

# Planning for a Successful NICU Feeding experience

Liz Drake, MN, NNP, RNC-NICU, CNS, C-ELBW  
Elizabeth Jeanson, DPT, CNT, NTMTC, DCS  
Kristina & Matt Rousso, Parents to infants  
discussed in webinar



# Disclosures

- Kristina & Matt Rousso - No disclosures
- Elizabeth Jeanson
  - No relevant financial disclosures
  - Nonfinancial disclosures – DandleLION Clinical Consultant
- Liz Drake
  - Co-owner of Engagegrowthrive & Co-developer of the Small Baby Care Specialist® Program



# Learning Outcomes

After attending this webinar, the participant will be able to:

List	two practical clinical strategies to help prepare families for the feeding experience in the NICU.
Discuss	three feeding competencies that help lay the foundation for feeding success between the co-regulated relationship of infant and care-provider.
Discuss	two topics for parent education related to the importance of understanding maturational age in assessing feeding readiness.
Identify	one concern parents experience after discharge that can be eased with NICU education prior to discharge





# Our Journey Today

- Introduction
- What do we already know?
- What are we expecting?
- How important is maturation?
- NICU feeding culture
- Summary
- Questions/Answers







# What do we already know?

Major reason for delay in hospital discharge

Increase cost for otherwise stable infant

Feeding most complex motor behavior infant completes

Feeding difficulties identified not only in ELBW but even in LPI

Parents tired & want to go home

After discharge feeding issues, parent questions & experience

Parent's Stress intensified

We influence pathway of infant's development



Fuhrman, L. & Ross, ES., *MCN Am J Matern Child Nurs*, 2020; Shaker, C. *NAINR*, 2013, Pickler, et al., *Nurs Res Pract*, 2012; Lutz, K., *NAINR*, 2012; Dem Mauro, et al, *Clin Pediatr*, 2011





# Pre-Feeding Process

Neuro-protection & Neuro-promotion

Early Skin to Skin

Breastmilk production/pumping

Non-nutritive breastfeeding & Taste Trials

Establishing a reciprocal trusting relationship



# *Tell us about your pre-feeding experiences*

---

Kristina & Matt







# What are we expecting?

---



**engage grow thrive**  
An interdisciplinary healthcare approach to improving lives



# Feeding Competencies & Skills

- Focus on preparation of families
- Team effective at guiding parents to protect their infants' feeding experiences
  - Feedings don't come naturally
  - Feeding will take time
- Approach to feeding foundational for how parents view feeding & role



Fuhrman L. & Ross, ES., *MCN Am J Matern Child Nurs.* 2020, Thoyre et al. *J Neonatal Nurs*, 2013



# Feeding Skill & Competencies Needed

## *Readiness & disengagement cues & stress*

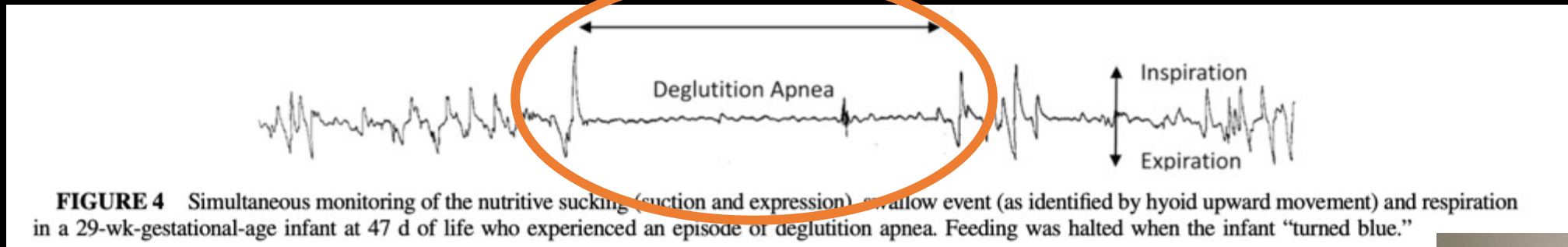
- Observational Skills
- Accurate interpretation of infant behaviors
- Ability to provide appropriate & timely responses
- Confidence to respect infant's limits



# Feeding Skill & Competencies Needed

## *Co-regulating sufficient Breaths*

- Understanding why preterm infants are at risk for insufficient breathing & impact on feeding (fatigue, physiologic instability, stress)
- Physical skill at shifting infant from sucking to breathing & back to sucking
- Ability to explore need for & timing of providing breathing co-regulation



# Feeding Skill & Competencies Needed

## *Regulated Milk Flow*

Evaluate match of infant's capacity to manage milk flow w/ organization

Understanding impact of milk flow on feeding behavior (strength of sucking, length of sucking burst, nipple on tongue, milk spill, threat of aspiration)

Feeding system (breast, bottle, various nipple systems)



Fuhrman L. & Ross ES., *MCN Am J Matern Child Nurs.* 2020, Thoyre, et al., *J Neonatal Nurs*, 2013



How can we acknowledge the complexity  
of what they are trying to do...and push  
beyond what they are ready do?



# Importance of Maturation

Objective: Identify difference in feeding skill performance of PT & Term Infant

Results: PT lower Neonatal Eating Outcome Assessment score 67.8 vs 82.2

- Poor arousal
- Poor tongue positioning,
- Suck swallow breathe discoordination
- Inadequate sucking bursts
- Tonal abnormalities
- Discoordination of jaw & tongue during awake state
- Complete the feeding



# Importance of Maturation

	32 weeks	33 weeks	34 weeks	35 weeks	36 weeks
Suction pressure (mm Hg)	-16.7	-31.2	-51.5	-70.1	-87
Sucking frequency (min)	20.1	33.6	51.3	63.6	73
Sucking duration (sec)	.32	.43	.57	.69	.71
Sucking Efficiency (ml/min)	1.1	2.5	4.3	7.3	10



# Team Collaboration



Credible, competent individuals

Assigned to same task/patient

Purpose of consistent care & communication

Synergy of interdisciplinary team

Competence

Continuous, coordinated, comprehensive & collaborative care





# Continuity

Good care coordination between providers

Care that is connected over time

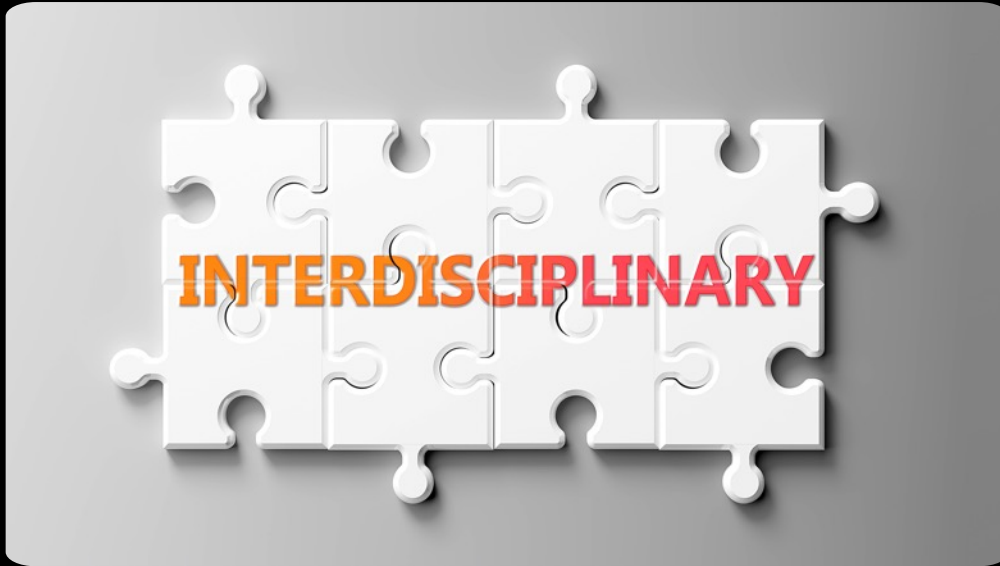
Variations can signal danger



*“There were too many nurses with too many different ways to try to get you to do it. You’d try really hard with the way that one nurse would do it and then you’d come back for your next feed, and it would be a different shift and there’d be a different nurse and they’d say, ‘Oh no no no, you’re holding her wrong’, or ‘You shouldn’t do it that way. Do it this way’....Every day with four feeds you can get ... say two or three different nurses. It just got frustrating”*



# Feeding Team Members



*Team*

*A number of people associated together in work or activity*



# Feeding Team Members

- Parent
- Nurse
- Primary feeding therapist
- Non-primary feeding therapist
- MD/NNP



McGrath, et al., *Adv Neo Care*, 2011; Howe, et al., *Nurs Res*. 2007; Thoyre, S., et al., *Neo Netw*, 2005





# Jelling with your Crew

*Follow the choreography*

- Follow protocol
- Respect
- Tips & tricks for feeding
- Typical/Atypical performance



# Jelling with your Crew

*Know your solo*

---

- Parents primary caregivers
- Feeding program knowledge
- Tips & tricks





# Individualized Feeding Plan

- Evaluate maturation & skill
- Parent comfort & knowledge
- Communicate plan



# Role of the Non-Primary NICU Therapist

---



Erdei C., et al. *J Perinatol.* 2019





# Role of the Non-Primary NICU Therapist

---







# Role of the Non-primary Therapist

Create motor  
foundation for  
feeding

Observe feeding  
performance

Support parent  
implementation of  
feeding strategies

Review feeding  
strategies in the  
moment w/ parent

Assess endurance  
& state changes  
during feeding  
event

Report feeding  
performance in  
real time

Carroll,, et al., *AJOT*, 2018; Shaker, C. S.. *Seminars in speech and language therapy*. 2017.; Sweeny et al., *Pediatric Phys Ther*, 2010



*Did you feel like a  
member of the team?*

---

Kristina & Matt



**engage grow thrive**  
An interdisciplinary healthcare approach to improving lives

# *Share your experience in rounds*

---

Kristina & Matt





# *Communication*

---

Kristina & Matt



**engage grow thrive**  
An interdisciplinary healthcare approach to improving lives

# NICU Feeding Culture

*Setting up for Success...a Shared Mental Model*

---



Morelius, et al., *Children*, 2022; Morelius, et al., *J Clin Nurse*, 2020;  
Swift, M. & Scholten I., *J clinical nursing*, 2010





# *Tell us about your feeding experience in the NICU*

---

Kristina & Matt



**engage grow thrive**  
An interdisciplinary healthcare approach to improving lives


# *Tell us about your feeding experience in the NICU*

---

Kristina & Matt







# NICU Feeding Language “If your baby could talk”



engage grow thrive  
An interdisciplinary healthcare approach to improving lives

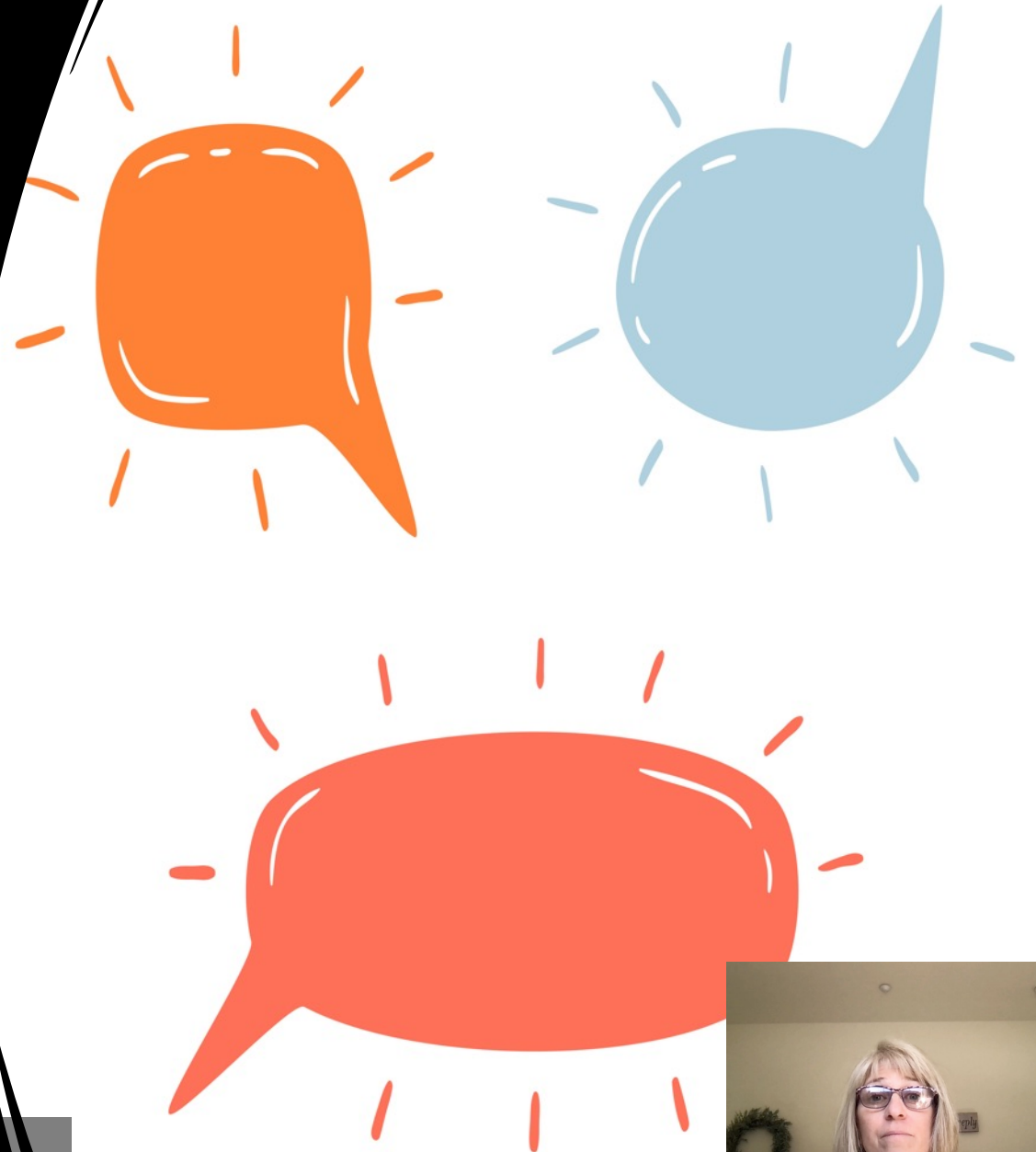


# Anticipatory Guidance

---

- “Did you see how Lily pushed the nipple out with her tongue? She might be telling us she needs more time for breathing”
- “When milk is spilling out of her mouth, Lily might be trying to tell me her mouth is too full. I’ll give her a break from sucking so she can clear her mouth. I think she liked that. What do you think?”

Shaker, C., ASHAWIRE, 2018





# THE POWER OF WORDS



**engage grow thrive**  
An interdisciplinary health care approach to improving lives





- Gentle reminders
  - Positive feeding experience
- Patience vs. persistence
- Time = Maturation





# Clarity

Present clear picture of needs



**engage grow thrive**  
An interdisciplinary healthcare approach to improving lives



# Affirmation

*Praise = repeated action*

---

Builds  
confidence &  
consistency

Improve  
parent/infant  
communication



# Affirmation

*Praise = repeated action*

---

Builds  
confidence &  
consistency

Improve  
parent/infant  
communication





# Follow Up Suggestions for Home



New team members

Options for support

Advancement

Tips & Tricks for home



# *Tell us about the transition to home*

---

Kristina & Matt



**engage grow thrive**  
An interdisciplinary healthcare approach to improving lives

# *Do you have discharge resource ideas?*

---

Kristina & Matt







# The Feeding Experience Through Different Lens

- Starts on Day 1
- Skillful understanding of cues & language
- Support infant's pace & maturation
- Shared mental model through teamwork & continuity in communication & plan
- Empowering & supporting parents





# References

- Bakewell-Sachs S, Medoff-Cooper B, Escobar GJ, Silber JH, Lorch SA. Infant functional status: The timing of physiologic maturation of premature infants. *Pediatrics*. 2009; 123:e878–e886. [PubMed: 19403481]
- Blecker, et al., Association of weekend continuity of care with hospital length of stay, *Int J Qual Health Care*. 26.5 (2014): 530-537.
- DeMauro, S. B., Patel, P. R., Medoff-Cooper, B., Posencheg, M., & Abbasi, S. (2011). Post discharge feeding patterns in early-and late-pre- term infants. *Clinical Pediatrics*, 50(10), 957-962. doi:10.1177/0009 922811409028
- Epstein E. Parents Perceptions of Continuity of Care in the NICU. *Journal Perinatology Neonatal Nursing*, 27 (2013): 168-275.
- Erden C, Inder TE, Dodrill P, Woodward LJ. The Growth and Development Unit. A proposed approach for enhancing infant neurodevelopment and family-centered care in the Neonatal Intensive Care Unit. *J Perinatol*. 2019 Dec;39(12):1684-1687. doi: 10.1038/s41372-019-0514-7. Epub 2019 Oct 3. PMID: 31582813.
- Fenwick, et al., “Chatting”: an important clinical tool in facilitating mothering in neonatal nurseries, *J of Advanced Nursing*, 33.5 (2000): 583-593.
- Fuhrman L, Ross ES. Parental Concerns about Newborn Feeding Post Hospital Discharge. *MCN Am J Matern Child Nurs*. 2020 Jan/Feb;45(1):34-40. doi: 10.1097/NMC.0000000000000590. PMID: 31815795.
- Gewolb IH, Vice FL. Abnormalities in the coordination of respiration and swallow in preterm infants with bronchopulmonary dysplasia. *Dev Med Child Neurol*. 2006;48(7):595-599.
- Gordon, et al., Beyond the Checklist: What Else Health Care Can Learn From Aviation Teamwork, (2013).
- Horbar, Jeffrey D. "The Vermont Oxford Network: evidence-based quality improvement for neonatology." *Pediatrics* 103.Supplement\_E1 (1999): 350-359.
- Howe, Tsu-Hsin, et al. "Psychometric characteristics of the Neonatal Oral-Motor Assessment Scale in healthy preterm infants." *Developmental Medicine & Child Neurology* 49.12 (2007): 915-919.
- Kamity R, Kapavarapu PK, Chandel A. Feeding Problems and Long-Term Outcomes in Preterm Infants-A Systematic Approach to Evaluation and Management. *Children (Basel)*. 2021 Dec 8;8(12):1158. doi: 10.3390/children8121158. PMID: 34943354; PMCID: PMC8700416.



- Krogstad, et al., Continuity of hospital care: beyond the question of personal contact *BMJ*, 324.7328 (2002): 36-8
- Lau, Chantal, Development of infant oral feeding skills: what do we know? *Am J Clin Nutr* 2016;103(Suppl):616S–21S.
- Ludwig S, Waitzmann KA, Changing Feeding Documentation to Reflect Infant-Driven Feeding Practice. *Newborn & Infant Nursing Reviews*. 2007; 7(3), 155-160
- Lutz KF. Feeding Problems of NICU and PICU Graduates: Perceptions of Parents and Providers. *Newborn Infant Nurs Rev*. 2012 Dec 1;12(4):207-213. doi: 10.1053/j.nainr.2012.09.008. Epub 2012 Nov 15. PMID: 23204932; PMCID: PMC3507452.
- McAllister M. Partnering with Parents: Establishing Effective Long-term Relationships with Parents in the NICU. *Neonatal Network*, 25 (2006):329-337.
- McAllister M. Continuity: A Person or a Process? *Neonatal Network*, 25.5 (2006):299-300.
- McAllister, M. & Dionne, K, Partnering with Parents: Establishing Effective Long-Term Relationships with Parents in the NICU, *Neonatal Network*, 25.5 (2006): 329–337.
- McGrath, Jacqueline M., Haifa A. Samra, and Carole Kenner. "Family-centered developmental care practices and research: what will the next century bring?." *The Journal of perinatal & neonatal nursing* 25.2 (2011): 165-170.
- Mills MM, Sims DC, Jacob J. Implementation and case-study results of potentially better practices to improve the discharge process in the neonatal intensive care unit. *Pediatrics*, 118 (2006): S124-S133.
- Mizuno K, Nishida Y, Taki M, et al. Infants with bronchopulmonary dysplasia suckle with weak pressures to maintain breathing during feeding. *Pediatrics*. 2007;120(4):e1035-e1042.
- Mizuno K, Ueda A. The maturation and coordination of sucking, swallowing, and respiration in preterm infants. *J Pediatr*. 2003 Jan;142(1):36-40. doi: 10.1067/mpd.2003.mpd0312. PMID: 12520252.
- Mörelius E, Sahlén Helmer C, Hellgren M, Alehagen S. Supporting Premature Infants' Oral Feeding in the NICU—A Qualitative Study of Nurses' Perspectives. *Children*. 2022; 9(1):16.
- Mörelius, E., Brogren, S., Andersson, S. et al. Fathers' experiences of feeding their extremely preterm infants in family-centred neonatal intensive care: a qualitative study. *Int Breastfeed J* 16, 46 (2021). <https://doi.org/10.1186/s13006-021-00394-0>

- Mörelius E, Kling K, Haraldsson E, Alehagen S. You can't flight, you need to fight-A qualitative study of mothers' experiences of feeding extremely preterm infants. J Clin Nurs. 2020 Jul;29(13-14)
- Pickler RH, Reyna BA, Griffin JB, Lewis M, Thompson AM. Changes in Oral Feeding in Preterm Infants Two Weeks After Hospital Discharge. Newborn and Infant Nursing Reviews. 2012;12(4):202–206.
- Pickler RH, Reyna BA, Wetzel P, Lewis M, "Effect of Four Approaches to Oral Feeding Progression on Clinical Outcomes in Preterm Infants", *Nursing Research and Practice*. 2015, <https://doi.org/10.1155/2015/716828>
- Pineda R, Prince D, Reynolds J, Grabill M, Smith J. Preterm infant feeding performance at term equivalent age differs from that of full-term infants. J Perinatol. 2020 Apr;40(4):646-654. doi: 10.1038/s41372-020-0616-2. Epub 2020 Feb 17. PMID: 32066844; PMCID: PMC7117861.
- Purdy IB, Craig JW, Zeanah P. NICU discharge planning and beyond: recommendations for parent psychosocial support. J Perinatol. 2015 Dec;35 Suppl 1(Suppl 1):S24-8. doi: 10.1038/jp.2015.146. PMID: 26597802; PMCID: PMC4660049.
- Reid T, Bramwell R, Booth N, Weindling M. Perceptions of parent- staff communication in Neonatal Intensive Care: The findings from a rating scale. J Neonatal Nurs. 13 (2007): 64-74.
- Sandra Carroll, O. T. R., O. T. R. Sue Ludwig, and O. T. R. Chrysty Sturdivant. "Occupational Therapy's Role in the Neonatal Intensive Care Unit." *The American Journal of Occupational Therapy* 72 (2018): 1-9.
- Shaker, C., “Mom, You Got This”, ASHAWIRE, 23(10) P54 60 (2018) DOI: 10.1044/leader.ftr2.23102018.54
- Shaker, Catherine S. "Infant-guided, co-regulated feeding in the neonatal intensive care unit. part I: theoretical underpinnings for neuroprotection and safety." *Seminars in Speech and Language*. Vol. 38. No. 02. Thieme Medical Publishers, 2017.
- Shaker, C. S. (2013a). Cue-based co-regulated feeding in the neonatal intensive care unit: Supporting parents in learning to feed their preterm infant. *Newborn and Infant Nursing Reviews*, 13(1), 51–55.
- Shaker, C. S. (2013b). Cue-based feeding in the NICU: Using the infant’s communication as a guide. *Neonatal Network*, 32(6), 404–408.
- Siow E. The Effect of Continuity in Nursing Care on Patient Outcomes in the PICU. *Journal of Nursing Administration*, 43 (2013): 394-402.

- Spellman, T., Interprofessional Collaboration Makes the Difference to Infants in the NICU, ASHAWIRE, volume 24, issue 12, <https://doi.org/10.1044/leader.OTP.24122019.36>
- Sweeney, Jane K., et al. "Neonatal physical therapy. Part II: Practice frameworks and evidence-based practice guidelines." *Pediatric Physical Therapy* 22.1 (2010): 2-16.
- Swift, Michelle C. and Ingrid Maria Scholten. "Not feeding, not coming home: parental experiences of infant feeding difficulties and family relationships in a neonatal unit." *Journal of clinical nursing* 19 1-2 (2010): 249-58 .
- Tesi Thomas, Rebecca Goodman, Ani Jacob, Deborah Grabher, Implementation of Cue-Based Feeding to Improve Preterm Infant Feeding Outcomes and Promote Parents' Involvement, *J Obstet Gynecol Neonatal Nurs*. 2021 May;50(3):328-339.
- Thoyre, Suzanne, Catherine Shaker, and Karen Pridham. "The early feeding skills assessment for preterm infants." *Neonatal Network* 24.3 (2005): 7-16.
- Thoyre, S., Park, J., Pados, B., & Hubbard, C. (2013). Developing a co-regulated, cue-based feeding practice: The critical role of assessment and reflection. *Journal of Neonatal Nursing*, 19(4), 139–148
- Thomas T, Goodman R, Jacob A, Grabher D. Implementation of Cue-Based Feeding to Improve Preterm Infant Feeding Outcomes and Promote Parents' Involvement. *J Obstet Gynecol Neonatal Nurs*. 2021 May;50(3):328-339.
- Welch et al., Improving care collaboration for NICU patients to decrease length of stay and readmission rates, *BMJ*, 6.2 (2017): doi:10.1136/bmj.oq-2017-000130
- White, A., & Parnell, K. (2013). The transition from tube to full oral feeding (breast or bottle)— A cue-based developmental approach. *Journal of Neonatal Nursing*, 19(4), 189–197
- Wright, L. & Leahy, M., *Nurses and Families: A guide to Family Assessment and Intervention*, 2012; 6<sup>th</sup> edition
- Wolfe, A. "Institute of Medicine report: crossing the quality chasm: a new health care system for the 21st century." *Policy, Politics, & Nursing Practice* 2.3 (2001): 233-235.
- Zwarenstein, et al., Interprofessional collaboration: effects of practice-based interventions on professional practice and healthcare outcomes. *Cochrane Database Syst Rev*. 8.3 (2009).