



CHANTAL LAU, PHD

Baylor College of Medicine

**From Surviving
to Thriving:
Boosting the
Oral Feeding
Performance of
Premature Babies**



From Surviving to Thriving: Boosting the Oral Feeding Performance of Premature Babies

The survival rates of premature babies are increasing all the time, but many struggle to develop proper oral feeding skills. This can result in longer hospital stays due to delayed development of important skills, such as swallowing and proper coordination of swallow and breathing to minimise milk penetration into the lungs. Professor Chantal Lau, Adjunct Associate Professor of Pediatrics at the Baylor College of Medicine, Houston, USA has been researching why these babies have difficulties feeding by mouth and what can be done to help them.

The birth of a child is a challenging time for new parents, but if a baby is born prematurely there are additional obstacles to face. Recent medical advances mean that premature babies are increasingly likely to survive, as the medical teams in neonatal intensive care units are able to help infants overcome many of the life-threatening complications that accompany preterm birth. This is wonderful news, and the push is now to help these babies not just survive, but thrive, in order to attain a quality of life that healthy term babies experience.

Premature babies often struggle to transition from tube to oral feeding be they feeding from the breast or the bottle. In fact, infants born prematurely now make up a large proportion of those referred to feeding specialists. As a baby's ability to feed by mouth safely and efficiently is a key criterion for discharging them from hospital, any problems they have in

reaching this milestone can lead to a longer hospital stay, continued tube-feeding along with increased maternal stress and medical cost. This has a negative impact on their development, as it increases the time they spend apart from their mothers.

Therefore, it is important that the potential causes of these oral feeding difficulties be researched, in order to develop strategies to help get preterm babies home as soon as possible. Understandably, the majority of research into preterm birth has focussed on ensuring the babies' survival, so studies aimed at improving their oral feeding ability have taken a backseat. However, Professor Chantal Lau has spent the past 25 years investigating the impact of premature birth on these infants' ability to feed by mouth and has been developing interventions to help them.

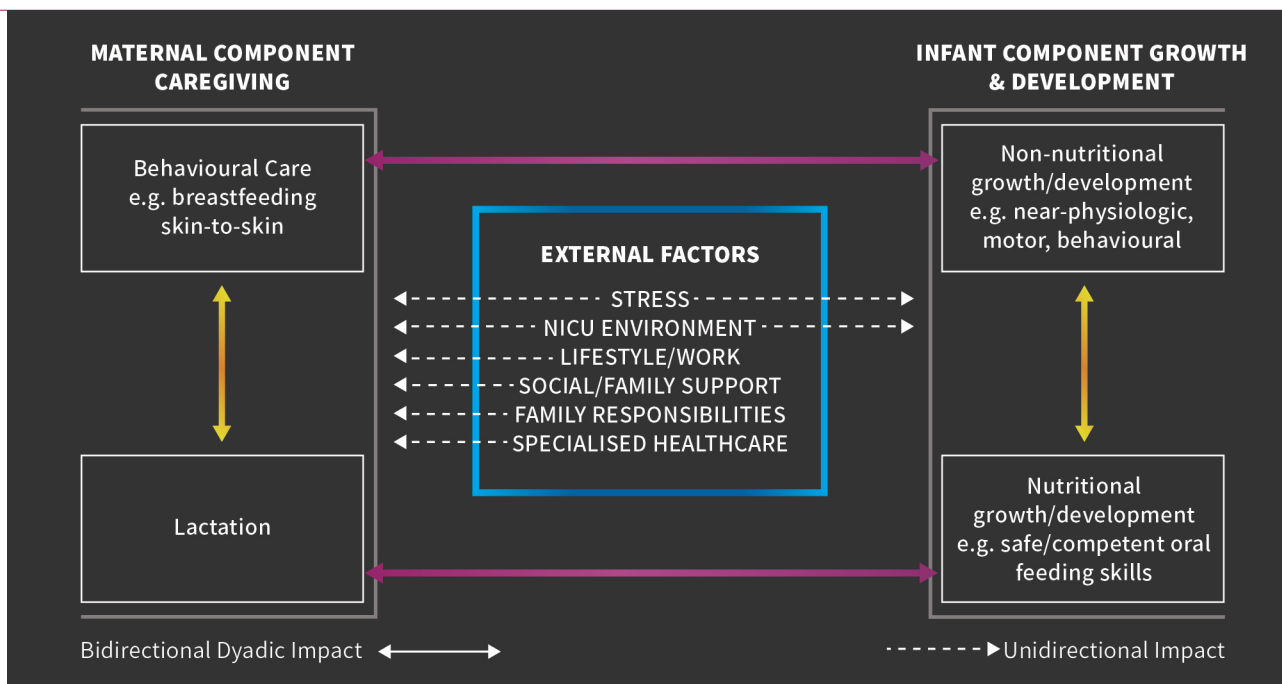
THE ORAL FEEDING PUZZLE

For many babies, the ability to breastfeed develops naturally, but in the case of preterm babies there are several factors that prevent this from happening. These include their fragility and physiologic immaturity and the stress caused to their mother by the neonatal intensive care environment.

In order to understand these challenges better, Professor Lau has developed and published a model that illustrates the complex interactions between mother and baby that are taking place as breastfeeding develops. In this model, both mother and baby are considered as one unit, each constantly influencing the other, whether positively or negatively. Professor Lau points out that this is different to the way this problem is often approached: 'I have come to realise that, as clinicians and researchers, we have not sufficiently recognised the support mothers of preterm infants truly need. This may be due to the fact that these mothers are not patients themselves.' Her model therefore takes into consideration the mothers' needs and contains four major elements, two maternal components and two infant components, which all impact on one another.

The maternal components consist of the behavioural care that the mother gives, such as the skin-to-skin contact she provides during breastfeeding and availability of her milk through lactation. The infant components distinguish between the 'non-nutritional' and 'nutritional' development of the baby. The non-nutritional aspect pertains to the infant's natural maturation that can be enhanced by frequent skin-to-skin contact and the nurturing process that breastfeeding offers. The nutritional aspect relates to the infant's ability to breastfeed.

If any one of these components is negatively impacted, it would affect all of the others. For example, if a baby isn't capable of latching on to the breast because its prematurity has not yet allowed for the proper development of the



necessary sucking skills, then mother's lactation would decrease over time and her motivation to provide skin-to-skin contact may be reduced. Professor Lau hopes that by considering the mother-infant pair as *one entity*, the monitoring of the four components described in her model would help clinicians determine whether infant's oral feeding difficulties originate from the mother's and/or baby's participation. This would allow them to intervene accordingly to prevent an unfavourable downward spiral.

HOW TO HELP

Professor Lau began her career as a physiologist, studying the mechanisms of the body at the level of cells and organs. She applied this knowledge to the problems premature babies have with breastfeeding by looking at the physiological causes underlying these problems. 'As a basic physiologist by training, I approach clinical studies from a different angle than most clinicians,' she says. 'I am not only interested in clinical outcomes, but also in the causes and mechanisms that lead to those outcomes.'

Looking at the problem from a mechanistic point of view allowed her to make several suggestions as to how

the components of her conceptual model could be monitored, and how clinicians could intervene to help. This includes a way to gauge oral feeding skills from the amount of milk consumed at different times as a baby transitions to independent oral feeding, without the need for any expensive equipment. She used this measure of oral feeding skills to test different interventions that might help improve oral feeding performance.

For example, she developed a swallowing exercise that helps babies to strengthen their swallowing skills and demonstrated how an existing safe infant massage protocol for premature infants lead to better oral feeding skills in general. Professor Lau also developed a 'self-paced' feeding system, which involves a bottle that only permits milk outflow when babies suck, allowing them to pause when needed and rest without milk dripping into their mouth. Professor Lau found that premature babies who used this system have more mature nutritive sucking skills than those who didn't.

LOOKING TO THE FUTURE

It is clear that the effects of premature birth on oral feeding are highly complex, but it's essential that they are properly researched in order to

improve the quality of life of these babies and their families. Professor Lau's work has provided researchers and healthcare workers with two useful tools to move this forward.

The first is her conceptual model, which describes the mother and baby as one combined unit, allowing clinicians to assess the impact that baby has on mother and vice versa. She is clear that we should use this to look past the surface problems to the underlying causes. 'It is essential to investigate how the reciprocal interactions, good or bad, between mother and her infant lead to the integrated outcome that we, as outside "observers", see.'

The second is an oral monitoring device – a system comprising different sensors that can measure an infant's sucking skills. Professor Lau hopes that this tool will be used in the clinic to individualise the care provided to infants based on their needs, because babies do not arise from one single mould. As well as providing tools for others, Professor Lau will continue her research in this area, 'to focus on how best to enhance the proper development of healthy mother-infant dyads.'

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CHANTAL LAU, PHD
ADJUNCT ASSOCIATE PROFESSOR
DEPARTMENT OF PAEDIATRICS
BAYLOR COLLEGE OF MEDICINE
HOUSTON, TX
USA

 **CONTACT**

E: clau@bcm.edu

W: www.chantallau.com

 **KEY COLLABORATORS**

Richard J Schanler MD, Steven and Alexandra Cohen Children's Medical Center of New York and North Shore LIJ Hospital

 **FUNDING**

National Institutes of Health (NIH)
Los Alamos National Laboratory, New Mexico

 **FURTHER READING**

C Lau, Breastfeeding challenges and the preterm mother-infant dyad – A conceptual Model. *Breastfeed Medicine*, 2018, 13, 8–17.

E Zimmerman, C Lau, The development of the mother-infant mutualistic screening scale, *Journal of Pediatrics and Mother Care*, 2017, 2, 109.

C Lau, Development of infant oral feeding skills: what do we know?, *American Journal of Clinical Nutrition*, 2016, 103, 616S–621S.

C Lau, J Bhat, D Potak, RJ Schanler, Oral Feeding Skills of Late Preterm Infants are correlated with Hospital Length of Stay, *Journal of Pediatrics and Mother Care*, 2015, 1, 102.

C Lau, Development of suck and swallow mechanisms in infants, *Annals of Nutrition and Metabolism*, 2015, 66, 7–14.

C Lau, Interventions to improve oral feeding performance of preterm infants, *Perspectives on Swallowing and Swallowing Disorders (Dysphagia) Special Interest Group* 13, 2014, 23, 23-45.

