



Adelaide  
**Mums & Babies  
Clinic**

# Breastfeeding 101

Dr Rhiannon Smith

GP/Lactation Consultant

[drriannon@mumsandbabies.com.au](mailto:drriannon@mumsandbabies.com.au)

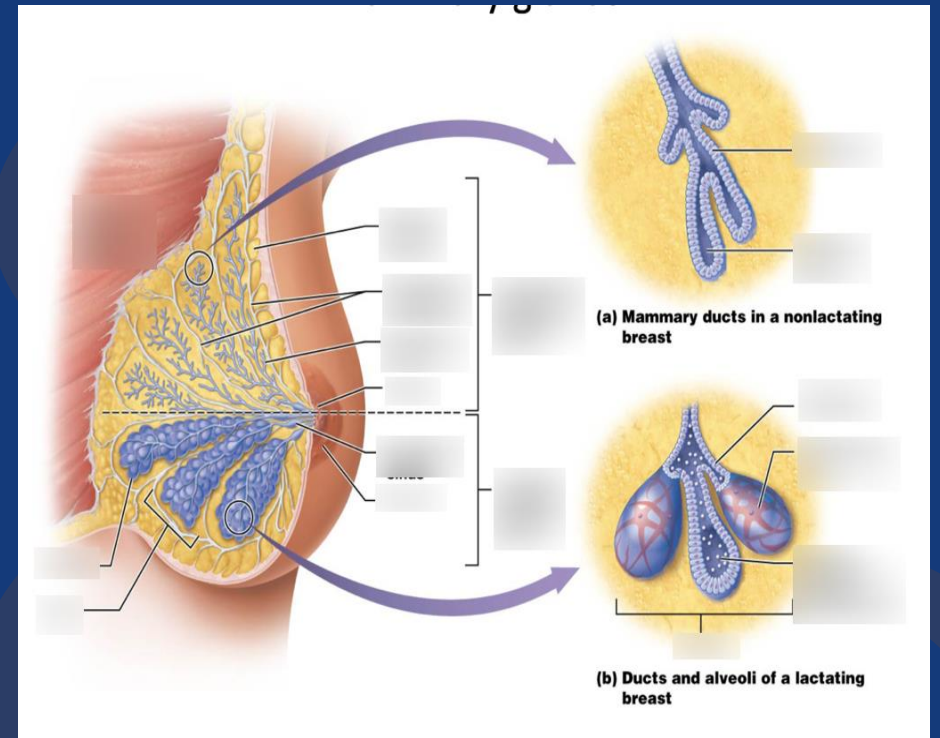
# Overview

- Anatomy and Physiology
- Common Breastfeeding Issues
  - Nipple pain
  - Mastitis/Blocked ducts
  - Low/over supply
- Antenatal Expression
- Supplementation – EBM, formula
- Where to find support



# Anatomy and Physiology

- Glandular and adipose tissue
  - Glandular – alveoli lined with lactocytes and milk ducts.
- 65% glandular tissue within 3cm of nipple
  - Myoepithelial cells line the ducts and contract in response to oxytocin – “let down”
- Breast growth in pregnancy
  - Oestrogen, progesterone and placental lactogen
    - produced by placenta → ductal growth
  - Prolactin levels rise but lactation inhibited by progesterone



# Physiology

## ▶ Lactogenesis 1

- ▶ High levels placental lactogen third trimester → alveoli produce colostrum

## • Lactogenesis II

- Once placenta birthed, drop in progesterone, increase in prolactin → milk production 36-72 hours post birth
- Delayed primips, type I DM, PPH, long 1/2<sup>nd</sup> stage, LSCS, obesity
- Endocrine and autocrine control
  - Endocrine – “milk coming in” – prolactin  
Oxytocin role in milk ejection reflex/let down
  - Autocrine – breast being emptied → milk production – feeding in first few days so important to breastfeeding journey

# Breastmilk Composition

- Unique to each baby and varies during feed and during the day
- Contains lipids, range of proteins, antibodies (secretory IgA), carbohydrates (lactose), vitamins and minerals
- 24 hour volume of milk intake stable 1-6 months and driven by infant
- Formula vs breastmilk
  - Breastmilk usually fattier
  - Formula usually has higher protein load, digested more slowly
  - Vitamins: Vitamin B12, Vitamin D
  - Immunological benefits

# History

- Pregnancy and birth history
- Postnatal course
- Mum's medical/surgical history
- Medications
- Social supports
- Mental health



# History

- Pain? Type, timing, duration, aggravating/relieving factors, bilateral
- Feeds – number, duration
- Baby's behavior at breast
- Baby's output – urine, stools, vomiting
- Associated symptoms – itch, colour change to nipples
- Breastfeeding goals

# Breastfeeding Assessment - Fit and hold

- Observe a feed! If you aren't comfortable – refer to someone who is
- The biggest cause of breastfeeding issues – can cause low supply, blocked ducts, mastitis, unsettled babies, nipple pain
- If pain, need to reassess attachment
- Biomechanics of infant suck
- Reduce breast tissue drag
- Deep face/breast bury
- Reclined cradle hold or side lying
- best to achieve this
- Nipple shields may be short term solution

*Photo included with consent*





# Breastfeeding Assessment – Fit and hold

- Gestalt Breastfeeding principles (pioneered by A/Prof Pamela Douglas, *Possums for Parents with Babies*)
  - Mother reclines into ‘deck chair’ (semi-reclined) position to allow exposure of underside of breast and the baby to fall into here
  - Woman exposes breast (bra, clothing out of the way)
  - Baby brought to breast with torso flat against mother’s torso with legs wrapped around mother’s body
  - Ensure deep face-breast bury with 4 points of contact
  - Experiment with micromovements – correct for pain/positional instability

# Breast Milk Extraction

- Current evidence points to extraction via creation of a vacuum.
  - Deep face/breast bury (seal)
  - Baseline oral negative pressure
  - Jaw and tongue drop TOGETHER
  - Breast fills oral cavity; tongue simply supports breast
  - Milk flows when the tongue/jaw are DOWN (this creates a higher negative pressure)

# Breast Milk Extraction



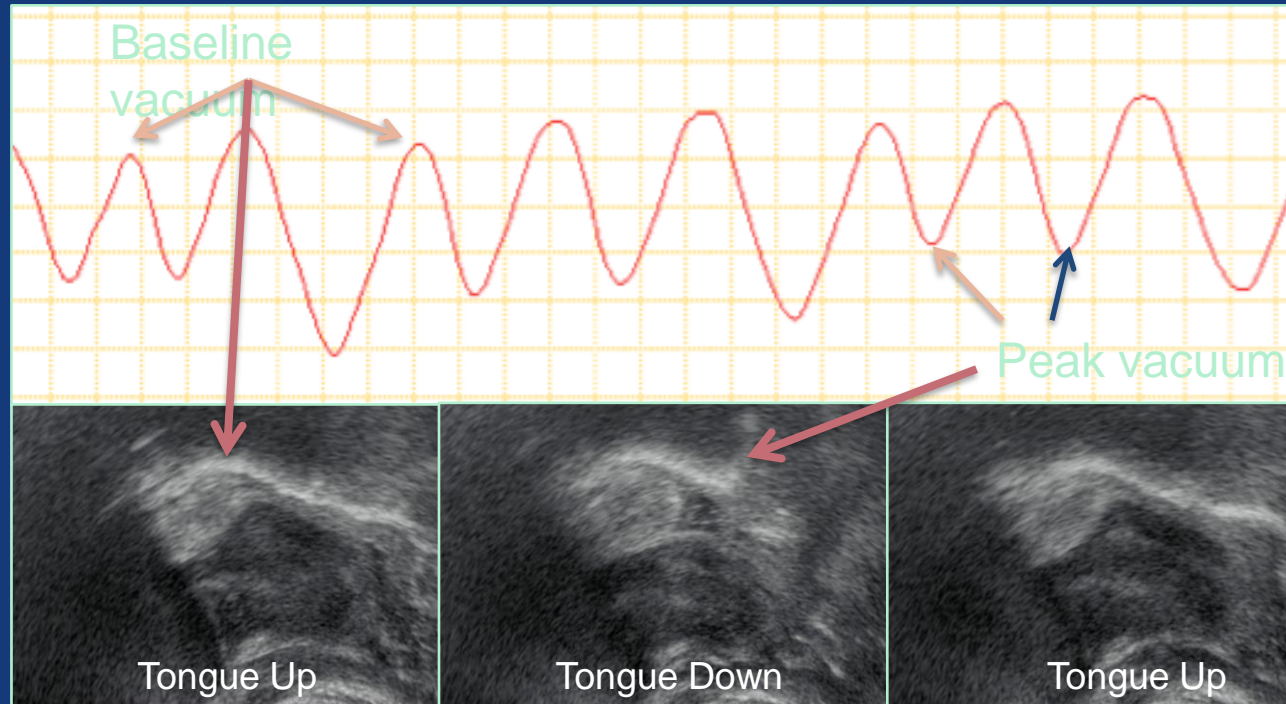
Ultrasound image superimposed on infant suckling normally to demonstrate intra-oral structures

# Tongue Function in Milk Extraction

- Tongue is a cushioning adaptable bed that moulds around the breast.
  - Does not need to lift to half-way up mouth
  - Does not need to lateralise
  - Does not grasp the breast
  - Does not compress the breast to extract milk
  - Does not move peristaltically
  - How a baby sucks on a finger is not how it sucks on the breast.
  - Dorsum of tongue lifts towards palate, not the tip
- Anterior and mid-tongue move as single unit
- 4-6 mm of tongue lift is all that is needed
- Mid-tongue is commonly confused with posterior tongue.
- Posterior tongue is opposed to soft palate, which lifts with swallow



# Tongue Function in Milk Extraction



**Intra-oral vacuum and ultrasound images of the infant oral cavity during breastfeeding** When the infant latches to the breast he or she creates a baseline vacuum and the tongue is up in apposition with the palate. The nipple diameter is reduced. When the tongue moves inferiorly vacuum increases in strength to peak vacuum, the nipple expands, and milk flows into the oral cavity.

# Fit and Hold



# Things that Interfere with Fit and Hold

- Clothing
- Pumping and breastfeeding at the same time
- Football hold
- Putting a hand on baby's head/neck
- Leaning forward or sitting upright



# Things that Interfere with Fit and Hold

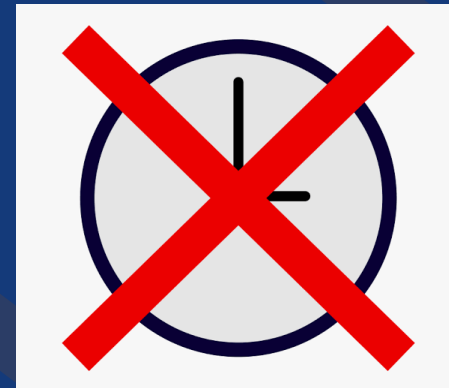


- Holding/touching the breast while feeding
- Feeding pillows
- Wrapping baby for feeds
- Checking the lips
- Taking baby off if latch doesn't look or feel right



# Numbers, Time and Breastfeeding

- In general, they don't mix
- *Exception: 8-12 feeds in 24 hrs*
- Do not look at the clock; look at the baby.
  - Cues: Starting to wake up → licking lips → sucking on hands/turning face to find nipple. Grizzle & cry are LATE signs.
  - The baby determines the pattern (both, one, mixed picture)
  - The baby determines feed spacing
  - *Offer the breast flexibly and frequently*
- Time at the breast tells us nothing about how much milk is drunk.
- There is no “normal”.



# Nipple Pain

- Suboptimal fit and hold
- Breast pump trauma
- Thrush
- Milk bleb/blocked duct/  
mastitis
- Tongue tie
- Vasospasm
- Bacterial/viral infection



Vasospasm – [breastfeedingnetwork.org.uk](http://breastfeedingnetwork.org.uk)

# Mastitis/Blocked ducts

- 20% women in first 8 weeks postnatally
- Inflammation of the breast secondary to blockage in milk duct
- Fever, rigors, myalgia + painful/red/hot/swollen breast
- Missed feeds, poor fitting bra/clothing, suboptimal fit and hold, nipple damage



*Milk Bleb - ABA*

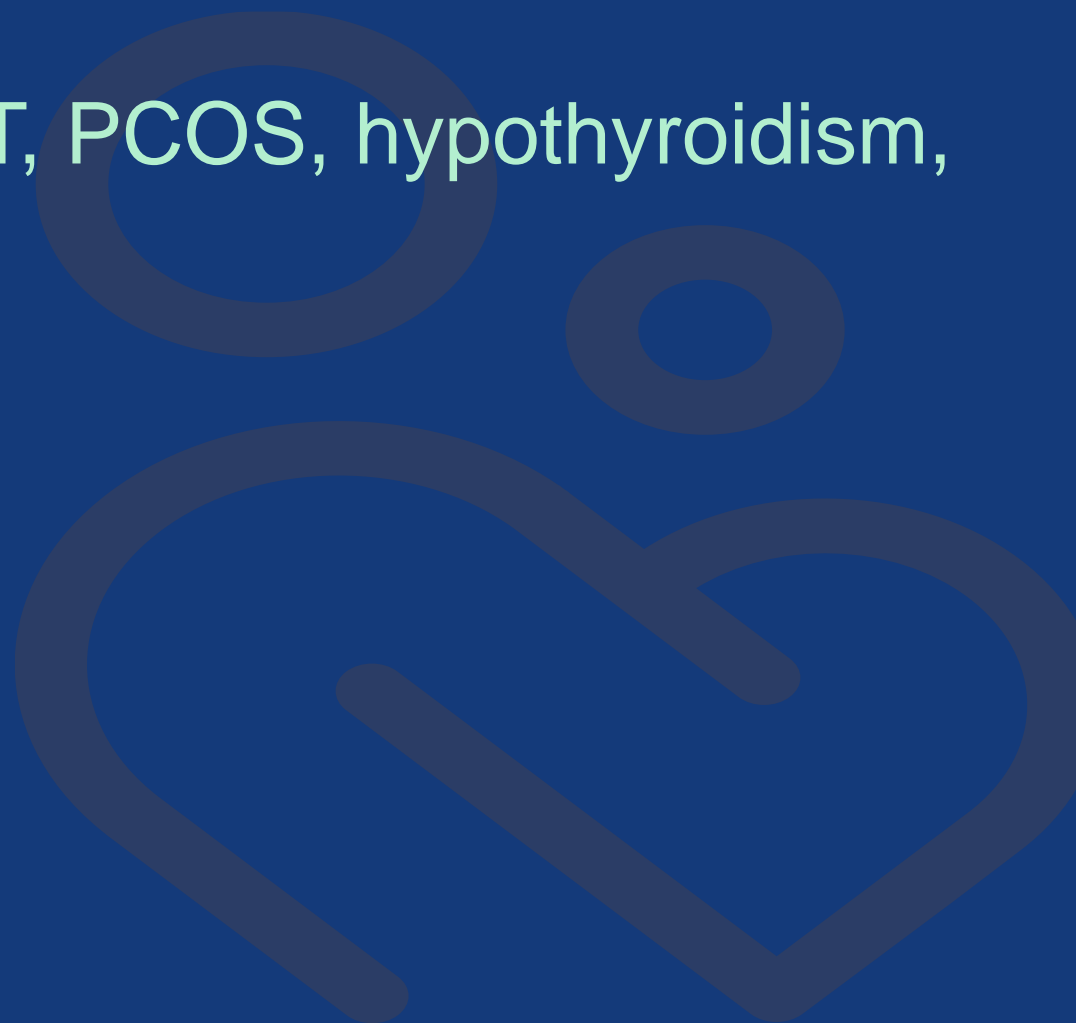
# Mastitis/Blocked ducts

- Empty often but gently – feeds/hand express/pump
- DO NOT STOP FEEDING!!!
- Position changes
- Offer affected breast first
- Rest, analgesia, heat /ice
- Antibiotics – flucloxacillin, ?MRSA
- Septic – IV antibiotics, ?abscess
- Probiotics, lecithin, physio



BMJ

# Low Supply

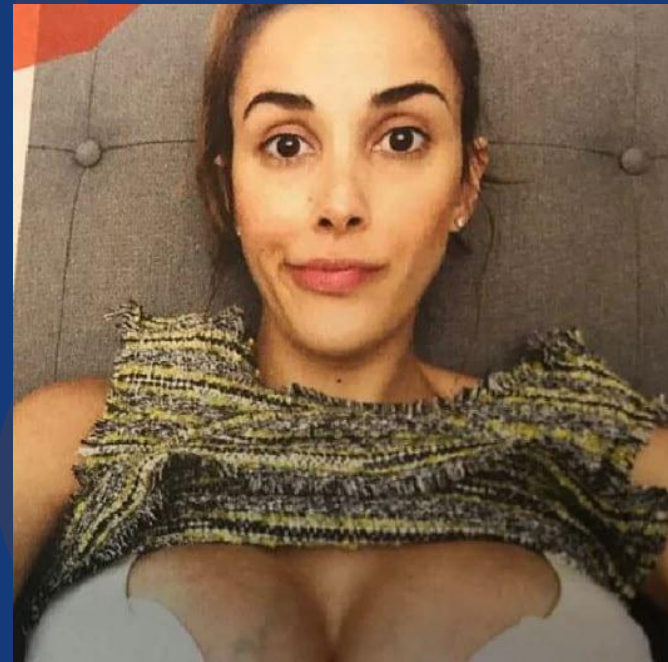
- Common presentation
  - True low milk supply is rare – IGT, PCOS, hypothyroidism, RPOC, previous surgery
  - Medications
  - Mastitis
  - Infant factors
- 

# Low Supply

- Optimise fit and hold
- Frequent feeding, avoiding feeding to schedule
- Switch feeding
- Expressing
- Domperidone
  - Dose
  - Interactions
  - Evidence

# Oversupply

- “Too much milk”
- Mum – blocked ducts/mastitis/engorgement
- Baby – functional lactose overload
- Fit and hold
- Feed on demand
- May need to block feed
- Express before attaching
- Appropriate bra
- Settles around 8 weeks



*Rebecca Judd: Instagram*

# A word about Antenatal Expression (DAME Trial)

- DAME trial suggests safe to express colostrum antenatally in low risk pregnancies
  - Gestational Diabetes
  - Hand expression 10 minutes BD
  - Volume gained not indicative of supply
  - Family brings into hospital to freeze
  - Offered to baby to supplement feeds if necessary
  - Higher rate of baby only having had received breast milk at discharge



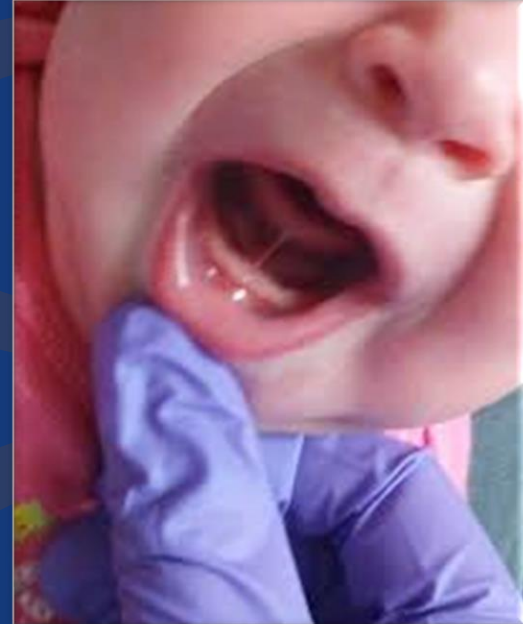
# Supplementation

- Expressed breast milk to be offered by finger feed, cup, bottle or supply line ?donor milk
- Paced bottle feeding to be used if a bottle offered  
<https://possumsonline.com/video/about-paced-bottle-feeding-renee-keogh>
- Formula is second choice if not maintaining weight with EBM top ups alone
- “Top up trap” – larger the topup, longer between feeds, less breast stimulation, less milk produced (normal to feed 8-12 times in 24 hours)
- Short term plan



# Lingual Frenulum Anatomy

- Dr Nikki Mills (a paediatric ENT surgeon in NZ) was the first person to ever study the anatomy of the lingual frenulum... in 2019!
- The anterior lingual frenulum is NOT a midline structure, it is formed of a fold of tissue of the floor of the mouth.
- A posterior tongue tie is a term that should never be referred to – it has no anatomical basis.
  - Risk damage to blood vessels, nerves and salivary ducts.
- The anterior lingual frenulum has anchor points somewhere along the underside of the tongue as well as the floor of the mouth towards the gingival ridge.



# Anterior Tongue Ties

- There are a few tools that are used to evaluate for tongue tie (Hazelbaker, Martinelli).
  - Over-rates the importance of tongue movement and peristalsis
  - A finger is used to assess (not relevant to how a baby sucks on a breast)
- Brief oral assessment:
  - How far along the underside of the tongue does the TT insert?
  - How far along the floor of the mouth does the TT insert?
  - Stretch/movement
  - Ability to reach gum/just to lip



# Evidence for Releasing Anterior Tongue Ties

- The presence of a tight lingual frenulum that comes all the way to the tip of the tongue and/or the gums AND
  - Mums have persistent nipple pain and trauma; unresolved by close attention to fit and hold.
  - Less evidence for improving milk transfer.
- **THERE MUST BE A FUNCTIONAL IMPAIRMENT NOT JUST A VISUAL APPEARANCE TO CALL IT A TONGUE TIE**
- Scissors currently gold standard (vs



# Risks of Frenotomy

- Bleeding (including life threatening haemorrhage)
- Infection
- Damage to surrounding nerves
- Damage to salivary ducts
- Scar
- Pain
- Oral aversion
- (Advice to perform stretching exercises)
- Delay in correcting breastfeeding problems (not caused by a TT)
- Delay in diagnosing other problems (ie laryngomalacia)
  
- *Over 3700% increase in TT procedures claimed from Medicare between 2006-2016 in ACT.*

# Where Evidence is Lacking

- NO EVIDENCE FOR RELEASING AN ANTERIOR TONGUE TIE FOR:
  - Breastfeeding problems such as: clicking, “swallowing air”, fussing at the breast; coming on/off during a feed; crying at the breast.
  - Reflux
  - Snoring/sleep apnoea (and improving sleep)
  - Difficulty with bottle feeding
- NO EVIDENCE FOR RELEASING AN ANTERIOR TONGUE TIE *IN AN INFANT* TO PREVENT PROBLEMS WITH:
  - Speech
  - Difficulty with solids
  - Dental issues
  - High-palates



# Upper Lip Ties

<sup>1</sup>Kotlow L. Diagnosing and understanding the maxillary lip-tie (superior labial, the maxillary labial frenum) as it relates to breastfeeding. *Journal of Human Lactation*. 2015;29:458-464.

Larry Kotlow<sup>1</sup>: “The inability to properly flange and completely extend the upper lip can be a significant and often unrecognized contributing factor to an infant’s inability to establish a good attachment and seal.”

Larry Kotlow<sup>1</sup>

“If the lip(s) cannot flange out (because of a tight labial frenulum), a good seal cannot be created and a poor latch-on could be the result.”



# Upper Lip Ties – The Reality

- Ultrasound/MRI studies: lips sit neutral on the breast. There is no need for the upper lip to flange. If you can see the upper lip – the baby is too shallow.
- It is the deep face-breast bury and the filling of the oral cavity with breast tissue that creates the seal, not the lips per se.
- All of the previous images show the variety of NORMAL upper lip frenulum anatomy.
- We risk pathologising normal anatomical variations, and cutting these risk pain, bleeding, scarring and then worsening of the diastema between the adult teeth.





# COLIC



# Gut-Brain Axis

- Colic = a cranky baby.
- 4<sup>th</sup> Trimester: immature neurological pathways; dislike of gut activity.
- Sympathetic Nervous System activates the gut.
- All babies that are upset will display gut behaviour. Cause of upset is **UNLIKELY** to be the gut.
- **MANAGEMENT:** dial down the sympathetic nervous system; gut behaviour will follow

# The Two Tools

- Tool 1: Feeds
  - Cannot overfeed a baby
  - Offer feeds flexibly and frequently
- Tool 2: Changing Sensory Experience
  - Step outside
  - Let go of fear of overstimulation
  - Experimentation



# Where to Find Support

- Australian Breastfeeding Association
- Lactation Consultants
  - LCA NZ
  - Hospitals
  - CYH
- Prescribing
  - WCH Drug Info Line
  - Mothersafe
  - Infantrisk



# Resources

- Australian Dental Association – Position Statement On Oral Frena
  - <https://www.ada.org.au/Ankyloglossia-Statement-Doc.aspx>
- Academy of Breastfeeding Medicine Protocol on Ankyloglossia in Breastfeeding Dyads
  - <https://www.bfmed.org/assets/Anklyloglossia%20position%20statement%202021.pdf>
- Dr Pamela Douglas’ website with her research articles
  - <https://www.pameladouglas.com.au>
- Australian Doctor Article: “Cutting Through The Tongue Tie Myths” by Dr Briony Andrew, March 2022.
  - <https://www.ausdoc.com.au/therapy-update/cutting-through-tongue-tie-myths>
- Facebook group: *Evidence based tongue and lip tie information* (run by Renee Kam)

