

JOURNAL FOR MATERNITY CARE AND NICU

Beginnings

From Evidence to Action

MOM is Medicine

Leveraging the benefits of Mother's Own Milk
in advancing neonatal care

Screening is Vital

A case for antenatal lactation
risk factor assessment

Culture is King

How to build successful
perinatal optimization teams



All of the clinicians here are going to reflect on their practice and they are going to go home and talk to their colleagues because they have seen some phenomenal results. And they will be more committed and passionate about changing the care to see the positive outcomes.

Prof. Donna Geddes, Speaker at all three Medela Symposia in 2025

Empowering Perinatal Teams

Advancing Lactation Science

Inside the 2025 Medela Global Breastfeeding and Lactation Symposium Series

Once again, the Medela Global Breastfeeding and Lactation Symposium Series brought together some of the most respected voices in lactation science to translate breakthrough research into clinical practice. Three hybrid symposia held across China, the Americas, and Europe, united neonatologists, lactation consultants, midwives, neonatal nurses, milk bank representatives and parent organizations for practice-changing talks and workshops directly addressing the real-world challenges families and healthcare professionals face today.

30
global & local
experts

3
continents

5.000+
participants
online,
450+ onsite

China Edition:

Improving Lactation Support

The China symposium, held in Shanghai, not only featured insightful presentations by international experts, but also showcased systematic discussions by local specialists in obstetrics, pediatrics, and nursing. They explored innovative clinical practices – from prenatal risk assessment and promoting breastfeeding for preterm infants in the NICU, to postpartum whole-cycle information-based support and specialized nursing clinics – providing cutting-edge scientific evidence and practical solutions for multi-disciplinary collaboration.

Americas Edition:

Empowering Perinatal Teams

Held in Illinois, the two-day program featured 12 clinical thought leaders in lactation science addressing three core themes: novel advances in neonatal care; optimizing Mother's Own Milk (MOM) volumes in vulnerable populations; and strengthening the web of care; connecting healthcare professionals, mothers, milk banks, and community support to ensure access to donor human milk and sustain a full milk supply for every infant. Presentations discussing advances in neonatal care included groundbreaking research on secretor and non-secretor status in relation to

exploring glycans and microbes at the intersection of the mother-milk-infant triad, best NICU practices to optimize health outcomes with MOM and breaking down barriers to best NICU feeding practices with MOM.

Europe Edition: Discussing Novel Scientific Research and Implications on Clinical Practice

The agenda in Lisbon, Portugal, addressed novel advances in neonatal care, optimizing MOM milk volumes in at-risk populations, and bridging the gap between 100% human milk and breastfeeding beyond discharge by strengthening human milk banking infrastructure across Europe and ensuring specialized lactation support for high-risk newborns. The symposium discussion integrated parent perspectives alongside clinical evidence to address the hospital-to-home transition for at-risk infants and mothers, highlighting a unique opportunity for a patient-advocacy perspective. In-depth expert workshops explored practical solutions to overcome barriers to tracking and increasing MOM provision for NICU infants.

With their broad appeal and deeply research-focused approach, the Medela symposium series continues to drive global practice change, build partnerships and improve access to mother's own milk for vulnerable infants worldwide.

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Imprint

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MOM is medicine

Breast milk is so much more than food. In the world of newborn care Mother's Own Milk (MOM) stands out as a tailored health intervention. A highly adaptive, bioactive system that supports infants through their most vulnerable days, weeks and months. Scientists have repeatedly campaigned for a more holistic approach on the properties of mother's milk, encouraging us to look past the nutritional benefits and recognize it as the true medicine it is.

Three examples to convince and astound.

Concentrated Superpowers

Exploring concentration of Mother's Own Milk
as an alternative to adding fortifier

Sometimes it takes a little more. For preterm infants, enriching human milk with fortifier, powdered formula or individual nutrients is a customary course of action. But as we know that MOM is in fact the best approach to protect the fragile gastrointestinal system and reduce disease risk, should we not look for ways to make sure the infant can receive more of these beneficial ingredients instead? Prof. Sarah Taylor and her team at Yale University may have found the solution – and it is as simple as it is effective: by concentrating raw and pasteurized milk through passive osmosis at the point-of-care.

Prof. Sarah Taylor,
Neonatologist at Yale School
of Medicine, USA



Prof. Taylor, what are the clinical advantages of using concentrated MOM compared to traditional fortification methods of human milk – especially in terms of preserving bioactive components and supporting gut health?

The clinical advantages of concentrated MOM over traditional fortification methods of human milk is that concentration exposes the infant to more MOM components. In concentrated milk, each mL of milk is going to have about 20% higher concentration of nutrition and bioactives. This is especially important for any time an infant has a limit to feeding volume, but it also may be important when a mother is pumping higher daily volume than the infant's daily feeding volume. This allows for the infant to obtain more of the nutrition and bioactives being made for the infant each day.



I think for mothers, the idea that they can avoid fortifier but use their own milk and concentrate it for the baby, will be really motivating and exciting.

Prof. Paula Meier,
Speaker at the
Medela Symposium Series
2025



Your research introduces a novel point-of-care method to concentrate Mother's Own Milk. Could you walk us through the passive osmosis process in more detail. What equipment is required to implement this method?

The primary equipment for the process is the human milk concentrating device. This device is a sterile thin-membrane filter made to fit in the milk containers which are used commonly in the NICU. The filter is rinsed with sterile water and then placed in the milk for concentration. The membrane will become heavier and thicker while concentrating as it is removing liquid from the milk.

It sounds like such a simple solution for very impressive results. How did you come up with the idea for this filter and how was it developed?

Beth Schinkel, a co-founder of Mother's Milk Is Best, was working as a NICU RN in Boston when she became very frustrated with how many of her patients were developing necrotizing enterocolitis. She wondered if it was possible to increase human milk nutrition and bioactives provided in the preterm infant prescribed feeding volume by removing water.^{1,2}

We know that increasing milk volume is one strategy to meet nutritional needs, but it's not always feasible for fragile preterm infants.

How might milk concentration via passive osmosis offer a safer alternative – and what do we know so far about its tolerability in clinical settings?

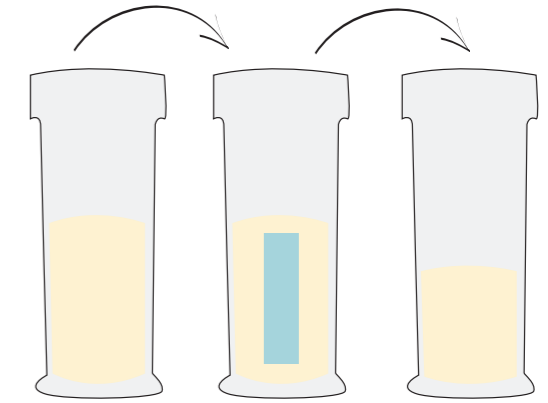
Both strategies, increasing milk feeding volume and using a human milk concentrating device, are focused on increasing the infant's intake of MOM nutrition and bioactives. The human milk concentrating device may be preferred when infants have limitation in feed volume. One example when volume may be limited is when an infant is working on oral feeding. We anticipate that the concentrated milk will be well tolerated because a concentration of 20% is probably within what already happens in variation of nutrients in MOM and, in our laboratory testing, all results were within the normal values for infant feeding. However, the clinical studies to assess tolerance have not yet occurred. They will start this spring (2026).

Although your research is currently in the trial phase, what guidance can you offer to clinics interested in adopting this technique?

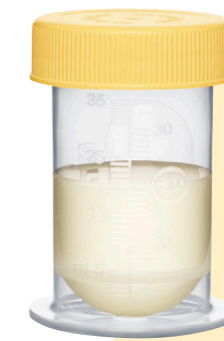
The best things to consider in preparation for using this device in the future is to focus on supporting each mother to come to volume in her milk supply. We hope that using the human milk concentration device will be a motivation for mothers as they pump milk for their NICU infant. Perhaps the fact that we consider MOM nutrition and bioactives so important that we want to concentrate it rather than add a fortifier will be empowering to mothers.

When do you anticipate broader clinical implementation?

The product will be ready for clinical use in 2026. We are still performing clinical research because we know it is important for hospitals to know about the safety and effectiveness of a product. We anticipate broader clinical implementation in 2027. Our trial is designed to move quickly because, if this device works as we think it will, we are eager to get this to NICUs.



20-30% less milk volume through passive osmosis.



In concentrated milk, each mL of milk is going to have about **20%** higher concentration of nutrition and bioactives.

MOM Irreplaceable benefits for preterm infants

Concentrated human milk provides a higher density of the unique bioactive components that make human milk fundamentally different from any manufactured alternative. By selectively removing water, the nutrient and bioactive load per milliliter increases — a critical advantage for preterm infants, who often have very limited enteral volumes but exceptionally high nutritional and immunological needs.

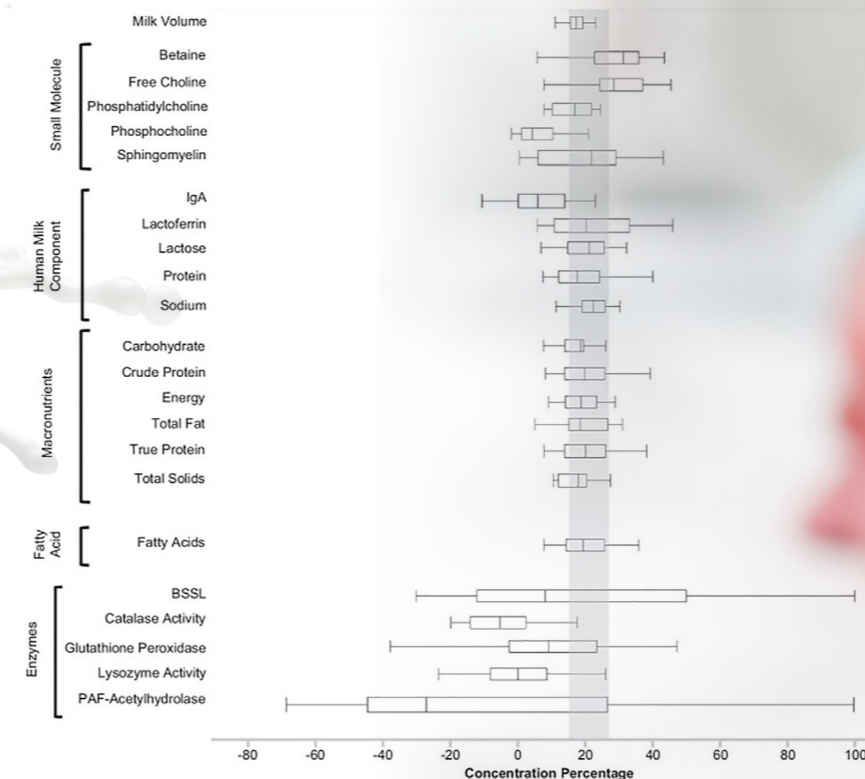
Signal, Shield, Nutrition

Human milk naturally contains living cells, immune mediators, enzymes, extracellular vesicles, and complex oligosaccharides that shape the infant microbiome, support gut barrier maturation, and modulate immune development. When milk is concentrated,

these components become proportionally more available within each feed. This means more immune protection, more microbiome-shaping molecules, and more growth-supporting nutrients delivered in every milliliter. For preterm infants, this is particularly important: they receive small volumes, are at heightened risk for NEC and sepsis, and rely heavily on the protective and developmental benefits of human milk.

Concentrated human milk therefore offers a way to meet elevated nutrient requirements while simultaneously enhancing exposure to the biological factors that contribute to improved gut maturation, better feeding tolerance, and stronger immune resilience.

Fresh Human Milk Component Percent Concentration Change compared to Human Milk Percent Concentration Change



Box Plot (center value median) of nutrient concentration, Ncon, compared to the average mother's milk concentration, HMcon (gray bar denotes expected nutrient concentration, Ncon).

Figure reproduced from: Schinkel ER et al. J Perinatol. 2024; 44(11):1575-1583. © The Authors 2024. Licensed under CC BY 4.0. (No changes were made to the original figure.)

References: 1 Schinkel ER et al. J Perinatol. 2021; 41(3):582-589. 2 Schinkel ER et al. J Perinatol. 2024; 44(11):1575-1583.

Promising Protection

Intranasal fresh mother's milk as a neuroprotective strategy in neonatal brain injury

Brain injury remains a common complication of prematurity. Overall, intraventricular hemorrhage affects approximately 15 – 25% of very preterm infants worldwide, with rates rising markedly at lower gestational ages. So far, there is no causal treatment, but Dr. Titus Keller and his team at the University Hospital in Cologne, Germany, follow an exciting and promising approach – leveraging the neuroprotective properties of colostrum.

Dr. Keller, how did this exciting finding come to be? Can you tell us a bit about the background?

In 2012, we informed the parents of an extremely preterm infant about the diagnosis of severe intraventricular hemorrhage. Like many parents in this situation, they asked us: How are you going to treat this? The usual answer is that there is no causal treatment – only careful monitoring and management of the consequences. However, we had recently become aware of two relevant scientific observations. First, experimental studies had shown that intranasal administration of epidermal growth factor and mesenchymal stem cells could attenuate neonatal brain injury in animal models. Second, human breast milk was known to contain growth factors and stem cells. Based on this constellation, Dr. Angela Kribs proposed a compassionate use approach: administering a few drops of the mother's own fresh milk intranasally, in addition to standard care. The parents agreed, and the nursing team supported the procedure. Eight weeks later, follow-up cranial ultrasound showed surprisingly little residual evidence of the initial hemorrhage. While this observation did not constitute proof of efficacy, it motivated us to further explore the feasibility and biological plausibility of this approach.

What is the physiological rationale behind the administration of early colostrum through the nose?

The nasal route offers a direct connection to the

central nervous system. Experimental studies have shown that biologically active substances can reach the brain along nose to brain pathways, partly bypassing the gastrointestinal tract and the blood-brain barrier. Early colostrum contains high concentrations of growth factors, stem cells, and other bioactive components. In the context of the preterm infant – whose brain is still developing – the rationale was to explore whether these components could reach vulnerable brain regions more directly via the nasal route than through enteral administration.

Which properties of MOM do you attribute the effects you observed to?

Human milk contains a complex and dynamic mixture of bioactive components, including growth factors, stem cells, extracellular vesicles, and immunomodulatory molecules. While individual components may be biologically relevant, my impression is that any potential effect is not driven by a single factor, but by the uniquely adaptive composition of a mother's own milk responding to her infant's needs.

Can you take us through the process? When, how much and how often do you administer it?

In our clinical setting, we administered a very small volume – typically one drop, or about 0.1 mL – of the mother's own fresh milk into each nostril. This was done during routine care times, usually in parallel with regular feeding, and repeated several times per day. The approach was designed to integrate seamlessly into standard neonatal care without disrupting established feeding practices.

Are there any specific exclusion criteria or medical conditions that would preclude intranasal administration?

Intranasal administration followed the same safety criteria as the use of human milk in general. When fresh mother's milk was contraindicated, intranasal administration was not



Bioactive components in MOM might reach vulnerable brain regions more directly via the nasal route than through enteral administration.

performed. In situations where pasteurized human milk was used for feeding, pasteurized milk was also administered intranasally. While viable cells are no longer present after pasteurization, many growth factors retain substantial biological activity.

If MOM can have such a positive effect on preterm infants with brain injury, might other infants also benefit from this treatment?

To date, the available data consist of early clinical observations from several centers, including reports from Canada and Turkey, which suggest potentially beneficial signals in preterm infants. From a theoretical perspective, other infants may also experience periods of increased brain vulnerability, such as after hypoxic-ischemic events. Whether intranasal administration of human milk could have any clinically relevant effect beyond the preterm population is currently unknown and would require dedicated, condition specific research.

What is the current status of this research?

The current evidence is still early. Small clinical studies and observational data from different centers, including reports from Canada and Turkey, suggest encouraging signals – for example reduced progression of ventricular

dilatation – but they are not designed to prove efficacy. At this stage, intranasal human milk remains an experimental approach, and larger, well controlled studies with standardized protocols and long term follow up are required before any conclusions about clinical benefit can be drawn.

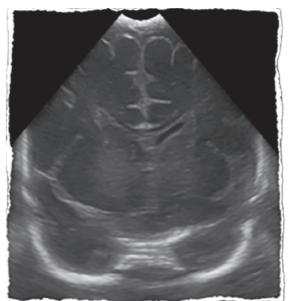
For all excited colleagues out there, how do you envision integrating this procedure into existing care protocols?

At the moment, any integration should begin with a shared understanding that this is not a standard therapy, but an experimental concept under investigation. The first step is interdisciplinary dialogue – bringing together neonatology, nursing, lactation consultants, and ethics – to align expectations and responsibilities. If future research confirms safety and clinical relevance, I would hope that this concept could be made accessible to preterm infants worldwide – always embedded in rigorous clinical standards and ongoing evaluation. Beyond any potential neurobiological effects, our experience has shown that this approach can strengthen parental involvement and motivate teams to prioritize early access to colostrum, which is beneficial in itself.

Brain hemorrhage in a preterm infant receiving intranasal Mother's Own Milk



26th week PMA...



...and 8 weeks later

Ultrasound images courtesy of Dr. Titus Keller



Dr. Titus Keller,
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Division of
Neonatology
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Cologne,
Germany

Parents remain one of our most underutilized resources

How parent touch and the use of MOM can impact procedural pain in neonates

Nearly all newborns undergo painful procedures within hours of birth. The burden is particularly high for infants born preterm or critically ill. Studies show these infants may experience 7 to 17 painful procedures per day during a NICU stay.¹ Such exposure is not insignificant: repeated early pain is linked to acute physiological instability as well as long term alterations in pain processing, cognitive development, behavior, stress responsiveness, and brain connectivity.^{2,3} Prof. Marsha Campbell Yeo has devoted her research to elevating neonatal pain management as a core component of clinical care.



Prof. Marsha Campbell-Yeo, neonatal practitioner, clinician scientist and professor at the School of Nursing, Dalhousie University, Canada

"Pain is not benign", stresses Campbell-Yeo. "We would never accept unmanaged, repeated pain exposure in any other patient population. Infants deserve the same standard of compassionate, evidence based care." Contemporary recommendations reinforce this view, prioritizing routine pain assessment, the reduction of unnecessary procedures, and the use of non pharmacologic comfort strategies – especially parent involvement – as foundational elements of care.²⁻⁴ Recognizing parents as therapeutic essential partners in care rather than visitors reflects a cultural shift grounded in robust evidence.

The impact of parent-led interventions

The evidence strongly supports parent led interventions as first line strategies for reducing procedural pain. Randomized controlled trials demonstrate that breastfeeding during procedures reduces behavioral signs of distress and cortical activation, offering strong evidence for its neurophysiological analgesic effect. Similarly, skin to skin contact, comforting touch, and the administration of Mother's Own Milk, when combined consistently lessen behavioral and physiologic indicators of pain across both healthy and critically ill infants.^{2,3} These parent driven measures, when paired with structured pain assessment, clustering of procedures, and

selective use of pharmacologic adjuncts, align with neuroprotective care principles and help limit cumulative stress exposure.^{3,5} Campbell-Yeo underscores this point: "Parents are not simply present – they are therapeutic. When we empower them, we improve infant outcomes and strengthen the parent – infant relationship at a critical time." She also highlights ongoing gaps in practice, noting, "Despite strong evidence supporting parent led interventions to reduce pain in healthy, preterm, and sick infants, uptake in clinical care remains poor. Parents remain one of our most underutilized resources to ensure optimal pain care."

Promising new protocols

Yet despite the strength of the evidence, implementation barriers persist. Observational studies continue to show a high procedural burden with inconsistent use of comfort measures and limited parental involvement.¹ Unit workflow, staffing pressures, and apprehension about involving parents during more invasive procedures remain common hurdles.⁴ However, emerging innovations offer promising solutions. eHealth educational platforms have been shown to increase clinician and parent confidence and improve the real world use of parent led strategies,⁶ while usability tested digital tools enhance parents' understanding of infant pain and their role in supporting their child.⁷ International survey data show that neonatal teams worldwide are increasingly supportive of integrating parents directly into pain assessment and management.⁸ Embedding parent led strategies into protocols, coaching families at the bedside, consistently using validated pain assessment tools, and clustering procedures can help close the gap between evidence and practice. As Campbell-Yeo summarizes, "Effective neonatal pain care is not a single intervention – it's a culture. When teams intentionally include parents as partners, we offer infants the safest and most compassionate start possible."



We need to take the fluff out of breastfeeding and make it more scientific. When we keep using words like "gift" while talking about mother's milk, we divorce it from the health issue. The more we can make it about a health issue that is informed by its own research and science, the more we are going to see the field move forward.

Prof. Paula Meier, Professor of Pediatrics at Rush University Medical Center Chicago and leading lactation researcher since 1975

Want to learn more?
Find the recordings of all exciting talks from our Medela Symposium Series 2025 in our Medela University!



References: 1 Bueno M et al. *Front Pain Res.* 2023; 4:110502. 2 Campbell-Yeo M et al. *Paediatr Child Health.* 2025; 30(7):607–623. 3 Campbell-Yeo M et al. *Children.* 2022; 9, 244. 4 Ullsten A et al. *Front Pain Res.* 2024; 5:1375868. 5 Benoit B et al. *Early Hum Dev.* 2021; 154:105308. 6 Hughes B et al. *Scand J Caring Sci.* 2024; 38(4):960–972. 7 Hughes B et al. *Paediatr Neonatal Pain.* 2024; 6(3):60–79. 8 Ullsten A et al. *Children.* 2024; 11, 1105.

Proactively
Improving

Breastfeeding

Outcomes

Historically, lactation care has included limited antenatal preparation, inconsistent early guidance and a reactive approach to breastfeeding challenges. Emerging evidence highlights the benefits of proactive antenatal screening and early postpartum biomarker monitoring to help clinicians identify women at risk of lactation difficulties and guide timely interventions.

A recent study by Perrella and colleagues,¹ published in the Journal of Midwifery & Women's Health (2026), examined the prevalence of antenatally identifiable lactation risk factors and their association with breastfeeding outcomes at six to eight weeks postpartum. The findings are compelling: 65.4% of women had at least one antenatal lactation risk factor.

Identifying risks early on

The most common were a pre-pregnancy BMI ≥ 25 , gestational diabetes mellitus (GDM), polycystic ovarian syndrome (PCOS), and lack of breast growth during pregnancy. Of the women with no risk factors, 77.1% were fully breastfeeding at six to eight weeks, considerably higher than the 60.2% of those with one risk factor. The combination of BMI ≥ 25 and GDM more than doubled the risk of not fully breastfeeding at 6 to 8 weeks postpartum.

These results underscore the role of non-modifiable factors (e.g. anatomical variations, metabolic conditions) in influencing lactation outcomes. Identifying these risks early creates an opportunity for targeted support.

New markers for objective decision making

Milk sodium monitoring offers a practical physiologic window into the timing of secretory activation and the health of the lactating breast, enabling clinicians to move beyond subjective signs toward objective, real-time decision-making in the first days and weeks after birth. In normal physiology, colostrum sodium concentrations decline rapidly in the first days postpartum as mammary tight junctions close and mature milk production begins. Values ≤ 16 mmol/L typically indicate that milk has 'come in', while higher readings beyond this early window can signal delayed secretory activation associated with inadequate infant intake. Persistent elevations above 16 mmol/L may also indicate suboptimal milk removal or evolving inflammation. As a point of care metric, milk sodium measurement complements latch, transfer, and weight assessments to create a more complete clinical picture. Using just 10 drops of hand-expressed milk, clinicians can obtain immediate results with compact ion-selective electrode devices. Repeated measurements over several days provide real-time feedback that helps guide targeted interventions and track lactation progress with clarity and confidence.

Common Risk Factors for Lactation Difficulties

Anatomical

- ➔ Breast hypoplasia/insufficient glandular tissue
- ➔ Prior breast or nipple surgery
- ➔ Nipple piercings (especially those damaging ducts)
- ➔ No noticeable breast growth in pregnancy

Endocrine & Metabolic

- ➔ Elevated pre-pregnancy BMI (≥ 25)
- ➔ GDM, PCOS
- ➔ Thyroid or pituitary disorders

Observed Indicators

- ➔ Breastfeeding goals
- ➔ Understanding family situation and support
- ➔ Mental health challenges

Understanding risk factor types

Lactation vulnerability is multifactorial. Anatomical factors, such as hypoplasia, prior breast or nipple surgery, and duct-disrupting piercings, can limit production or transfer from the outset. Minimal or absent breast growth in pregnancy may signal underlying anatomical or metabolic influences and should trigger closer monitoring.¹ Endocrine and metabolic factors, particularly BMI ≥ 25 , gestational diabetes mellitus (GDM), polycystic ovary syndrome (PCOS), and thyroid or pituitary disorders, can delay secretory activation and impede sustained milk synthesis, with recent

cohort data highlighting BMI and GDM as particularly strong predictors of reduced full breast-feeding at six to eight weeks.¹ Finally, psychosocial factors, confidence, intention, and the ability to persist through early difficulties, shape infant feeding decisions in the first weeks.²⁻⁵ The thread that connects these categories is practical: structured antenatal screening finds risk early; sodium monitoring then verifies postpartum physiology and supports precision in care.

A Mom's Perspective



It helped me to understand that my struggles were not due to lack of effort or will.

For Isabel Teixeira breastfeeding did not come naturally and it came with a lot of emotional struggles. Today, she believes that an earlier diagnosis of her hypoplasia* and better preparation and guidance by healthcare professionals could have made a lot of difference to her experience, and she advocates for better personalized care.

"I look back on my first breastfeeding journey as a period filled with expectations that simply did not match reality. I had imagined breastfeeding to be natural and effortless, yet what I actually experienced was the exact opposite. While friends spoke of uncomplicated starts, I struggled with challenges that left me wondering how I could create a bond with my son when something so essential felt out of reach. This brought an overwhelming sense of uselessness as a mother. I believed breastfeeding was a kind of quality stamp – proof that I was prepared for motherhood – and when it wasn't working, I felt I was failing.

When I eventually learned that my difficulties stemmed from mammary hypoplasia, everything shifted. I had noticed that my breast did not grow like my friends' breasts did – of course, I am a woman, I do compare, I simply did not know what it

meant. Finally having a diagnosis brought relief and helped me understand that my struggles were not due to lack of effort or will. This certainty allowed me to forgive myself and accept my limits and it changed my second postpartum experience profoundly. I felt lighter, more grounded, and better prepared to work within what my body could and could not do. The support of my partner and the validation from the IBCLC nurse who had accompanied me during my first journey were invaluable. When she told me, 'Give what you can, and the rest is formula – and that's perfectly fine,' something inside me settled. It allowed me to make peace with those early, painful memories. Looking back, I wish I had received more clarity, more straightforward information, and support that didn't frame breastfeeding as an all-or-nothing experience. Mixed feeding and other alternatives could have been introduced with more openness, especially when the situation clearly required it. Today, being a healthcare professional myself, I believe strongly in the necessity of individualized support. There is no single approach that works for every mother. Professionals must observe, listen, soothe fears, and validate each woman's efforts. A diagnosis, timely guidance, and personalized care can make all the difference. They certainly did for me."

*Mammary hypoplasia is an underdevelopment of glandular breast tissue present from birth that can significantly limit milk production despite optimal lactation management.

The Solution

medela Turning Science Into Care

Antenatal Breastfeeding Screening

1. What are your plans for feeding this baby?

Breastfeeding Breastfeeding and infant formula Formula feeding
(If formula feeding only, you do not need to complete the rest of this questionnaire)

2. How long do you plan to breastfeed your baby?

____ months OR ____ years

3. Breastfeeding history

How long did you breastfeed your older children? #1 _____ months #2 _____ months #3 _____ months #4 _____ months

Any previous preterm births? Yes No

Previous breastfeeding difficulties:

Nipple pain Breast pain Mastitis Abscess Low milk supply Oversupply

Other: _____

4. Breast anatomy and changes

Bra size pre-pregnancy: _____ now _____ at _____ weeks

No breast changes Breast hypoplasia

Breast / nipple surgery: Augmentation Reduction Other

Nipples: Large Short Flat Inverted No concerns

Nipple piercing: No piercing Left Right Piercing was infected

5. Metabolic health

Pre-pregnancy weight: _____ Height: _____ Pre-pregnancy BMI: _____

BMI > 30 Polycystic Ovarian Syndrome Placental disorders / surgery

Gestational diabetes Pre-existing diabetes

Thyroid disorder: If yes, the last TSH result: _____ Date: _____

6. Mental health

History of: Anxiety Depression Other mental health difficulties

Details: _____

Outcome of screening

RED Breastfeeding class and antenatal lactation consultation with postpartum follow-up advised

ORANGE Breastfeeding class and postpartum lactation follow-up advised

GREEN No risk identified, breastfeeding class advised

References: Perrella SL, Vaskovicky F, Geddes DT. Prevalence of antenatal identified lactation risk factors and risk of not fully breastfeeding at 6 to 8 weeks postpartum. *J Midwifery Womens Health*. 2020; 30(1):179-185. 2 Diaz LE et al. Front Public Health. 2023; 11:1256-432. 3 Brown CRL et al. *CJPH*. 2014; 105(3):e179-185. 4 Vargas-Pérez S et al. *Int Breastfeed J*. 2025; 20(1):49. 5 Simpson DA et al. *Eur J Clin Nutr*. 2022; 76(5):671-679.



A quick screening tool identifies mothers at-risk.

A 3-tiered system guides personalized care

- High risk**
Breastfeeding class and antenatal lactation consultation with postpartum follow-up advised.
- Moderate risk**
Breastfeeding class and postpartum lactation follow-up advised.
- No risk**
No risk identified, breastfeeding class advised.

Early identification ensures high risk women get timely intervention and support. Tailored plans may include early pumping and expert consults.

Take action today!

Download the free Antenatal Breastfeeding Screening Tool and start integrating proactive lactation care into your maternity services



Assessing with the right tools

To operationalize antenatal risk identification, Dr. Sharon Perrella, Professor Donna Geddes, Dr. Stuart Prosser, and colleagues developed and implemented the Antenatal Breastfeeding Screening Tool (ABST).¹ Used during routine mid-pregnancy visits, typically at 24 – 28 weeks, the tool assesses breastfeeding intentions and history, breast anatomy and changes, metabolic health, and mental health considerations. Risk is stratified into three categories: high risk (red), moderate risk (orange), and no risk (green). High-risk women are recommended to have a breastfeeding class and antenatal lactation consultations with postpartum lactation follow-up, while moderate-risk women are advised to take a breastfeeding class and have follow-up. Those with no identified risk are recommended to attend a breastfeeding class.

Implementation sites report that ABST is quick to complete, easy to integrate into standard visits, and well-accepted by clinicians and families. Early milk sodium testing (repeated when indicated) verifies that secretory activation is on track, or signals the need to intensify milk removals, refine latch/positioning, and escalate follow-up.

From research to clinical practice

For midwives, obstetricians, lactation consultants, and other maternal healthcare providers, the integration of antenatal lactation risk screening with early postpartum milk sodium monitoring represents a meaningful shift from reactive to predictive and preventive lactation support. Rather than waiting for problems to arise, clinicians can identify elevated lactation risk during pregnancy and prepare a proactive, multidisciplinary plan, providing tailored education, assessment and interventions to empower women at risk. In the first weeks after birth, milk sodium measurements offer a rapid and objective confirmation of secretory activation progression or breast inflammation, indicating whether intervention and/or early referral to lactation specialists is needed. The message is clear: early identification and intervention can make a measurable difference for mothers and babies.



For more insights

Explore the full Symposium content presented by **Prof. Donna Geddes and Dr. Stuart Prosser on Medela University**

References: 1 Perrella SL et al. *J Midwifery Womens Health*. 2026; 71(1):17-25. 2 Diaz LE et al. *Front Public Health*. 2023; 11:1256-432. 3 Brown CRL et al. *CJPH*. 2014; 105(3):e179-185. 4 Vargas-Pérez S et al. *Int Breastfeed J*. 2025; 20(1):49. 5 Simpson DA et al. *Eur J Clin Nutr*. 2022; 76(5):671-679.

Advancing Lactation Care

My Pumping Pathways™

A Novel Evidence-Based Approach to Lactation Care
for Pump-Dependent Mothers with Infants in the NICU

The importance of early, frequent, effective and comfortable milk removal cannot be overstated for pump-dependent mothers. Yet mothers with infants in the NICU continue to encounter multiple barriers to achieving their full milk-making potential, including insufficient standardized education on effective, safe and individualized pump use, as well as limited access to hospital-grade breast pumps equipped with appropriate technology to support early lactation.¹ These challenges persist despite strong evidence that pump-dependency creates a critical need for breast pumps capable of replicating the unique suckling pattern used by healthy-term breastfeeding infants – both to initiate lactation, and to build and maintain an adequate milk supply.²⁻⁷ In response, Prof. Paula Meier and Prof. Leslie Parker developed My Pumping Pathways™, a comprehensive, evidence-based resource that standardizes and individualizes breast pump education and guided pump use for mothers whose infants require neonatal intensive care.

My Pumping Pathways™ was originally developed by Profs. Paula Meier and Leslie Parker to address the critical need for standardized, evidence-based approaches in both research and clinical practice related to breast pump use and milk-volume outcomes. At its core, it provides two distinct clinical 'pathways' for HCPs to interact with mothers, guiding them through the most critical phases of their lactation journey: one pathway designed for the initial maternity-hospitalization period until mothers achieve secretory activation (milk 'coming in'), and a second pathway for the period after secretory activation occurred, when mothers – particularly those of preterm infants – typically begin to build their milk supply.⁸

Building on this foundation, Medela has expanded My Pumping Pathways™ to include complementary educational assets, such as structured education modules, micro-learning units, a competency-validation tool, and a consultation checklist. This allows the pathways to be embedded not only in clinical routines, but also in staff competency development, strengthening bedside and point-of-care education and helping increase provider confidence.

Standardize practice

Through standardized, high-quality clinical interactions, My Pumping Pathways™ enables mothers to reach their own full milk-making potential with a personalized, evidence-based approach that reflects lactation initiation physiology from birth to day 14. By providing timely, on-point guidance – supported thorough documentation and regular check-ins – the program strengthens maternal autonomy while providing the structured lactation care necessary for informed and confident pumping decisions. Ultimately, My Pumping Pathways™ aims to mirror, as closely as possible, the complex physiologic interplay between the breast and a healthy, full-term breastfeeding infant during early lactation – now reinforced by a standardized educational framework that elevates both clinical practice and maternal experience.

Increase knowledge

A core objective of My Pumping Pathways™ is to reduce maternal stress and strengthen mother's knowledge and self-confidence in pumping. It is designed to serve as a flexible standardized guide for individualized interaction with mothers rather than a rigid, technical checklist. While

the components of the pathways are outlined in publicly available resources, what truly distinguishes My Pumping Pathways™ is the creation of a comprehensive "bundle" of best evidence to optimally set up mothers for pumping success.

My Pumping Pathways™ offer a clear, structured, and evidence-based framework that helps pump-dependent NICU mothers navigate the most critical phases of early lactation. From birth through the first postpartum days until secretory activation ('milk coming in'), they provide a standardized approach to early pumping initiation with Medela Symphony® – guiding step-by-step through breast assessment, correct pump setup (INITIATE program), and effective milk removal while ensuring individualized, goal-oriented guidance tailored to each mother's needs. As lactation progresses and secretory activation occurs, My Pumping Pathways™ focus on adequate milk supply development, optimizing pumping routine, and facilitating a smooth, guided transition to the MAINTAIN Program. Throughout the journey, the pathways ensure continuity and ongoing personalization as lactation progresses and mothers establish and sustain their milk supply.

Improve outcomes

The guide incorporates modern educational tools such as QR codes that provide mothers with access to evidence-based resources and instructional videos. Key educational elements include proper breast-shield sizing – a frequently overlooked factor with significant impact on milk removal efficiency⁹ – as well as correct breast shield positioning and handling during pumping sessions. The pathways emphasize the importance of simultaneous (double) pumping, which has been shown to increase prolactin levels, shorten pumping time, and increase milk volume compared to sequential single-breast pumping.¹⁰⁻¹² Research by Dr. Medina Poeliniz and colleagues, who standardized breast-pump use according to evidence-based protocols, demonstrated significant increases in milk volume among pump-dependent mothers with an infant in the NICU – findings that directly informed the development of My Pumping Pathways™.¹³

My Pumping Pathways™ is currently undergoing early clinical testing, with promising first insights. The full program will be available soon – stay tuned for what's coming next in evidence-based lactation care.

Actively seek the barriers to progress

HOW TO BUILD SUCCESSFUL PERINATAL OPTIMIZATION TEAMS

Dr. Julie-Clare Becher, Consultant Neonatologist at Edinburgh Royal Infirmary, struck a chord with attendees at the European Edition with an engaging call to action for optimising team culture in perinatal care. Highlighting, that successful optimisation of care is inseparably linked with successful team culture – but that building this kind of culture is no small feat.



Dr. Becher, how exactly would you define a perinatal team?

The perinatal team is an extensive interconnected network of professionals from different specialties, backgrounds and even geographical locations who have roles which may be distinct but which commonly converge on achieving the best outcomes for women and their babies. However despite this common goal, differing priorities, management structures and professional responsibilities can impact the perinatal team culture.

In your symposium talk, the line that really stayed with attendees was: “Culture eats strategy for breakfast.”

Yes. This quote, attributed to the business guru Peter Drucker, means that the culture of an organisation, the shared beliefs, values and behaviours, has a stronger influence on success than strategy alone.

What does this mean in the context of perinatal care?

The first step is to define the goals of the team you wish to build: what is your current performance, what do you want to achieve, how aspirational do you want to be? The answers to these questions will help to build your improvement strategy. It is also equally important to understand the culture within your team as this is crucial to success. This information can be gathered through staff culture surveys, trainee surveys, parent feedback, staff focus groups, learning from adverse events, performance in perinatal optimisation metrics.

Who are the key stakeholders, who needs to be on board first?

Optimising preterm outcomes takes many members of staff across different teams and sometimes across different hospitals. While it is essential to have neonatologists, neonatal nurses,

midwives, obstetricians and anaesthetists working towards a shared goal, we must not forget the essential role that other staff can have in promoting a healthy culture. These staff may include domestic staff, ward administrative staff, allied health professionals. Having an inclusive culture in your improvement efforts helps all the team to get behind projects and support each other even where the work is challenging.

Everyone in perinatal care ultimately wants the same thing – healthy mothers and healthy babies. Why, in your view, is interdisciplinary or multidisciplinary teamwork still so challenging?

The goal of healthy mothers and healthy babies is undoubtedly one we all want to embrace. However the realisation of that goal can be months in the future and many frontline staff may never be aware if this goal is achieved or not. Instead team members often require goals which are more immediate and meaningful. These often take the form of ‘process measures’ rather than higher level ‘outcome measures’. Process measures might include, for example, expressing within the first 2 hours after birth, or enabling delayed cord clamping for 2 minutes or more. Goals such as these are more tangible for frontline staff who may invest considerable time and energy to making them happen and are more rewarded by immediate results.

Not everyone works on the frontline in the same manner. How do you ensure each team member knows their role, in the bigger picture?

Indeed, having more specific goals can impact one staff group more compared to another. For example, expressing breast milk within the first two hours may not be a priority for community midwives, who may see their role in supporting mothers after discharge – this can lead to disengagement. A challenge is to make these staff groups understand their contribution, even where it is not obvious. For example midwives in the community can help in an early expressing goal by ensuring preparation of mothers before birth, such as providing information about the benefits of breast milk and demonstrating expressing techniques. In this way collaboration becomes more natural.

What is the greatest challenge when starting on this journey?

The greatest challenge is staying positive in the face of little or slow progress. Most professionals in the field of quality improvement are enthusiastic clinicians who have attributes of flexibility, adaptiveness to change and innovation. This has to

be carefully balanced against teams who may have many justifiable reasons for not wishing to change.

Understanding these reasons is key to engagement and progress. Those leading in culture change can find it supportive to share their difficulties with other leaders.

Changing a team’s culture takes time, yet quality improvement projects often demand visible results in the short or medium term. How can teams balance these two timelines?

It is important to realise that poor performance in a quality improvement metric is more frequently due to cultural issues than the change idea. All too often interventions are modified repeatedly in order to achieve compliance, when elements of poor culture are hindering success. Performance in our quality improvement goals can help to highlight where culture needs to be improved. For example, a unit may have a very high ‘early expressing rate’ but a very low ‘breast milk on discharge rate’. Knowing this, helps to focus efforts on improving the supportive culture within neonatal units and in the community, rather than in the delivery suite where it is likely that culture around early breast milk is good. Therefore cultural change can and often does occur in parallel to QI efforts.

How can leaders keep teams motivated when progress is not immediately visible?

Firstly, focus on small successes. This might be the fact that while five patients in one month did not receive antenatal magnesium, one patient did. Focus on the excellent practice that occurred in this case. Personal feedback helps to grow champions who spread the word through their peers. Secondly, actively seek the barriers to progress by speaking to teams on the frontline. As change scientists we often make the mistake of implementing change ideas that have not been seen or trialled by staff. Seek to understand these viewpoints, staff feel valued when their opinion is sought.



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Curious to learn more?

Join our live webinar with Dr. Julie-Clare Becher on April 28, 2026 or watch the recording in our Medela University





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