Optimizing NICU care environment to support breast milk expression and feeding

Philips Avent Scientific Symposium 2019

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Disclosure statement

I have no Conflicts of Interest (COIs) to declare

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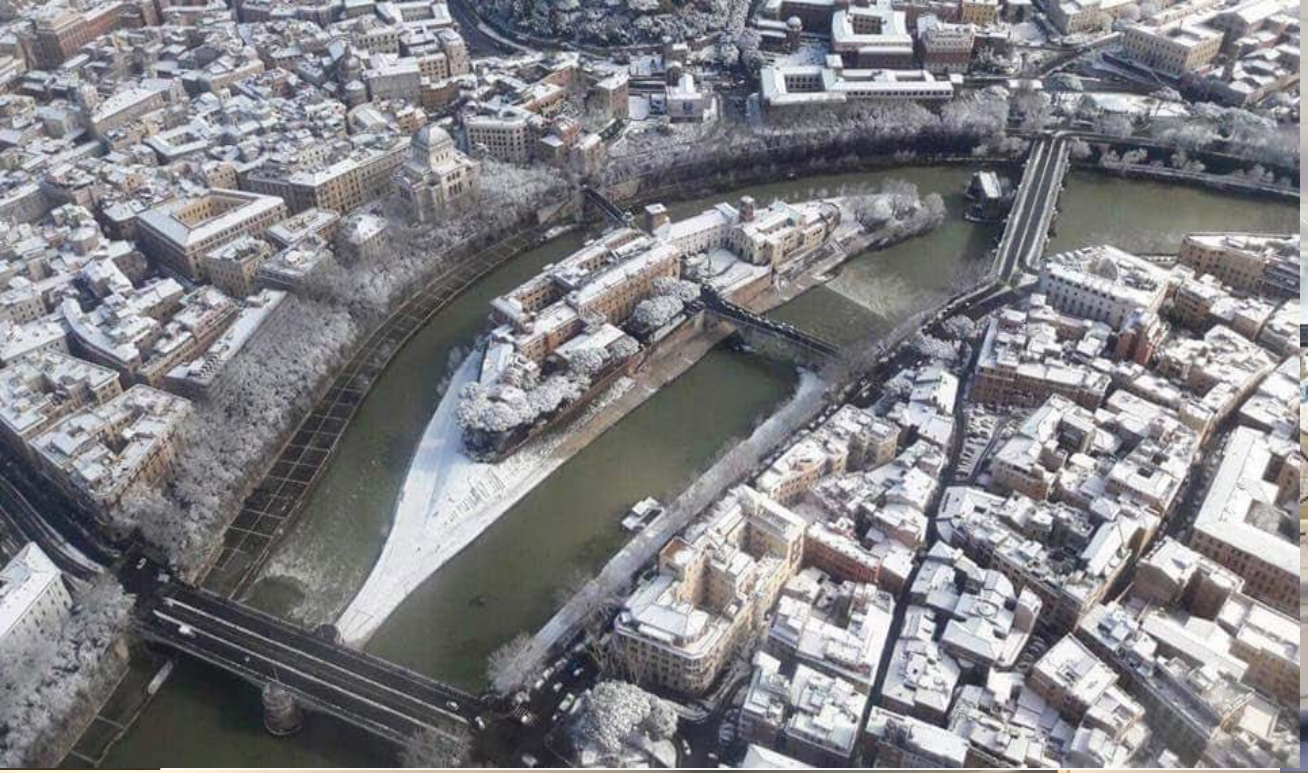

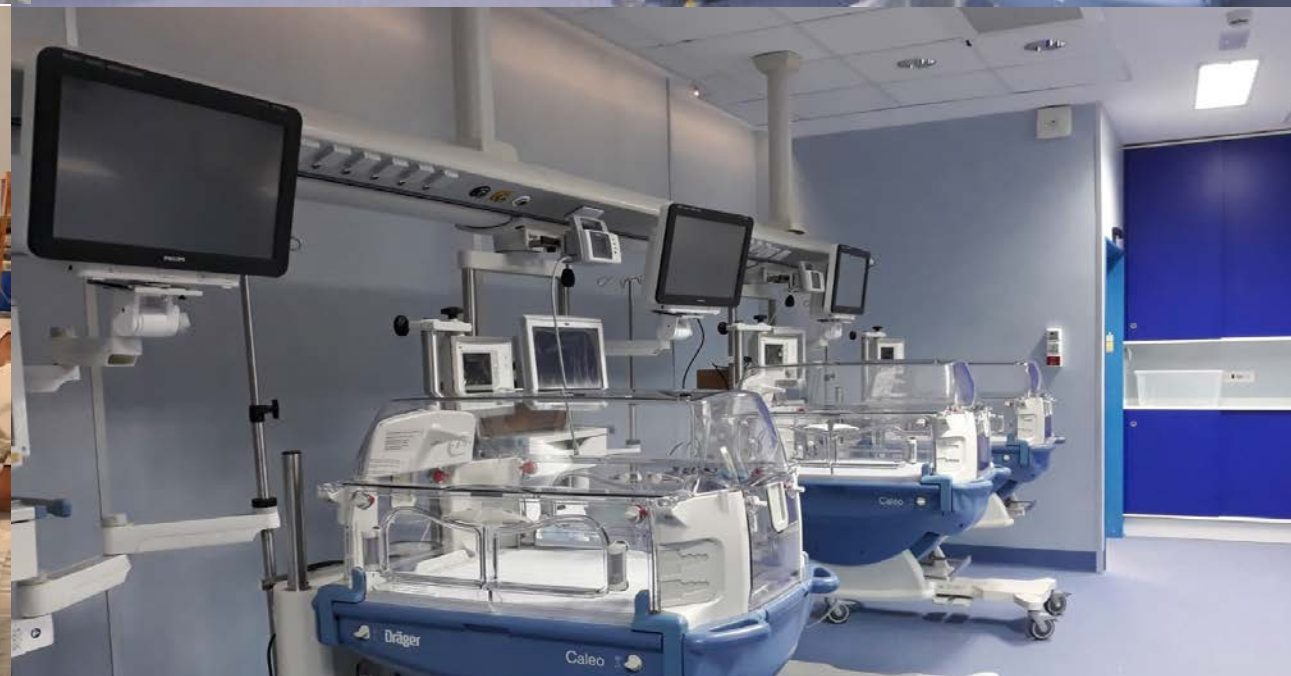
Dräger
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PULMONARY ATRESIA ON PGE1

Topics of the talk

1. Benefits of breast-feeding in the NICU
2. Barriers to breast-feeding in the NICU
3. Optimizing NICU care environment to support breast milk expression and feeding

Topics ot the talk

1. **Benefits of breast-feeding in the NICU**
2. Barriers to breast-feeding in the NICU
3. Optimizing NICU care environment to support breast milk expression and feeding

“the most natural thing in the world”

- 89% of women initiate breastfeeding upon delivery of their baby
- 26% have continued to do so exclusively by the recommended 6-month postpartum mark
- This is far behind the World Health Organization’s (WHO) global nutrition target of reaching a rate of 50% exclusive breastfeeding at 6 months by the year 2025

Benefits of breast-feeding a preterm infant

- Breast milk feeding reduces neonatal morbidity:

  necrotizing enterocolitis (NEC) (Lucas & Cole, 1990; Quigley & McGuire, 2014; Sisk, Lovelady, Dillard, Gruber,& O'Shea, 2007; Sullivan et al., 2010)

  late-onset sepsis (Corpeleijn et al., 2016; Underwood, 2013)

  retinopathy of prematurity (Bharwani et al., 2016; Manzoni et al., 2013),

  improved long-term neurocognitive development (Larroque et al., 2008; Lucas, Morley, Cole Lister, & Leeson-Payne, 1992).

Breast-feeding in the NICU

- Breastfeeding and/or provision of expressed breast milk can take on a whole new meaning within the NICU environment.

- It goes beyond a form of life-sustaining nourishment for the neonate, but rather can become a **life-saving intervention** that is heavily endorsed for its immunological and nutritive benefits

Benefits of breast-feeding for the mother

- reduced risk of breast and ovarian cancer
- reduced incidence of cardiovascular disease
- maternal psychological wellbeing

(Chowdhury et al., 2015; Schwarz et al., 2009; Victora et al., 2016).

Breast-feeding information

- NICU messaging about the superiority of human milk does not make mothers feel guilty or coerced, but instead is interpreted as needed information to make the best feeding decision for their infants

Meyer et al., 2017

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DOI: 10.1111/jocn.14686

DISCURSIVE PAPER

WILEY Journal of Clinical Nursing

Breastfeeding woman or lactating object? A critical philosophical discussion on the influence of Cartesian dualism on breastfeeding in the neonatal intensive care unit

Maternal psychological wellbeing

- providing milk for a NICU-admitted infant can be reduced to a **mechanized act**, stripped of its more relational components
- feelings of **alienation**, **guilt** and **lack of control** are recurrent themes amongst NICU mothers
- the challenge that remains is balancing **optimal breast milk intake** without disregarding the equally essential **relational aspects of the breastfeeding interaction**

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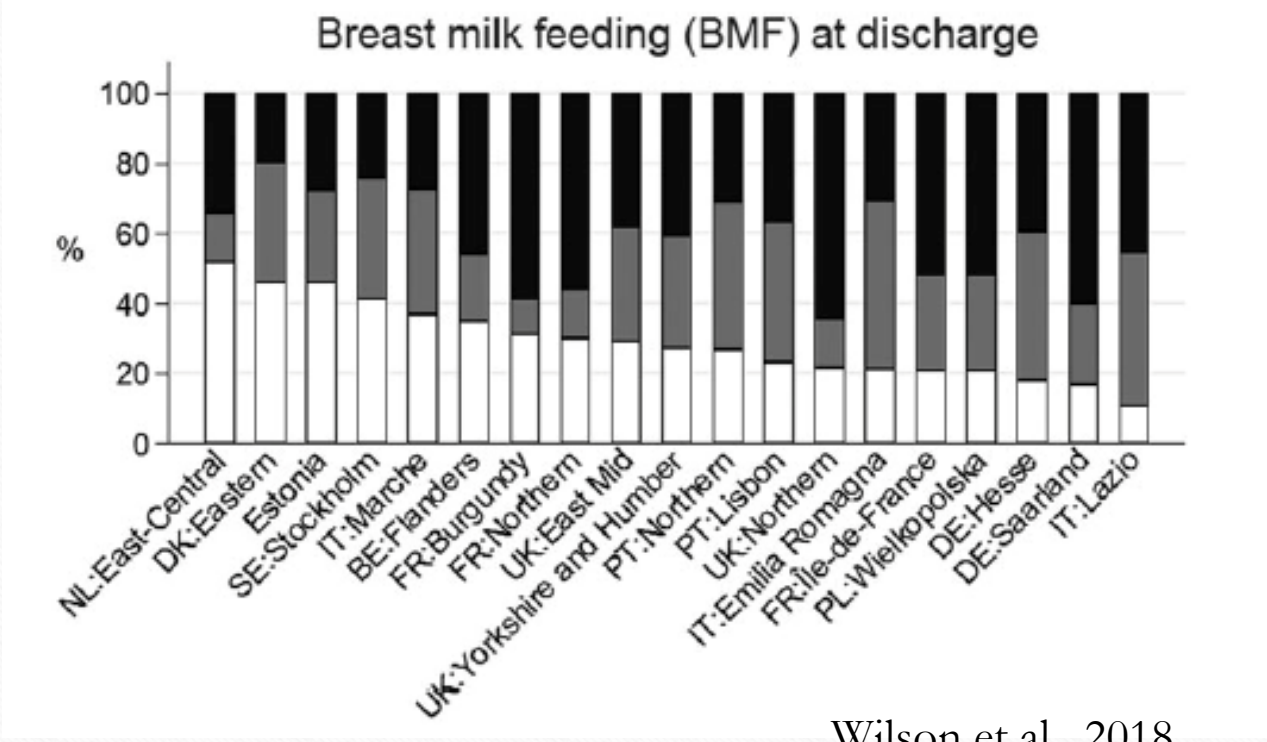
There are large variations

- Infant discharged home on any breast milk:

  36-80%

- Infant discharged home on direct breast-feeding:
  16-93%



Wilson et al., 2018

Topics of the talk

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2. **Barriers to breast-feeding in the NICU**
3. Optimizing NICU care environment to support breast milk expression and feeding

Obstacles to breast-feeding

Factors we can't control:

Mother:

- not married
- very young
- low social class
- smoker
- not attending prenatal care

Baby:

- low gestational age
- low birth weight
- bronchopulmonary dysplasia
- long hospital stay
- twins

BUT WE NEED TO KEEP IN MIND

Rodriguez et al., 2018

Obstacles to breast-feeding

Obstacles we must overcome:

Mother:

- Not informed of benefits of breat-feeding
- Not directly supported in breast-feeding
- Strict visiting hours
- Not encouraged to express breast milk

Baby:

- Delayed start of enteral feeds
- Fear of NEC
- Unavailability of donor milk

- Maternal anxiety regarding their infant's clinical condition
- **Worries regarding the adequacy of milk production in relation to the infant's high demands.**

Gianni ML et al., 2018

Inefficacy of maintaining lactation

insufficient human milk volume

less-intensive milk expression efforts

Meyer et al., 2017

Obstacles in direct breast-feeding

- separation during the long hospitalization
- need to express breast milk for several weeks

- (Acuna-Muga et al., 2014; Alves, Magano, Amorim, Nogueira, & Silva, 2016; Alves, Rodrigues, Fraga, Barros, & Silva, 2013; Callen & Pinelli, 2005; Furman, Minich, & Hack, 2002).

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nutrients

MDPI

Article

Direct Feeding at the Breast Is Associated with Breast Milk Feeding Duration among Preterm Infants

Shiran Pinchevski-Kadir [1], Shir Shust-Barequet [2], Michal Zajicek [3], Mira Leibovich [4], Tzipi Strauss [1], Leah Leibovitch [1] and Iris Morag [1,*]

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a daily basis from admission until discharge. Direct feeding at the breast is commenced when the infant reaches 33 weeks. Infants are discharged home at 36 weeks gestational age (GA) if they meet the

Original Research

International Lactation Consultant Association
A Worldwide Network of Lactation Professionals

Journal of Human Lactation
2015, Vol. 31(3) 386–392

DOI: 10.1177/0890334415581798
jhl.sagepub.com
SAGE

Direct-Breastfeeding Premature Infants in the Neonatal Intensive Care Unit

Carrie-Ellen Briere, PhD, RN, CLC[1,2], Jacqueline M. McGrath, PhD, RN, FNAP, FAAN[1,2], Xiaomei Cong, PhD, RN[1], Elizabeth Brownell, PhD, MA[3,4], and Regina Cusson, PhD, NNP-BC, APRN, FAAN[1]

GA at first breastfeeding, wk	33.6 (0.8); range, 32.1-36.1

Acta Pædiatrica ISSN 0803–5253

REGULAR ARTICLE

Early attainment of breastfeeding competence in very preterm infants

KH Nyqvist (kerstin.hedberg_nyqvist@kbh.uu.se)

Department of Women's and Children's Health, Uppsala University, Uppsala, Sweden

- Direct feeding at the breast could be introduced at **29 weeks of PMA**

Nyqvist et al., 2008

Adv Neonatal Care. 2015 Apr;15(2):134-41. doi: 10.1097/ANC.0000000000000167.

When is it safe to initiate breastfeeding for preterm infants?

Lucas RF[1], Smith RL.

Author information

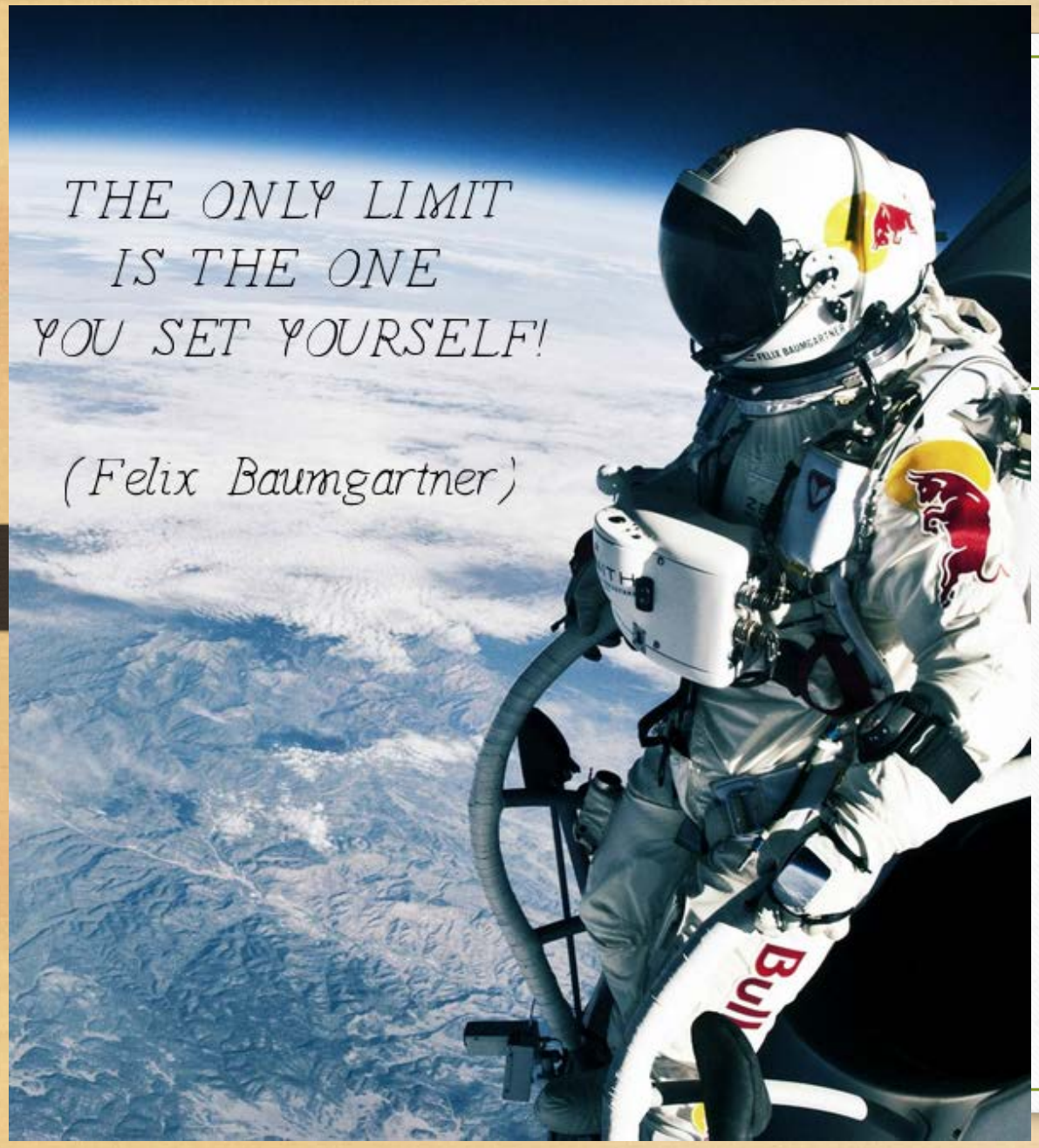
Abstract

BACKGROUND: Breast milk is the gold standard of nutrition for preterm infants. Yet, initiation of direct breastfeeding before 32 weeks' postconceptional age (PCA) is not common practice in many neonatal intensive care units (NICUs). Our clinical question was, "In preterm infants, when is it safe to initiate breastfeeding in infants <32 weeks PCA receiving enteral feedings?"

SEARCH STRATEGY: A review of the literature was compiled between February 2013 and January 2015 by using the following databases: CINAHL, Cochrane Systematic Review, Scopus, and PubMed. Articles found were written in English and published after 1985. Key words were utilized during searches and references were hand checked.

RESULTS: Our review revealed that stable preterm infants maintain their physiological status during exposure to the breast as early as 27 to 28 weeks' PCA. Several studies demonstrated infants during breastfeeding compared with bottle-feeding experienced minimal variation in oxygen saturation and heart rate during feeding. Some infants exposed to the breast before 30 weeks' PCA were exclusively breastfeeding (direct breastfeeding and breast milk) at 32.8 weeks' PCA. Skin-to-skin mother-infant contact is crucial to the successful transition to direct breastfeeding.


IF SKY IS
THE
LIMIT,
THEN GO
THERE.


THE ONLY LIMIT
IS THE ONE
YOU SET YOURSELF!
(Felix Baumgartner)

Key point

- Infant stability should be the only criterion for initiation of nutritive sucking at the breast, not gestational, postnatal, or postmenstrual age or current weight

Topics of the talk

1. Benefits of breast-feeding in the NICU
2. Barriers to breast-feeding in the NICU
3. **Optimizing NICU care environment to support breast milk expression and feeding**

VIDEO

10 steps

1. Have a written breastfeeding policy that is communicated to all health care staff
2. Train all health care staff in skills necessary to implement this policy
3. Inform all pregnant women about the benefits and management of breastfeeding
4. Help mothers initiate breastfeeding within half an hour of birth
5. Show mothers how to breastfeed
6. Give newborn infants no food or drink other than breast milk
7. Allow mothers and infants to remain together - 24 hours a day
8. Encourage breastfeeding on demand
9. Give no artificial teats or pacifiers to breastfeeding infants
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

BOSTON MEDICAL CENTER

- 4 years after the Baby-Friendly designation

- NICU breastfeeding initiation rates had increased from 35% to 74%
- proportion of infants at the postnatal age of 2 weeks receiving any breast milk had increased from 28% to 66%
- the proportion receiving breast milk exclusively increased from 9% to 39%

Merewood et al., 2003

Key point

- A breast milk feeding friendly environment improves breast milk feeding rates at discharge from neonatal care

Guiding Principles of breast-feeding in the NICU

1. The staff attitude toward the mother must focus on the individual mother and her situation.

2. The facility must provide family-centered care, supported by the environment.

3. The health care system must ensure continuity of care, that is, continuity of pre-, peri-, and postnatal and postdischarge care.

The 10 steps adapted to the NICU

Step 1: Have a written breastfeeding policy that is routinely communicated to all health care staff

- NICU breastfeeding policies must allow variations in practices depending on local differences in challenges to infants' and mothers' health, and availability of health care services
- The more vulnerable the infant–mother dyad, the more important that breastfeeding is protected.

Nyqvist et al., 2013

The 10 steps adapted to the NICU

Step 1: Have a written breastfeeding policy that is routinely communicated to all health care staff

- The breastfeeding/infant feeding policy must state that all mothers, irrespective of method of feeding, receive appropriate counseling on infant feeding and guidance on selecting options they find acceptable and suitable for their situations.
- Summaries of the policy should be visibly posted or available as written and visual information in the neonatal (intensive and intermediate care) unit and be displayed in the language(s) and written with wording most commonly understood by families and clinical staff.

Nyqvist et al., 2013

The 10 steps adapted to the NICU

Step 2: Educate and train all staff in the specific knowledge and skills necessary to implement this policy

- Specific knowledge and skills are needed for breastfeeding counseling targeted at these vulnerable mothers.
- Educational and practical interventions must be based on recent research on preterm/sick infants' capacity for feeding at the breast and on systematic evaluation of different lactation support strategies.

Nyqvist et al., 2013

The 10 steps adapted to the NICU

Step 2: Educate and train all staff in the specific knowledge and skills necessary to implement this policy

- The NICU should have a plan for education and training of all new staff members, irrespective of profession, and for regular continuing education.
- The standard to be attained by all clinical staff members set by the original WHO requirements for BFHI certification is a curriculum corresponding to at least 20 hours, including at least 3 hours of supervised training

Nyqvist et al., 2013

The 10 steps adapted to the NICU

Step 3: Inform hospitalized pregnant women at risk for preterm delivery or birth of a sick infant about the management of lactation and breastfeeding and benefits of breastfeeding

- Most women who are confronted with preterm delivery doubt their ability to produce breast milk and breastfeed
- Prenatal information about the benefits of breast milk and practical aspects of breast milk expression has been associated with longer breast milk feeding in preterm infants

Nyqvist et al., 2013

Factors associated with higher rates of breast-feeding

- Early breast milk expression after very preterm birth is essential for increased milk production (Furman et al., 2002)
- Expression should preferably start during the first hour after birth (Hill et al., 2005; Parker et al., 2015)
- High intake of mother's own milk during the first postnatal week has also been associated with exclusive BMF at 36 weeks PMA in infants born between 23 and 31 weeks of gestation (Wilson et al., 2015)

The 10 steps adapted to the NICU

Step 4: Encourage early, continuous, and prolonged mother–infant skin-to-skin contact (kangaroo mother care) without unjustified restrictions

- Mother–infant skin-to-skin contact promotes maternal milk volume and breastfeeding initiation rates, exclusivity, and duration
- WHO guidelines recommend initiation of KMC for stable infants from 28 postmenstrual weeks or from a birth weight of 600 g
- Parents should be informed and encouraged to commence provision of KMC as early as possible, ideally from birth, for as long a period per day as they want, also continuously, around the clock, without unjustified restrictions

Nyqvist et al., 2013

The 10 steps adapted to the NICU

Step 5: Show mothers how to initiate and maintain lactation and establish early breastfeeding with infant stability as the only criterion

- Early (within 6 hours) and frequent stimulation of lactation is associated with higher milk production later on
- Infant stability should be the only criterion for initiation of nutritive sucking at the breast, not gestational, postnatal, or postmenstrual age or current weight

Nyqvist et al., 2013

The 10 steps adapted to the NICU

Step 6: Give newborn infants no food or drink other than breast milk, unless medically indicated

- Breast milk is uniquely superior to all substitute feeding preparations
- When mothers' own milk is not available, pasteurized screened human donor milk is the best option
- Distribution to mothers of materials that recommend use of breast milk substitutes and inappropriate feeding practices should not be permitted

Nyqvist et al., 2013

Higher rates of breast-feeding

- Received their mother's milk at first enteral feed (Wilson et al., 2018)
- The length and level of payment of maternity leave (Strang & Broeks,2016)
- Possibility to spend time in the NICU (Greisen et al., 2009)
- Skin-to-skin is the first step to breastfeeding at breast and kangaroo mother care contributes to increased breastfeeding at breast (Hurst, Valentine, Renfro, Burns, & Ferlic, 1997; K. H. Nyqvist et al., 2010; Sharma, Farahbakhsh, Sharma, Sharma, & Sharma, 2017).

Donor milk

- Providing donor milk increased exclusive BMF rates at discharge are consistent with a recent U.S. study that showed a sixfold increased odds of receiving mother's own milk if a donor milk programme was implemented (Parker et al., 2016).
- The use of donor milk positively impacts BMF overall and may be a strong signal to mothers and families that breast milk and breastfeeding is important and that the staff has a positive attitude and experience instructing mothers how to express breast milk.

The 10 steps adapted to the NICU

Step 7: Enable mothers and infants to remain together 24 hours a day

- Opportunity for rooming-in helps the parents feel like a family and not just visitors to their own baby
- Mothers separated from their newborn infants experience emotional strain and anxiety, feel like outsiders, and experience lack of control
- When rooming-in is not possible, mothers should be offered the opportunity to sleep in another room on the unit, or at least in a room at a short walking distance from the NICU

Nyqvist et al., 2013

The 10 steps adapted to the NICU

Step 8: Encourage demand feeding or, when needed, semi-demand feeding as a transitional strategy for preterm and sick infants

- Nutritive suckling at the breast has been noted in very preterm (GA 28-31 weeks) and extremely preterm infants (GA 27 weeks or less) from about 28 weeks, and exclusive breastfeeding from 32 weeks
- The mother should be encouraged to place the infant at the breast at any discrete sign of waking up or wanting to suck, but also be guided in protecting the infant's deep sleep by observation of behavioral signs

Nyqvist et al., 2013

The 10 steps adapted to the NICU

Step 9: Use alternatives to bottle-feeding at least until breastfeeding is well established and use pacifiers and nipple shields only for justifiable reasons

- Bottle-feeding has been shown to negatively impact breastfeeding success in both full-term and preterm infants
- For infants of mothers who intend to breastfeed, the first nutritive sucking experience should be at the breast
- Pacifier sucking may encourage the development of sucking behavior and improve digestion, has a calming effect, reduces infant stress and anxiety, and gives pain relief during procedures

Nyqvist et al., 2013

The 10 steps adapted to the NICU

Step 10: Prepare parents for continued breastfeeding and ensure access to support services/groups after hospital discharge

- When mothers intending to feed exclusively at breast are discharged before they reach this goal, support by an experienced professional increases the likelihood of a longer duration of breast milk feeding/breastfeeding
- Planning of infant discharge from the unit should occur in collaboration with the family and the community health services

Nyqvist et al., 2013

Rethinking NICU design:

- More space for parents: not just visitors but part of the NICU family

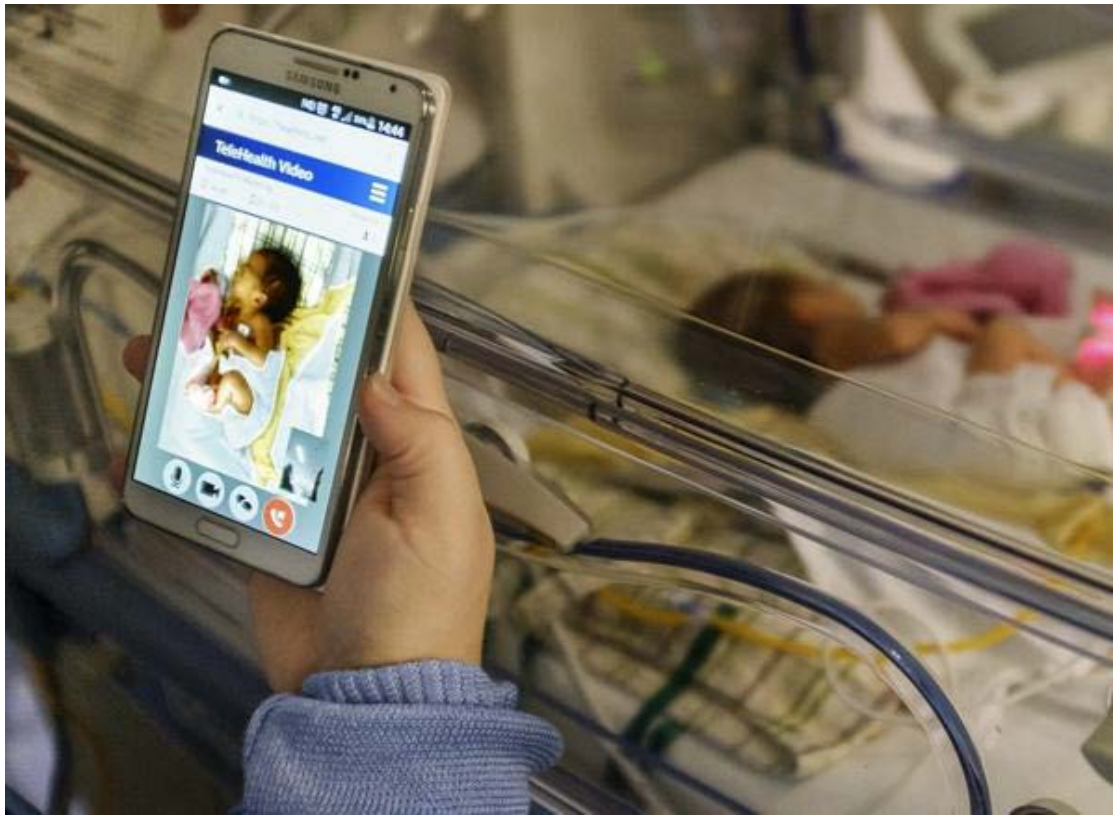
1. Rooming in should be the first choice, if not possible, mothers should have a separate room in the NICU for expressing breast milk
2. Common area for meetings with parents
3. Parents should be physically or **virtually** able to spend 24 hours a day with their children

- NICU environment should not be a barrier to their presence and to opportunities for "becoming parents"

Rethinking NICU design:

- Full integration of maternal postpartum care into the NICU
- Presence of Lactation Consultants 7 days per week, 24 h per day
- Integration of breast milk pumping into medical chart information
- Staff-wide promotion of skin-to-skin contact

Maastrup et al., 2012; Merewood et al., 2005



Screen to screen technology

- Ideal for parents living far from the NICU or with other children waiting at home

Screen to screen technology

- Enables parents to see their child inside the incubator from their smartphone

Thank you for your attention…

…and feel free to visit