
No.: 00490
(Formerly PN-2-S-1950)

ISSUED BY: NICU-SCN-MB
APPROVED BY: Clinical Director,
Obs/Gyn/Newborn Care Portfolio
Chief (A), Division of Neonatology, The
Ottawa Hospital
CATEGORY: Newborn Care

DATE OF APPROVAL: 2003/03
LAST REVIEW/REVISION DATE:
2010/07
IMPLEMENTATION DATE: 2003/03

POLICY STATEMENT:

Administration of small amounts of concentrated sucrose as per protocol reduces pain related behaviors seen during minimally invasive procedures. A physician’s order is required. Parental verbal consent is required prior to initiation of sucrose administration.

Administration of 24% sucrose solution for the management of pain is a nursing standard of care.

OBJECTIVE:

To reduce the perception of procedural pain in infants or for short term management of distress in infants up to 18 months. Oral Sucrose is most effective as a mild analgesic agent for infants in the first month of life however it has been shown to have analgesic and calming effects up to 12 months of life (Harrison, 2010). In one study, Sucrose was effective up to 18 months of life and beyond (Dilli et al., 2009). Calming effects are noted to be independent of volume and only small volumes are required (Harrison, 2010).

Effective pain management is critical as long term effects of unmanaged pain in infants have been shown to include permanent impairment of elements of cognitive development including learning, memory and behaviour (Hatfield et al., 2008).
CHEO playlist