

Empowerment and the power of human milk: When science helps break down barriers

Improvements in science and medicine have resulted in premature babies having a much improved chance of survival. The growing consensus is that the most natural of products – human milk – is the key to giving them the best start in life. Highlighting the continued interest in this area of science, Medela’s 8th International Lactation and Breastfeeding Symposium in Copenhagen gathered 430 delegates from 46 countries to listen to and interact with peers. The challenge still remains to translate the science and the research into practical applications, but it is clear from the symposium that progress continues to be made.

Professor Diane Spatz from the Children’s Hospital of Philadelphia is adamant that from her perspective human milk is a medical intervention and not a lifestyle choice. From the outset, parents of children in her hospital are provided with the science behind breastmilk and its impact on the baby’s outcome.

Families want to do what is best for their children and by being able to provide milk to their critically ill child, they are empowered. If surgery makes direct breastfeeding impossible in the immediate short term, mothers are encouraged to pump as soon as possible to give the infant the best possible chance of being breastfed. Clear communication of the impact of breastmilk has resulted in a 99% pumping initiation rate in the hospital.

Significant benefits to infant host defense, sensory-neural development, gastrointestinal maturation and nutritional status are observed when premature infants are fed their mother’s milk. Professor Richard Schanler highlighted the significant impact of human milk in reducing necrotizing enterocolitis (NEC) in particular. Interestingly, the positive impact of human milk in the preterm infant continues into adolescence where neurodevelopmental outcomes have reported significantly positive effects on long term mental and motor development, intelligence quotient and visual acuity. New research is being carried out in the area of new human milk fortifiers as a way to increase nutrition levels in milk for the preterm infant.

Avoiding malnutrition in preterm infants is one of the primary concerns for Professor Uwe Ewald, known for his expertise and experience in NICU. The challenge is to reproduce in utero conditions for the infant in the unit. i.e. aim for similar growth, similar change in body composition and similar organ development as in utero. Through individual fortification based on the nutrient content of the mother’s milk, the right levels of nutrition can be attained. Kangaroo care, family involvement and using the parent’s chest as the new care space instead of incubators leads to a rapprochement between the parents and the unit staff.

Empowerment of parents is also central to Dr Ann Dsilna Lindh’s research, where challenges with feeding a very immature infant can lead to feelings of helplessness. Through involvement, parents quickly understand and see the medicinal benefits of using the mother’s milk. Reduced stress through continual rather than bolus feeding also impacts on the infant’s wellbeing.

Scientific research into the composition of breastmilk

Scientific research into the composition of breastmilk continues to yield fascinating results. Oxytocin was the first hormone to be isolated and synthesized in the 1950s. Scientific interest remained centred around the ordinary effects of the hormone, i.e. milk ejection, and labour inducement. The effect of oxytocin in the breastfed infant however has been unclear. According to Prof. Kerstin Uvnas-Moberg, it now appears likely that the human infant will be exposed to oxytocin within the brain from suckling, from having food in the gastrointestinal tract and from skin to skin contact. She has concluded that oxytocin plays a key regulatory role for both mother and infant in the development of bonding, interactive behaviour and stress levels. It may also optimize behavior and physiology of the newborn. The renewed interest in oxytocin is evident through numerous clinical trials which are underway to examine its effect in autism, social phobias, schizophrenia and depression.

Research into the cellular composition of breastmilk also raises interesting questions about the role of cells. Dr Foteini Hassiotou has examined immune cells in mature human milk to find that their levels increase not only during an infection in mother or baby, but in advance of an infection. A comparison between human embryonic stem cells and breastmilk stem cells show that they display a similar morphology with a similar gene expression. Dr Hassiotou's research shows that these pluripotent human breast milk stem cells can differentiate into other types of cells including brain, liver and pancreatic cells. With a proven link between longer breastfeeding and a reduced chance of breast cancer, suggestions are that stem cells play a role in this outcome.

Professor Kim Michaelsen has begun investigations into what is regulating the macronutrient and energy intake in children who are exclusively breastfed. The impact of glutamate and whether it has an appetite regulating effect is the primary focus of his research. If the mechanism regulating breastmilk intake is better understood it might open possibilities to support exclusively breastfed infants who are not thriving and regulate intake in those who have excessive weight gain.

In parallel, researchers and scientists are still trying to find the best ways to communicate their findings to mothers and their babies appropriately. During the symposium, Professor Peter Hartmann from the University of Western Australia drew a comparison between the clinical practice guidelines that exist for the heart, and the lactating breast. Whereas clear frameworks exist to help identify and treat cardiovascular problems, no frameworks exist to support lactation problems.

LAMP (Lactation Assessment and Management Programme) is a web based tool that has been developed to address this need for an intuitive framework to help family doctors in particular, with the assessment, diagnosis and management of lactation dysfunction. Importantly, it is easy to use, particularly during a patient consultation. Providing mothers with evidence based medical care can help them to find the best solutions for their problems, and help them to continue breastfeeding. LAMP is currently being rolled out in Australia, with interest from the AAP in the US.

Assoc Prof Donna Geddes outlined the need for objective research on ankyloglossia. Otherwise known as tongue-tie, the condition results in feeding difficulties for the infant (difficulties in maintaining attachment to the breast, inefficient milk transfer and poor growth). By using ultrasound techniques, Geddes has been able to look at the impact of a frenotomy on the feeding baby. Better understanding the potential benefits of frenotomy in these cases can avoid continued feeding problems and encourage breastfeeding.

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Contact

Martin Elbel, Medela AG,
Head of Corporate Communications
martin.elbel@medela.ch,
Phone +41 41 769 54 37 (Office),
+41 79 881 78 28 (Mobile)

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About Medela

Founded in 1961 by Olle Larsson and headquartered in the Canton of Zug, Switzerland, Medela is family-owned to this day, and concentrates on two business units: Breastfeeding, leading the way in the development and production of breastpumps, and Healthcare, specialising in the application of vacuum technology to medical suction devices.

Medela conducts fundamental research together with leading scientists and universities, and uses the research results in the development of its products. Medela has 15 subsidiaries in Europe, North America and Asia, and distributes its products through independent partners in more than 90 countries.

The company employs around 1,300 staff worldwide, 300 of whom are located in the Canton of Zug