Keywords: breastmilk, breastfeeding, pumping, skin-to-skin, bundle, ante-partum consults, manual expression, feeding guidelines, teamwork

Background: As a Children’s Hospital Healthcare Corporation, maternal deliveries for both campuses occur within another healthcare system. We recognized the need to establish a standardized process for improving mother's milk supply in the first 7 days after delivery.

Aim: Increase overall nutrition by increasing maternal production of human milk in first 7 days of life by December 31, 2015 through the use of a Breastfeeding for Success Bundle (see attached). Due to our different cultures, each unit chose a different portion of the bundle for their quality improvement work. A global aim as a team was to revise our feeding guideline and feeding tolerance assessment tool.

Setting: Our patients are served on 2 campuses. CHOC is a 67 bed NICU in a freestanding children’s hospital. CCMH is a 22 bed NICU in a Pediatric Community Children’s Hospital within an adult Hospital. Both delivery hospitals (same health care system) are Baby Friendly.

Mechanism: The maternal population in our county has many high risk factors for delayed onset of lactogenesis II that directly affect the dose of human milk an infant receives. These risk factors are identified on both campuses and consist of high rate of multiples, advanced maternal age, PIH and on our smaller campus breast augmentation and reduction. Based on this assessment we developed key drivers and focused on two. Approaches were unique to the first key driver based on unit need and culture. We took 1 unified approach for the 2nd key driver of improving overall nutrition through use of a feeding guideline.

CCMH - Enhance breastfeeding education/messaging/support in the 1st 7 days of life
- Partner with families prior to delivery through ante-partum consults to include MD/CN/CNS and lactation team (process map)
- Partner with Birth hospitals in establishing and initiating bundle (process map) by decreasing hours to 1st pump and teaching early manual expression

CHOC – Decrease barriers to early skin-to-skin/continued skin to skin contact through development of:
- Safety checklist to decrease/eliminate unplanned extubations related to skin to skin in extremely low birth weight infant
- Safety practices to prevent unplanned extubations (UPE) – i.e. no cell phone use
- Establish Checklists for team and family.

CCMH - Identification delay in day to 1st feeding and of lack of adherence to guidelines

CHOC - Opportunities for improvement related to the ELBW and frequency of feedings

Drivers of Change: Based on our assessment we developed key drivers and focused on two. Approaches were unique to the first key driver based on unit need and culture. We took 1 unified approach for the 2nd key driver of improving overall nutrition through use of a feeding guideline.

Methods: We reviewed the current practice from maternal admission, delivery of infant and admission to NICU. Through an interdisciplinary team approach, we created the following tests of change, which included all 4 parts of our Breastfeeding for Success bundle:
- Ante-partum clinical consults and lactation consults (CCMH)
- Education messaging and a “1st Seven Day Initiation of Pumping Process map” (CCMH)
- Process for manual expression (CCMH)
- Creation of 3 checklists to establish guidelines and safety measures to support skin to skin contacts. The checklists were for intubated and non-intubated babies as well as one for the parents. (CHOC)
• Simulation training to assure all team members understood how to transfer an intubated baby or a baby on CPAP. (CHOC)

**Measures:** CCMH measures include:
- Completed/requested MD/CN/CNS and Lactation ante-partum consults
- Time of 1st pumping
- Day to 1st feed

CHOC measures include:
- Skin to skin frequency
- Rate of UPE’s related to skin to skin occurrences

CCMH/CHOC
- % infants discharged home on any breastmilk

**Data/Results:** See Attached

**Discussion:**
Evidence reveals that an early milk supply is vital to the dose of human milk an infant receives in the 1st 28 DOL. Our maternal population includes a large number of mothers who are at high risk for delayed lactogenesis II, therefore early establishment of milk supply is vital to the infants clinical outcome. We reviewed the process of “Bundles” from the IHI. Bundles are explained as:
- Reliable way to deliver best possible care for population with inherent risks
- Structured way of enhancing processes and outcomes
- Straightforward set of EBP (3-5) when practiced collectively are proven to improve outcomes
- Includes a robust body of science of practices performed uniformly for every patient

Based on this information, bundles are used to prevent. We ask can we create a bundle to promote? Our units chose 4 EBP’s that support early milk production and created a bundle to support these practices. These 4 practices are:
1. Ante-partum medical and lactation consults/education
2. 1st pumping by 6 hours after deliver
4. Early and increased Skin-to-skin contact.

Evidence shows the importance of skin to skin for neurodevelopmental care of the neonate in addition to it increasing mother’s own milk. Our interdisciplinary team set goals and expectations of care surrounding intubated babies. We highlighted the safety of transferring and importance of having multiple team members involved in the process.

A valuable part of the development of the Breastfeeding for Success bundle and looking at overall care in improving nutrition in the infant < 1500 grams was the team building that was accomplished as each unit pursued different aspects of the PBP’s. Our discussions lead to identification of other PBP’s for our organization. The feeding guideline revision provided a great example of how two different hospitals could work together to standardize care in the ELBW infant within each of our unique cultures. Revisions made to the feeding guidelines included frequency of feeds, conserving more breastmilk through change in flushing practices and recommendations for the timing of supplements/additives. There was a complete revision (Stop light vs. algorithm) of the feeding intolerance to a feeding tolerance tool. There is currently global online education/training of staff which includes the evidence to support the changes.

**Team Acknowledgement:**

We would like to acknowledge Dr. Arul MD leader, Sue Freck and Tiffani Ghene (Dieticians), CHOC and CCMH Lactation Teams, Gina Christman Parent Support, Mindy Morris DNP SBU Coordinator
Data:
CCMH

Ante-Natal & Lactation Consults
December 2014 - July 2015
N = 19

Neonatologist Completed: 50%
LC Completed: 74%

Hour of 1st pump/IB

# of Patients

CHOC Orange NICU Skin to Skin

Skin to Skin by Week of Stay

% Infants < 1500 Grams Discharged Home on Any Breastmilk

<table>
<thead>
<tr>
<th>Year</th>
<th>CHOC</th>
<th>CHOC at Mission</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>69%</td>
<td>79%</td>
</tr>
<tr>
<td>2011</td>
<td>63%</td>
<td>79%</td>
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<tr>
<td>2012</td>
<td>80%</td>
<td>77%</td>
</tr>
<tr>
<td>2013</td>
<td>82%</td>
<td>77%</td>
</tr>
<tr>
<td>2014</td>
<td>75%</td>
<td>70%</td>
</tr>
</tbody>
</table>
"First pump by 6 hours after delivery"
We have a concept for a “Breastfeeding for Success Bundle. We understand that a bundle is an established process. The Institute for Health describes a bundle as the following:

Bundles – IHI
- **Reliable** way to deliver best possible care for population with inherent risks
- **Structured** way of enhancing processes and outcomes
- **Straightforward** set of EBP (3-5) when practiced collectively/reliably are proven to improve outcomes
- Includes a **robust body of science** of established practices **performed uniformly**

We utilize bundles to **Prevent**...can we create a bundle to **Promote**

**Breast Feeding for Success Bundle**

1. **Organization Messaging** – to Leadership, NICU Team, Parents & Families

2. **Education messaging (to parent & healthcare team)**
   - Breast milk is perfectly designed nutrition for your baby – 1 of a kind milk
   - # pumpings 8 or more
   - Use of hospital grade pump
   - Skin to Skin
   - Maximize fluid intake

3. **Ante-Partum/Pre-natal Consult Process**
   - Establish process for all neonatal consults - < 32 weeks gest/<1500 grams
   - MD/CN/CNS consult
     - Begins conversation & provides handout w/brief ed message on 1 of a kind milk (medicine)
   - Neonatal Lactation ante-partum consult
     - Asks mom/dad what information in the handout connected with them
     - Offers video link for hand expression video and Breastfeeding LA Video
     - Discusses importance of early pumping to both parents

4. **Birth of Infant**
   - Mom pumps within 1st 6 hours
   - Mom’s 1st Unit experience
     - Bedside nurse gives and reviews BFS Kit - Hand Free pumping bra & Skin to Skin shirt
     - Colostrum vials w/# labels - Small water bottle
     - Link to Hand Expression Video - List of Apps
     - Hand Free pumping bra & Skin to Skin shirt - Lovey Doll
   - 1st 7 days (see process flow map) and throughout continuum
     - Pumping hx, # pumpings, assess coming to volume
     - Re-enforce education messaging
     - Offer donor milk
     - Lactation consultant support

5. **Parent Partner Connection: Ease of lactation experience?**
   - What’s working? Barriers?
   - 7 days? 14 days? 1 month?
   - Discharge Phone call with parent partner