

Media Release

The medicinal benefits of human milk – the underestimated lifeline for premature infants

Today, over 10% of all babies are born premature, but thanks to medical advances over 90% of those 15 million infants born early around the world will survive. It is widely recognized that human milk provides the best nutrition and medicine for these infants taken care of in NICU (Neonatal Intensive Care Unit) yet its use is not always prioritised. Concepts like “family centred care”, which promote the involvement of parents in all aspects of their baby’s care, are understood as essential. Diane Spatz, Uwe Ewald, Ann Dsilna Lindh and Robert Schanler, experts in NICU care, are pioneering the way forward with holistic approaches to further improve the quality of care in the NICUs. They will speak at the 8th Breastfeeding and Lactation Symposium in Copenhagen in April.

Over the past 50 years, we have witnessed a complete reversal in life expectancy for premature babies due to advances in research, technology, medication and new procedures. The nutritional and medicinal effects of breastmilk have also been investigated, leading to the conclusion that its benefits must not be underestimated. It contains numerous nutrients, hormones and host defence factors that help to prevent inflammation and stimulate optimal growth. Breastmilk is essential for supporting the growth, development and immunology of the preterm infant. However, it is not a given, that breastmilk will be used. According to Professor Diane Spatz (University of Pennsylvania, Children’s Hospital of Philadelphia, USA), “infants in the NICU could benefit most from human milk, yet are at high risk for not receiving it due to current care practices in many NICUs around the world.”

Breastmilk feeding methods for NICU babies

Providing nutritional support for preterm infants brings with it other challenges, such as when, and how to feed. Choices made will have short term effects on development and growth as well as long term impact on survivors. Dr Ann Dsilna Lindh (Karolinska University Hospital, Sweden) is a specialist in Paediatric Care and Neonatology. She has devoted her research to enteral feeding, determining the influence of different feeding methods for very immature infants who are not fully developed. The use of human milk is central to her research. She says: “Several studies have shown positive effects of high human milk intake on brainstem maturation¹ and cognitive development² in preterm infants. It is therefore so important to determine the best way to feed and what to give our smallest patients, the very immature infants, to achieve optimal nutrition.”

¹ Amin SB, Merle KS, Orlando MS, Dalzell LE, Guillet R. Brainstem maturation in premature infants as a function of enteral feeding type. *Pediatrics* 2000; **106**(2 Pt 1):318-22

² Anderson JW, Johnstone BM, Remley DT. Breast-feeding and cognitive development: a meta-analysis. *Am J Clin Nutr* 1999; **70**(4): 525-35. | Vohr BR, Poindexter BB, Dusick AM, et al. Persistent beneficial effects of breast milk ingested in the neonatal intensive care unit on outcomes of extremely low birth weight infants at 30 months of age. *Pediatrics* 2007; **120**(4): e953-9.

The quality of human milk for prematurely born infants

Although human milk provides adequate nutrition, it may not contain adequate levels of all nutrients necessary for very low birth weight infants weighing less than 1500g. According to Uwe Ewald (Uppsala University Children’s Hospital in Sweden), finding the balance is a delicate process on a number of levels. A mother must not get the feeling that her milk is not good enough for her own baby. The process of milk fortification involves the mother pumping her milk before it is then analysed and fortified to meet the infant’s specific requirements. He explains that “Fortifiers exist and are widely used in NICUs today, but they cannot replace human milk. They are merely used to increase intake of protein and minerals in infants born preterm. But there is still a lack of hard evidence on how to reach a composition that adequately meets each individual baby’s needs without interfering with the mother’s own breastmilk supply to her infant, and initiation of breastfeeding,”

Family centred care

In parallel with his focus on nutrition, Professor Ewald is driving a special ‘care model’ at Uppsala University Children’s Hospital in Sweden. Quite simply, the model promotes the involvement of parents in all aspects of their baby’s care, with no separation of the child from its parents, maximum skin-to-skin contact and strong breastfeeding support for the mother. This concept has been shown to decrease stress and pain for the baby, whilst also supporting sleep patterns and overall growth.

There are further programmes like NIDCAP (Newborn individualized developmental care and assessment programme) have helped to reach the goals of reducing mortality and morbidity. They are designed to provide education and specific training in developmental observation, and assessment for health professionals who care for high risk infants and their families.

Speakers at Medela’s 8th Breastfeeding and Lactation Symposium 2013

Professor Diane Spatz, Dr Ann Dsilna Lindh, Professor Uwe Ewald and Professor Robert Schanler will be presenting their latest research and evidence based practice in relation to the value of human milk in NICU during Medela’s 8th International Breastfeeding and Lactation Symposium 2013, 12-13 April in Copenhagen, Denmark.

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About Medela

Medela provides technologically advanced, superior-quality breastpumps and breastfeeding accessories to nursing mothers around the world. Medela is developing products based on research by the world’s leading lactation experts. Medela has developed an extensive line of products to meet the diverse needs of nursing mothers. These products include hospital-grade, double and single electric and manual breast pumps and breastfeeding accessories.

The Medela family company, headquartered in the Canton of Zug, Switzerland, was founded by Olle Larsson in 1961. Medela concentrates on two business units Breastfeeding and Healthcare, specialising in the application of vacuum technology to medical suction devices. Medela has 16 subsidiaries in Europe, North America and Asia, distributes its products in over 90 countries, and employs 1,300 staff worldwide. www.medela.com

Fact Sheet “Medicinal benefits of human milk in Neonatal Intensive Care Units”

10% of all babies are born prematurely

- Every year around 15 million infants are born prematurely; this means more than one in ten of all the babies worldwide. 1.1 million of these newborns die from preterm birth complications³.
- These special infants present many challenges for parents and caregivers in the neonatal intensive care unit. They are not just a smaller version of full-term infants; additionally they have a host of physiological and metabolic differences that are compounded by their prematurity.
- These babies still need to adapt to life outside the uterus, as full-term infants do, but they do so with significant challenges. The highest level of care needs to be in place to ensure the best possible outcome for each individual infant.

Reducing mortality and morbidity

- In the past fifty years, there have been remarkable changes in the care of the neonate. The outcome for infants with birth weights of ~ 1000g has changed from 95% mortality to 95% survival⁴. To attain this turnaround, research is essential, as is the dissemination of the research results.
- Most of the major advances in this remarkable achievement have come from specialised procedures such as: thermoregulation using incubators; respiratory support using antenatal steroid treatment of preterm mothers to make the foetus’ immature lungs produce surfactant (a substance that reduces surface tension, thus allowing the baby’s lungs to expand); postnatal treatment of infants with surfactant; the use of continuous positive airway pressure, a treatment that uses mild air pressure to keep the airways open; techniques for providing nutrition and an ever more sophisticated collection of medications.
- At Medela’s symposium Dr Ann Dsilna Lindh, Karolinska Hospital Stockholm, will be discussing sources of nutrition, optimal timing and techniques for enteral feeding.

The importance of Breastmilk and the use of fortifiers

- Breastmilk is essential for supporting the growth, development and immunology of the preterm infant, but although human milk provides adequate nutrition for term infants, extremely premature infants weighing less than 1500g have additional nutritional requirements⁵. In these cases the mother’s milk, or donor milk if the own mother’s milk is not available, may not meet these needs. Fortifiers exist and are widely used in NICUs today, but there is very little evidence to support what composition these should have to adequately meet each individual baby’s needs without having adverse effects. The use of fortifiers enables the infant to receive optimum benefit from the mother’s milk.
- At Medela’s symposium Professor Uwe Ewald will speak about the experiences from his unit at Uppsala University Children’s Hospital on targeted fortification of human milk. Professor Richard J. Schanler will underline the use of breastmilk in his

³ World Health Organisation (2012). Born too soon – The global action report on preterm birth.

⁴ Philip, A.G. The evolution of neonatology. *Pediatr. Res.* 58, 799-815 (2005).

⁵ American Academy of Pediatrics - Section on Breastfeeding Breastfeeding and the use of human milk. *Pediatrics* 129, e827-e841 (2012).

presentation which will focus on the reduction in infection-related morbidity in human milk-fed premature infants, a conclusion reached in several studies in the past 25 years.

Family-centred care

- In almost all NICUs, infants are separated from their parents, however, it has been suggested that separation may lead to later behavioural and emotional problems for both mother and baby⁶. It also has a negative impact on the initiation and maintenance of adequate milk production. This is crucial since the benefits of feeding human milk to preterm infants are realised not only in the NICU but also in the fewer hospital readmissions for illness in the year after NICU discharge^{7, 8}.
- The family-centred model of care promotes the involvement of parents in all aspects of their baby’s care. Professor Ewald is at the forefront of this field and has implemented a family-centred care model, which is now being adapted by many NICUs worldwide. This requires the optimisation of hospital care space to facilitate maximum or continuous contact between mother and baby and even other family members. In Professor Ewald’s NICU at Uppsala University Children’s Hospital, parents have 24 hour care of their infant with the support of the professionals. Breastfeeding rates are improved and time to discharge has also been demonstrated to be earlier.

Quotes of Professor Uwe Ewald

- “Prematurely born babies and their mothers need intensive care and are therefore a cost to society, but with the right attitude, consensus and strict guidelines, we have succeeded in implementing a different type of care and allowing parents to stay with their child 24/7 – without expanding the budget at all,” says Professor Uwe Ewald.
- “If we treat prematurely born babies without separating them from their parents we immediately see an improvement in both mother and baby. Parents feel more confident and tend to go home earlier with their babies. We also notice that mothers continue to breastfeed after leaving hospital, and do so for longer.”

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⁶ Rutter, M. Parent-child separation: psychological effects on the children. *J. Child Psychol. Psychiatry* 12, 233-260 (1971).

⁷ Vohr, B.R. *et al.* Beneficial effects of breast milk in the neonatal intensive care unit on the developmental outcome of extremely low birth weight infants at 18 months of age. *Pediatrics* 118, e115-e123 (2006).

⁸ Vohr, B.R. *et al.* Persistent beneficial effects of breast milk ingested in the neonatal intensive care unit on outcomes of extremely low birth weight infants at 30 months of age. *Pediatrics* 120, e953-e959 (2007).