

Breastfeeding the Fragile Feeders: Cutting Edge Research to Elevate Your Practice

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Disclosures

- ▶ Financial disclosures
 - ▶ Salaried employee at a large bay area teaching hospital
 - ▶ Lansinoh Laboratories Incorporated
 - ▶ Dr. Brown's Medical
- ▶ No non-financial disclosures

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Objectives

1. List three treatment strategies to improve breastfeeding success for infants with medical comorbidities
2. Explain two interventions that maximize breastfeeding potential for infants born prematurely
3. Describe two ways that tongue ties can impact breastfeeding outcomes

breastfeeding

NICU premature
pumping medically frenotomy
myofunctional infant tie production
MBM ankyloglossia complex
lactation ROM latch IBCLC
tongue feeding FEES milk
preemie swallowing
neonate VFSS breastpump
dysphagia

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Rules of The Talk

- ▶ References will be NO more than 5 years old, most less than 3 years old
- ▶ Concrete ideas of how to integrate new strategies into your practice!
 - ▶ Jot these ideas down
 - ▶ Create a plan to share with your team
 - ▶ Flag studies to read
- ▶ Don't hate the messenger

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Appraising the Evidence

1. Ask a clinical question considering the population, issue of interest, comparison related to the intervention, outcomes (PICO)
 2. Conduct a systematic search to discover what is known
 3. Complete a critical appraisal of the research
- Steps 4, 5, & 6 to follow...

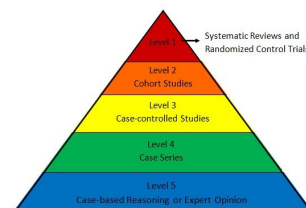


(Fineout-Overholt, 2019)

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Appraising the Evidence



*based on the Oxford Centre for Evidence-based Medicine - Levels of Evidence

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Healthcare Workers Attitudes

- ▶ Ethnographic study over 6 months NICU
- ▶ Widespread agreement that breastfeeding is important
- ▶ Implementation of breastfeeding policies was problematic
- ▶ Three major themes
 - ▶ Contradiction
 - ▶ Working conditions
 - ▶ Controlling relationships

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(Shattawi, 2017)

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"Together, these elements revealed a situation whereby the staff appeared more preoccupied with addressing the task of caring for the babies than with supporting mothers in feeding and subsequently caring for their preterm children."

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(Shattawi, 2017)

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Healthcare Workers Attitudes

- ▶ NICU healthcare professionals, especially nurses, play a huge role in breastfeeding success
- ▶ Ongoing CEUs for breastfeeding education imperative
- ▶ Supportive policies may not be enough
- ▶ Implementation should be evaluated
 - ▶ Quality improvement studies
 - ▶ Identification of site-specific barriers
 - ▶ Healthcare professionals should advocate for solutions

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(Shattawi, 2017)

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Healthcare Workers Attitudes



- ▶ Certified lactation consultant for each unit
- ▶ NICUs should establish protocols for:
 - ▶ Breast pumping
 - ▶ Proper milk collection and storage
 - ▶ Initiation of feeding for the infant
 - ▶ Management of common breastfeeding problems

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(Shattawi, 2017)

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Breastfeeding Non-Initiation

- ▶ Compared predictors of breastfeeding non-initiation
 - ▶ Population based retrospective cohort
 - ▶ Infants who were and were not in NICU
 - ▶ Goal to target interventions to high-risk mothers when babies need breastmilk
 - ▶ Breastfeeding NOT initiated
 - ▶ 39.4% NICU
 - ▶ 31.5% newborn nursery

(Gertz & DeFranco, 2019)

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Breastfeeding Non-Initiation

- ▶ Smoking during pregnancy was the most significant risk factor for not breastfeeding in either group
 - ▶ Socioeconomic factors
- ▶ Factors associated with increased breastfeeding initiation
 - ▶ Intentional home birth
 - ▶ Use of fertility treatments
 - ▶ Gastroschisis and low birth weight

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(Gertz & DeFranco, 2019)

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Breastfeeding Non-Initiation

- ▶ NICU mothers need MORE support re: breastfeeding given lower initiation rates
- ▶ Mothers who smoke need MORE support given lower initiation rates AND increased risk of complications for their babies
- ▶ Mothers with low education attainment and limited prenatal care should be identified and offered increased support

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(Gertz & DeFranco, 2019)

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NICU Specific Lactation Consultants

- ▶ Synthesis of the literature
- ▶ NICU LC availability is highly variable
- ▶ Many LC are shared between postpartum and NICU
 - ▶ Frequently means less time to work with high-risk mothers
- ▶ Less than half of NICU have an IBCLC

(Mercado, Vittner, & McGrath, 2019)

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NICU Specific Lactation Consultants

- ▶ NICU staffed with board-certified lactation consultants
 - ▶ Improved breastfeeding rates through discharge
 - ▶ Increased proportion of infants who receive mother's own milk
 - ▶ Increased duration of breastfeeding
- ▶ Take away?
 - ▶ Human milk improves outcomes for high-risk infants
 - ▶ Having dedicated LC can improve breastfeeding
 - ▶ Advocate for NICU specific LC
 - ▶ Increase YOUR specific lactation knowledge

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(Mercado, Vittner, & McGrath, 2019)

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NICU Breastfeeding Supports

- ▶ Information from 29 level 3 Canadian NICU
- ▶ Evaluated a wide range of supports
 - ▶ Breastfeeding-friendly layout
 - ▶ Breastfeeding support personnel
 - ▶ Education for mothers who breastfeed
 - ▶ Breast pump related resources
 - ▶ Coordination of post-discharge breastfeeding support
 - ▶ Breastfeeding related policies

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(Scime & Burke, 2018)

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1. How is your NICU environment or layout designed to support breastfeeding?
2. Who is available in your NICU to provide direct breastfeeding support or counseling to mothers?
3. What breastfeeding resources do you have that aim to educate mothers?
4. How does your NICU support mothers who are expressing milk?
5. Do you offer any opportunity for parents to room in with their infant during the infant's stay?
6. What written policies do you have in your NICU on breastfeeding, breastfeeding-related topics, or skin-to-skin?
7. What is the role of breastfeeding in discharge planning? Do you provide any referrals to community resources for follow-up support?
8. Are there any other breastfeeding-related supports that you would like to add that we haven't yet discussed?

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(Scime & Burke, 2018)

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NICU Breastfeeding Support

Breastfeeding education for mothers	
Printed handouts	29 (100)
Electronic resources	17 (59)
Group education sessions	11 (38)
Posters displayed within unit	4 (14)
Breast pump-related resources	
Breast pumps available for in-unit use	29 (100)
Availability of fridge and freezer space	29 (100)
Provision of breast pump kits	29 (100)
Breast pump loan program	9 (31)

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(Scime & Burke, 2018)

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NICU Breastfeeding Support

Breastfeeding-related policies*

Skin-to-skin care	23 (82)
Breastfeeding (general)	17 (61)
Management of expressed milk	17 (61)
Donor milk	9 (32)
Oral immune therapy	9 (32)
Alternative feeding methods	9 (32)
Breast pump related	8 (29)
Supplementation	6 (21)
Incorrect human milk administration	5 (18)

(Scime & Burke, 2018)

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NICU Breast Pumps Bedside

- ▶ Pilot project, small observational study
- ▶ Increasing breast pumps at bedside
 - ▶ Improved educational strategies
 - ▶ Updated information for parents
- ▶ Volume of MBM at day 14 doubled and increased to greater than 500 mL day
- ▶ Rate of exclusive breastfeeding at discharge from 26.67% to 76.19%
- ▶ Cost of donor milk decreased by 15.7%



(Porta et al., 2021)

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KMC & Breastfeeding

- ▶ Longitudinal randomized control study of 79 preterm infants
- ▶ KMC group 2.5 hrs/day vs control
- ▶ Measurements 40 weeks PMA, 3 months CA, & 6 months CA
 - ▶ Physical growth
 - ▶ Neonatal Behavioral Neurological Assessment
 - ▶ Breastfeeding

(Wang et al., 2021)



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KMC & Breastfeeding

- ▶ KMC group by discharge
 - ▶ Higher percentage received mothers' milk
 - ▶ Higher percentage were exclusively breastfeeding
 - ▶ Significantly increased body weight and length
- ▶ KMC group long term outcomes
 - ▶ Increases in body weight, length, and head circumference
 - ▶ Higher neurobehavioral scores
 - ▶ Higher percentage exclusively breastfed at 6 months CA

(Wang et al., 2021)

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Breastfeeding the Preterm Infant

- ▶ Examination of direct breastfeeding and long-term breastfeeding rates
- ▶ Level IV NICU – 88 infants < 34 wks
- ▶ Of the infants who received human milk
 - ▶ 59% first feeding at breast
 - ▶ 33% of mothers had breastfeeding goals

(Briere, McGrath, Cong, Brownell, & Cusson, 2016)



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Breastfeeding the Preterm Infant

- ▶ Mothers who did at least one direct breastfeeding per day:
 - ▶ More likely to have breastfeeding goals
 - ▶ Increased maternal age
 - ▶ Infants had more days between the first breastfeed and introduction of the bottle
 - ▶ Shorter length of stay
- ▶ Recommendations?
 - ▶ Mothers should be supported to breastfeed before bottle feed
 - ▶ Goal setting plays an important role

(Briere, McGrath, Cong, Brownell, & Cusson, 2016)

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Breastfeeding the Preterm Infant

- ▶ Mothers need support for daily presence in the NICU
- ▶ Waiting to work on breastfeeding until after d/c IS not research supported
- ▶ First time mothers need even more support
- ▶ Breastfeeding experience within the NICU has implications for months

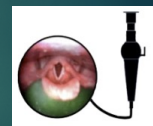
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(Briere, McGrath, Cong, Brownell, & Cusson, 2016)

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Latest FEES Research

- ▶ Fiberoptic endoscopic evaluation of swallowing
 - ▶ Collaborative bedside examination
 - ▶ Trained clinician positions laryngoscope
 - ▶ Provides a superior view of epiglottis, VC, larynx
 - ▶ Can visualize internal structures/anatomy
- ▶ Benefits
 - ▶ No radiation exposure and no ingestion of barium
 - ▶ Can be utilized to assess breastfeeding



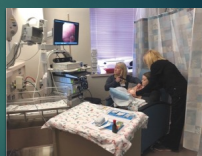
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(Armstrong, et al., 2020)

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Latest FEES Research

- ▶ Pilot study to examine safety and feasibility of FEES-B in unique population
 - ▶ NICU infants with swallowing dysfunction
 - ▶ Convenience sample from 25 infants who completed bottle feeding with VFSS and FEES, then FEES-B
- ▶ Team of SLPs, OTs, ENT



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(Armstrong, et al., 2020)

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Latest FEES Research

- ▶ 10 of the 25 patients breastfed
 - ▶ 5 agreed to the FEES-B study
- ▶ Safety? No adverse events noted
 - ▶ No epistaxis, laryngospasm, nor autonomic instability
 - ▶ Difference in respiratory rate did approach significance
- ▶ Feasibility? Two of five latched and breastfed (one penetration, no aspiration)
 - ▶ Two latched but did not extract milk
 - ▶ 1 was not able to latch

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(Armstrong, et al., 2020)

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Laryngomalacia and Breastfeeding

- ▶ Retrospective cohort study using endoscopic evaluation
- ▶ 23 infants with laryngomalacia
- ▶ Signs of airway obstruction or compromised airway protection in 87% in supine or semi-lateral
- ▶ Repositioned semi-prone
 - ▶ Improvement or resolution of stridor
 - ▶ Improved ability to maintain latch
 - ▶ Improved dynamic airway function and reduced aspiration risk

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(Mills, Keesing, Geddes, & Mirjalili, 2021)

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Laryngomalacia and Breastfeeding



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(Mills, Keesing, Geddes, & Mirjalili, 2021)

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Laryngomalacia and Breastfeeding



(Mills, Keesing, Geddes, & Mirjalili, 2021)

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VFSS at the Breast

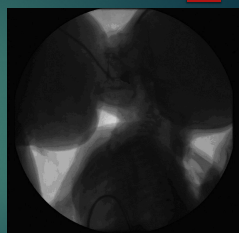
- ▶ Retrospective study of 25 VFSS, variety of diagnoses
 - ▶ Ex: laryngomalacia, prematurity, esophageal atresia
- ▶ Goal of analyzing similarities and differences, breast & bottle
 - ▶ Swallowing function
 - ▶ Oral structures and function
 - ▶ Tongue and mandible movements
- ▶ For breastfeeding
 - ▶ Left side lying "aspiration catheter number 6" with 20 mL syringe

(Hernandez & Bianchini, 2019)

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VFSS at the Breast

- ▶ Nasopharyngeal reflux
 - ▶ 56% bottle feeding
 - ▶ 4% breastfeeding
 - ▶ Indicates significant difference with velum
- ▶ Penetration
 - ▶ 24% bottle feeding
 - ▶ 4% breastfeeding
- ▶ Aspiration 8% both trials



(Hernandez & Bianchini, 2019)

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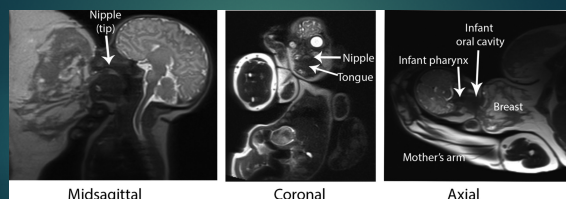
MRI to Evaluate Breastfeeding

- ▶ Pilot study of 12 infants < 5 months old
 - ▶ Static images 11 infants
 - ▶ Dynamic images of 9 infants
 - ▶ Assessed anatomy and dynamic function
- ▶ Technical and practical challenges make it unlikely to be suitable for swallowing assessment at present
 - ▶ Advances in technology
 - ▶ Improved expertise in dynamic image capture

(Mills et al., 2020)

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MRI to Evaluate Breastfeeding



(Mills et al., 2020)

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Research Updates: Tongue Tie

- ▶ Recent position papers from Academy of Breastfeeding Medicine (ABM) and American Academy of Otolaryngology – Head and Neck Surgery (AAO-HNS)
- ▶ Definition according to the ABM
 - ▶ "The tongue is limited in its range of movement, and subsequent function, due to the presence of a restrictive sublingual frenulum."
- ▶ Both papers reported a substantial increase in
 - ▶ Publications
 - ▶ Diagnosis and treatment

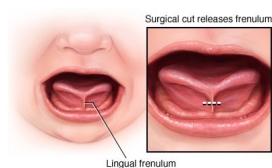
(LeFort et al., 2021, p. 278)

(Messner, et al., 2020)

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Research Updates: Tongue Tie

- ▶ Primary issues
 - ▶ Maternal nipple discomfort or trauma
 - ▶ Impeded breastmilk transfer and decreased breast drainage
 - ▶ Inadequate infant satiation
 - ▶ Decreased weight gain
 - ▶ Potential early cessation of breastfeeding



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(LeFort et al., 2021)

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ABM Position Paper

- ▶ Tongue tie asmt PAIRED with skilled breastfeeding asmt
- ▶ Modifications to latch and position
 - ▶ Possible use of temporary nipple shield
 - ▶ Expressing breastmilk
- ▶ Five RCTs in last 20 years
 - ▶ Frenotomy did decrease nipple pain
 - ▶ Questions remain regarding timing and outcomes (treated vs non-treated)
- ▶ Evidence is lacking with post-procedural manual manipulation



(LeFort et al., 2021)

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AAO-HNS Clinical Consensus

- ▶ Distilled expert opinion to clinical consensus
- ▶ 89 statements with goal of consensus
 - ▶ 41 reached consensus
 - ▶ 17 near consensus
 - ▶ 28 did not reach consensus
- ▶ Lack of consensus implies
 - ▶ Knowledge gap
 - ▶ Lack of adequate evidence

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(Messner, et al., 2020)

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AAO-HNS Clinical Consensus

Breastfeeding difficulties are common in the newborn period and evidence shows that anterior ankyloglossia is a potential contributor to infant feeding problems

Maternal pain and poor infant latch can be caused by ankyloglossia but these symptoms can also be present with other etiologies of breastfeeding difficulties

Lingual frenotomy should ideally be performed as soon as possible after diagnosis of ankyloglossia in an infant with breastfeeding problems not improving with conservative management.

It is not necessary to perform lingual frenotomy in an infant with little or no restriction in tongue mobility to prevent a future feeding disorder.

A consultation with a speech pathologist is encouraged before frenotomy/frenuloplasty in an older child who is undergoing the procedure for speech concerns.

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(Messner, et al., 2020)

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Systematic Review: Frenotomy & Breastfeeding/Speech Outcomes

- ▶ Research supports frenotomy to:
 - ▶ Reduce nipple pain
 - ▶ Improve maternal self-efficacy with breastfeeding
- ▶ Frenotomy for children with speech delays is inconclusive
 - ▶ Lack of objective data
 - ▶ Lack of research quality

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(Visconti, Hayes, Ealy, & Scarborough, 2021)

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Tongue-tie and Breastfed Babies: TABBY Assessment Tool

Pros

- ▶ Quick and easy to use
- ▶ Clear visual scale to assess tongue structure
- ▶ High interrater reliability

Cons

- ▶ Cannot be used alone to determine need for frenotomy
- ▶ Does not include:
 - ▶ Feeding assessment
 - ▶ Maternal autonomy
 - ▶ Interview with breastfeeding mother

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(Ingram, Copeland, Johnson, & Emond, 2019)

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TABBY Tongue Assessment Tool

	0	1	2	SCORE
What does the tongue-tip look like?				
Where it is fixed to the gum?				
How high can it lift (wide open mouth)?				
How far can it stick out?				

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(Ingram, Copeland, Johnson, & Emond, 2019)

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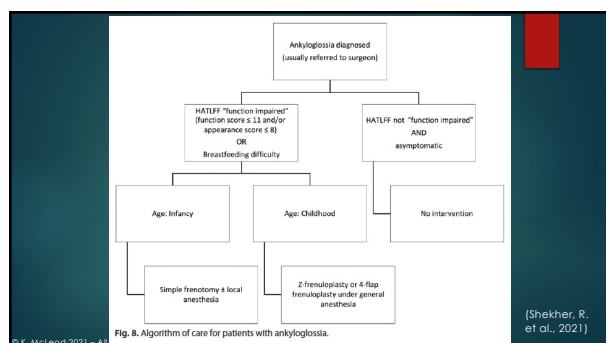
Algorithm for Treating Tongue Tie

- ▶ Meta-analysis which examined 5 RCT (424 studies reviewed)
 - ▶ Benefit of frenotomy in breastfeeding measures
 - ▶ Degree of tongue tie
 - ▶ Maternal pain during feeding
- ▶ Algorithm created to incorporate evidence into a pathway

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(Shekher, R. et al., 2021)

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Algorithm for Treating Tongue Tie

- ▶ When treated, noted improvements in:
 - ▶ Decreased degree of tongue tie (Hazelbaker Assessment Tool)
 - ▶ Improved self-reported breastfeeding
 - ▶ Decreased pain

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(Shekher, R. et al., 2021)

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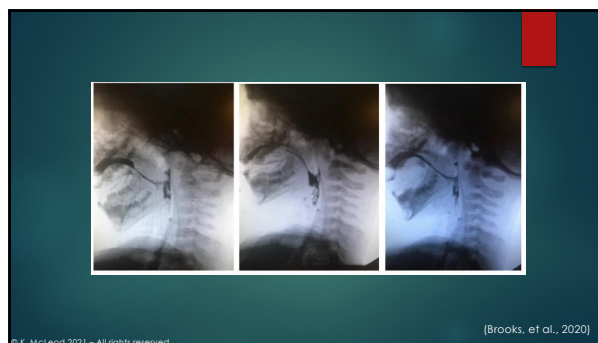
Tongue Tie and Dysphagia

- ▶ Case study former 37 wk infant, with RSV, pneumonia, intubated 8 days
- ▶ Abnormal FEES
- ▶ Discharged on NG feedings, token practice
- ▶ Four weeks later – VFSS revealed (and 3 subsequent VFSSs):
 - ▶ Impaired base of tongue movement
 - ▶ Nasopharyngeal regurgitation
 - ▶ Impaired pharyngeal constriction
- ▶ All resulting in inefficient bolus clearance and aspiration

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(Brooks, et al., 2020)

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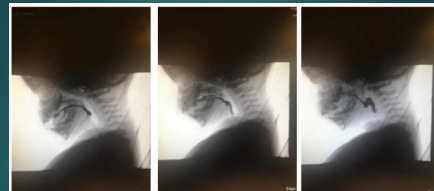
Tongue Tie and Dysphagia

- ▶ Hypothesis – Poor base of tongue movement related to anatomy
- ▶ Found to have posterior tongue tie
 - ▶ Difficulty with articulation
- ▶ Repair around 17 months of age
- ▶ VFSS two months post-op
 - ▶ Significant improvement in swallowing function
 - ▶ Improved base of tongue movement resulting in decreased residuals
 - ▶ Resolution of aspiration

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(Brooks, et al., 2020)

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(Brooks, et al., 2020)

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Additional Recommendations

- ▶ Stay current on latest research
 - ▶ Ongoing literature reviews
 - ▶ Discussions via journal clubs, research-based podcasts
 - ▶ Continuing education courses
- ▶ Build your evidence-based references
 - ▶ LactMed Application, now on NCBI bookshelf
 - ▶ Reference books



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Appraising the Evidence

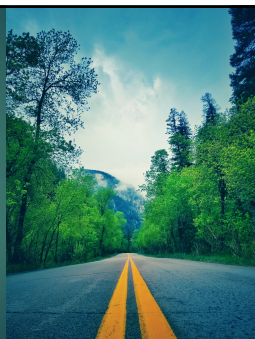
1. Ask a clinical question considering the population, issue of interest, comparison related to the intervention, outcomes (PICO)
2. Conduct a systematic search to discover what is known
3. Complete a critical appraisal of the research
4. ***“Implement best practices by blending external evidence with clinical expertise and patient preferences and values.”***
5. ***Evaluate how the implementation went***
6. ***Share findings, good and bad, with the healthcare community***

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(Fineout-Overholt, 2019)

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On average, it takes “17 years to get clinical research into daily practice and less than 50% of clinical research makes it to general usage.”



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(Bauer & Kirchner, 2020)

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Closing Thoughts

- ▶ List three specific things to integrate into your practice
- ▶ Choose at least three articles to read on your own
- ▶ Sign up for a breastfeeding specific CEU course
- ▶ Solidify at least one idea for a QI study or research study



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