Clinical Update:

Jaundice

Tongue Tie

Hot topics in Lactation Research

DR GILLIAN OPIE
Neonatal Paediatrician, IBCLC
Mercy Hospital for Women
Heidelberg, Victoria

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Jaundice

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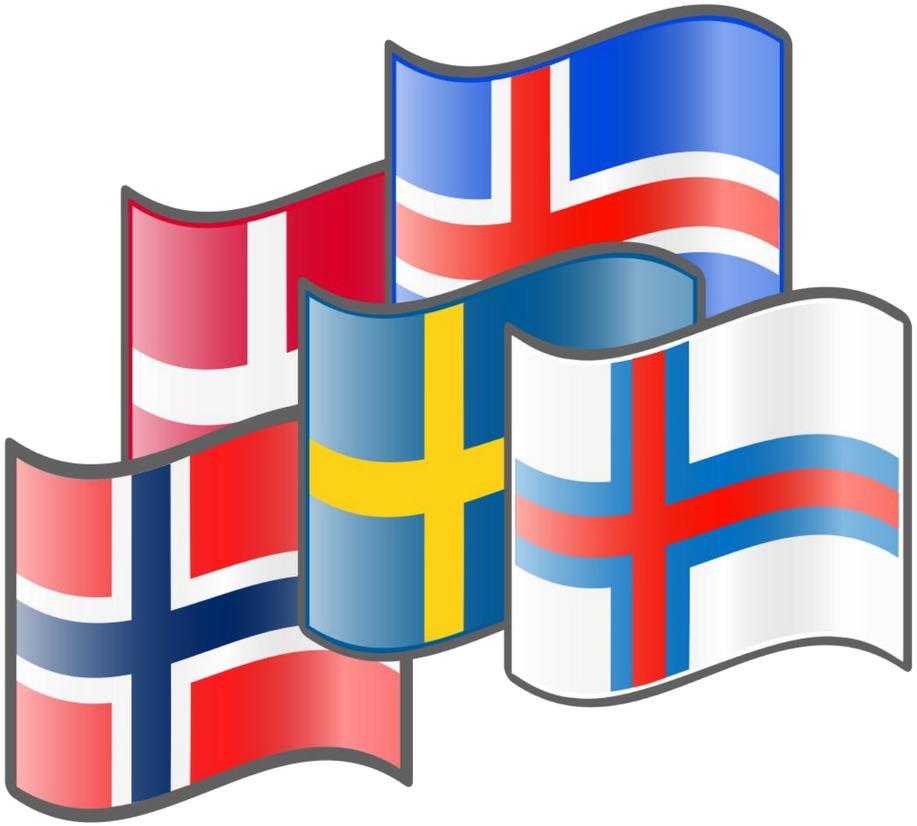

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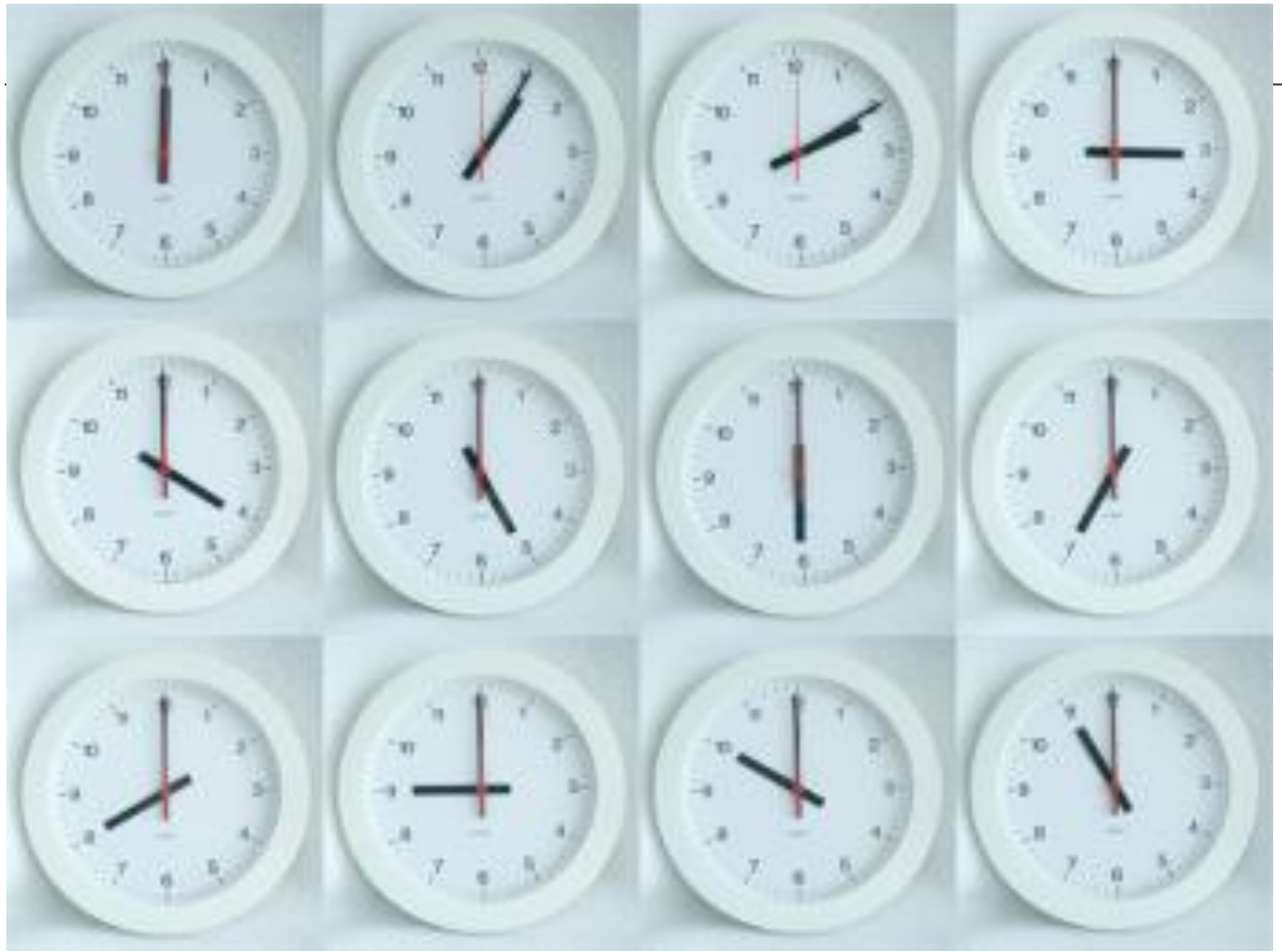


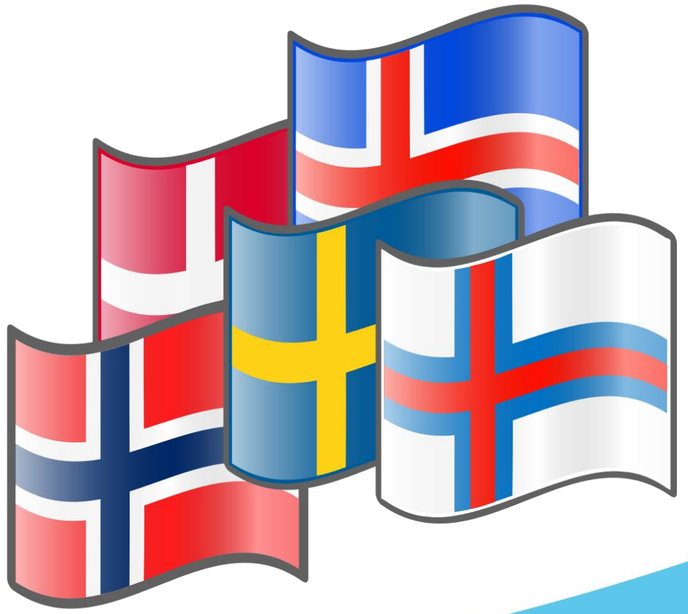
Early
or
Prolonged
or
Late

Early Jaundice

- 24 hours – 10 days age
- Very common – 60 % infants born at term
- Peaks 3 - 4 days of life
- Recognise risk factors – may need treatment

Risk Factors – early jaundice

- Mothers with a positive antibody screen
- A previously affected sibling
- Cephalhaematoma, bruising and trauma from instrumental birth
- Delayed passage of meconium
- Prematurity
- Dehydration
- Inadequate breastfeeding
- A family history of G6PD deficiency
- ABO incompatibility
- Rh incompatibility



Kramer's rule

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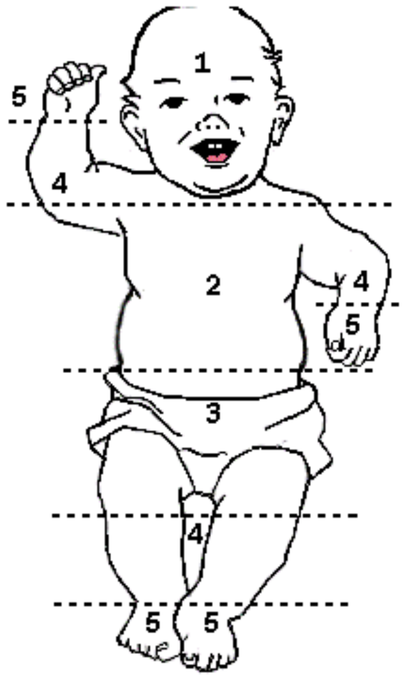
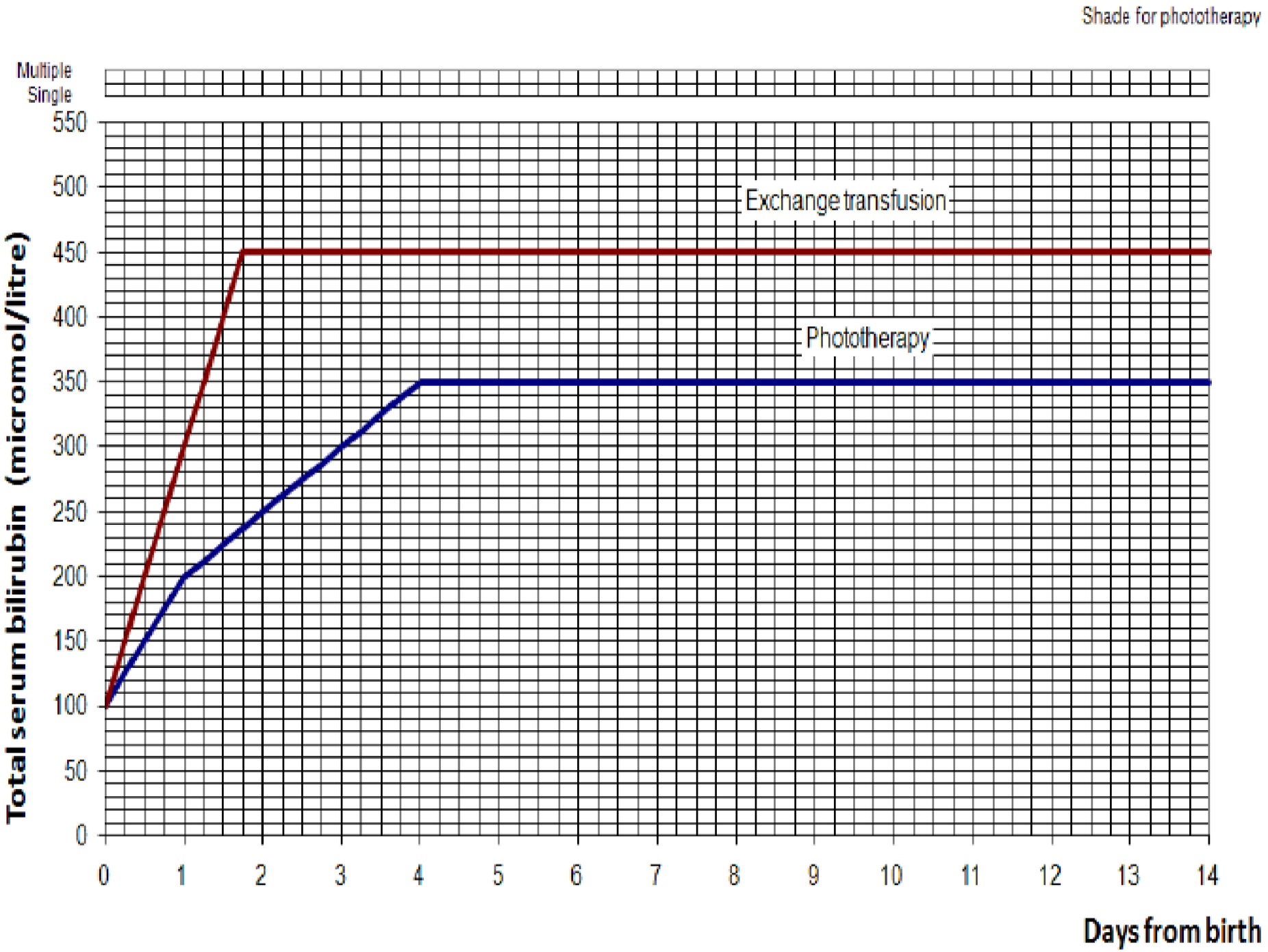
Zone	Head and neck	Chest	Lower body and thighs	Arms and legs below knees	Hands and feet
SBR (mol/L)	100	150	200	250	> 250



Wide inter-observer variation
Unreliable in infants with pigmented skin

DO NOT RELY ON VISUAL INSPECTION

Source: Neonatal eHandbook



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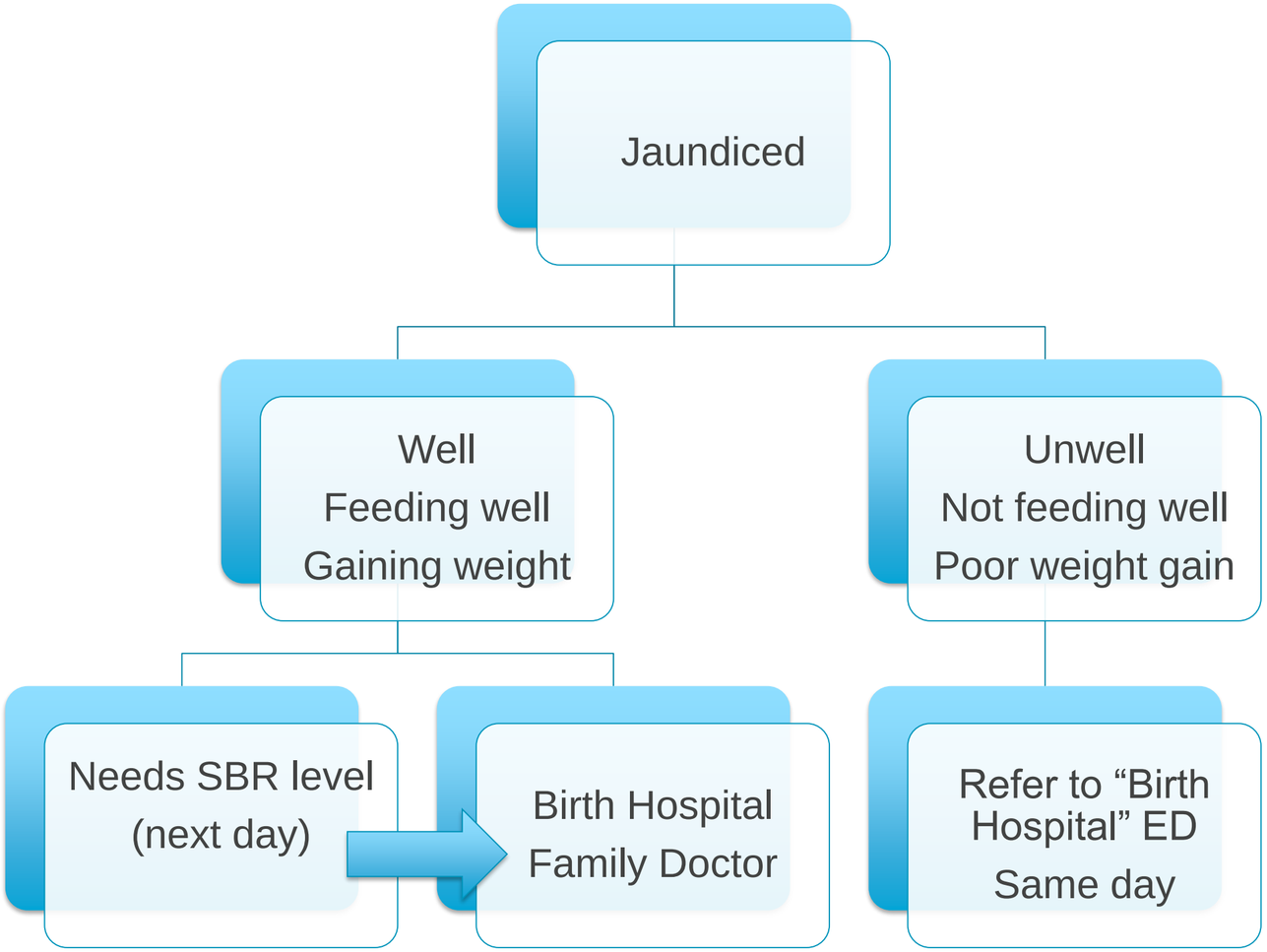
Management – early jaundice



Early Jaundice

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Sudden re-appearance of jaundice

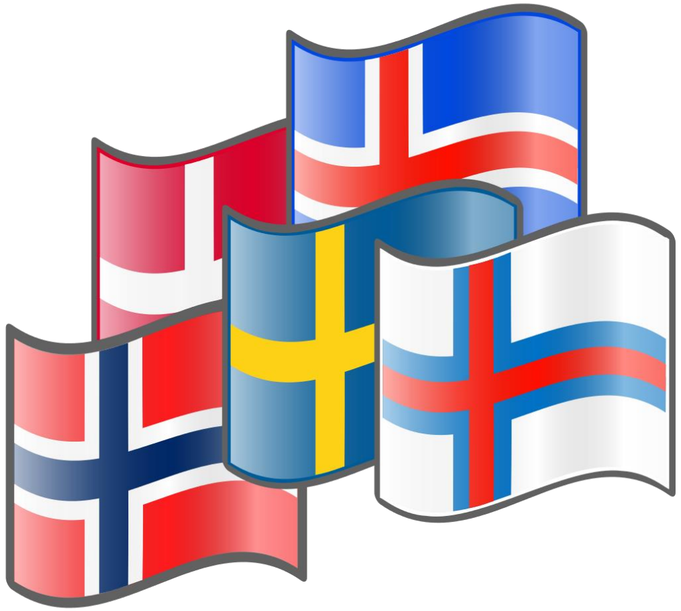
- always pathological
- haemolysis is first consideration (+ dark urine ? G6PD)
- infection possible (UTI often)

ACTION = urgent referral to hospital ED

Prolonged jaundice

Persists beyond 10 -14 days of life

Always needs investigation to exclude pathological causes



- Unwell or lethargic
- Feeding poorly
- Poor weight gain / weight loss
- Abnormal bowel actions

Prolonged Jaundice

Causes

- Infection – UTI
- Haemolysis
- Hypothyroidism (not always identified with NST)
- Rare congenital inborn errors of metabolism (Galactosemia)

- Breastmilk jaundice - diagnosis of exclusion

- Check Vitamin K given at birth

Prolonged Jaundice

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Dark, tea coloured urine

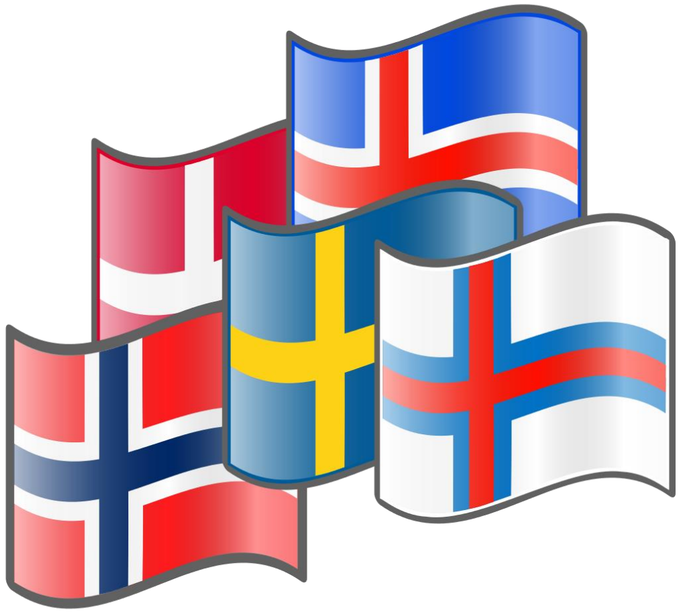
Pale lemon / chalky stools

BILIARY ATRESIA MUST BE CONSIDERED

Late Jaundice

Jaundice appears after day 10 – 14 of life

Always pathological



- Failure to thrive
- Lethargy
- Jaundice: “muddy green / brown in colour

ACTION = URGENT REFERRAL

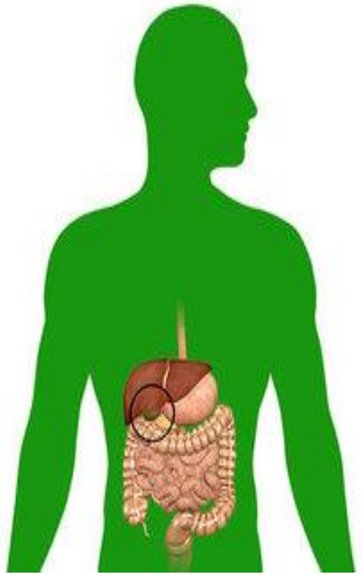
Late Jaundice - Pathology

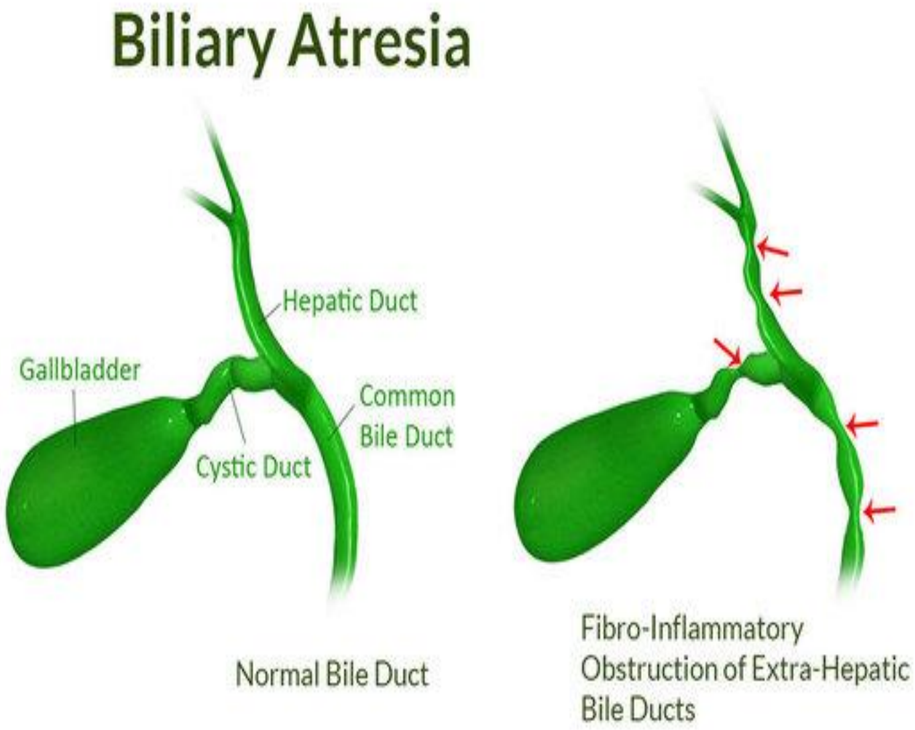
1. Biliary Atresia
2. Biliary Atresia
3. Biliary Atresia

Choledochal cyst

Neonatal hepatitis

Metabolic syndromes





Jaundice - Summary

Common

Early: risk factors

- refer especially of baby is unwell, feeding poorly or not gaining weight

Prolonged: needs diagnosis

- Breastmilk jaundice is diagnosis of exclusion

Late: ? Biliary Atresia

Sudden re-appearance of jaundice
Dark urine ± pale bowel action
Failure to thrive
Unwell

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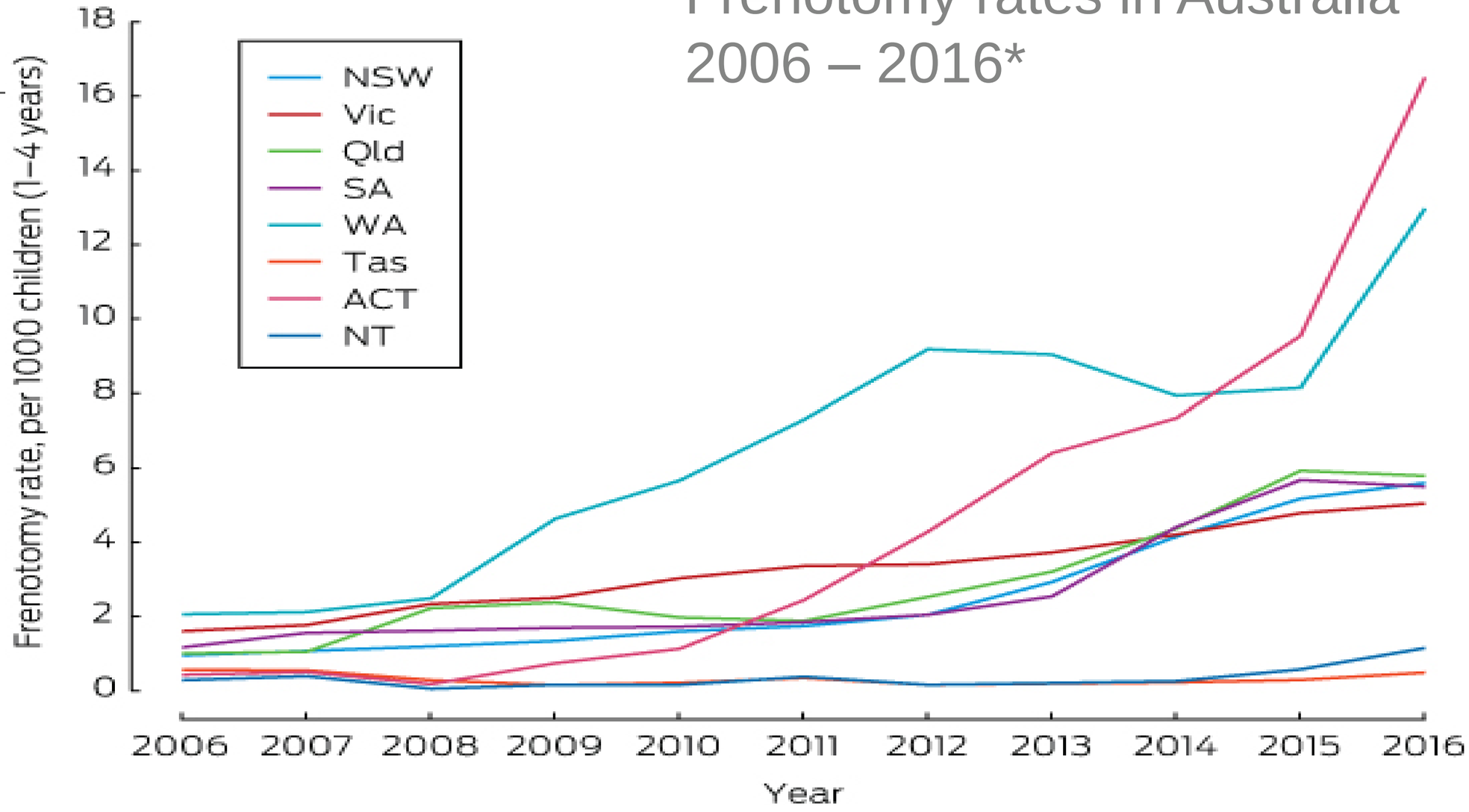
Tongue Tie:
“to snip or not to snip”

Frenotomy rates in Australia 2006 – 2016*



Kapoor V et al. Med J Aust 2018; 208(2): 88-89 ** Medicare data*

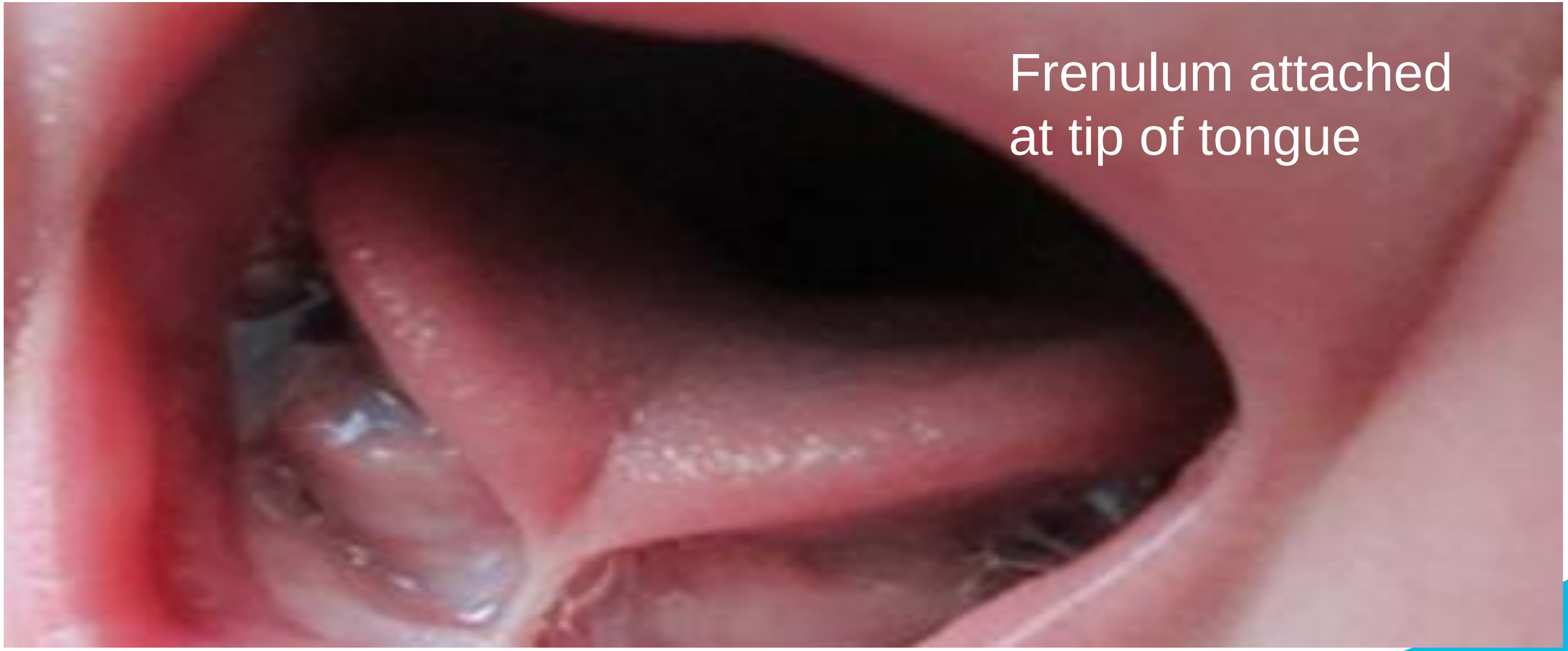
Impact

- Delayed oral development / dental caries
- Feeding problems
- difficulty in establishing breastfeeding / poor weight gain
- latch issues / maternal pain / low supply
- Licking ice-creams
- Speech problems (articulation)
- Swallowing problems (aerophagia)
- Intimacy problems (kissing)

Prevalence

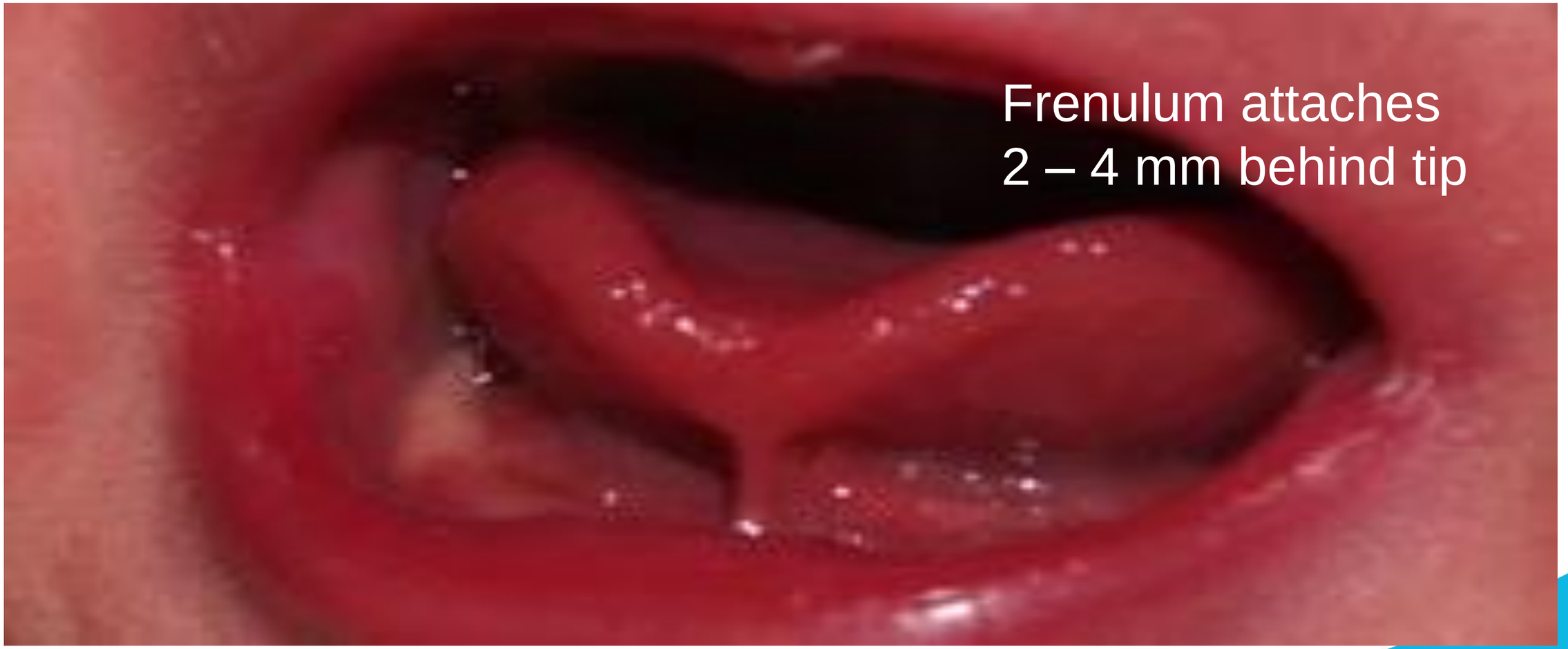
- 4 – 11% of newborns
- 40 – 50 % of infants with TT display breastfeeding difficulties
- More common in males 1.5-2.6:1
- Familial correlation is seen
- Gene mutation, TBX22, manifests as heritable TT with cleft lip and palate

Type 1 Anterior



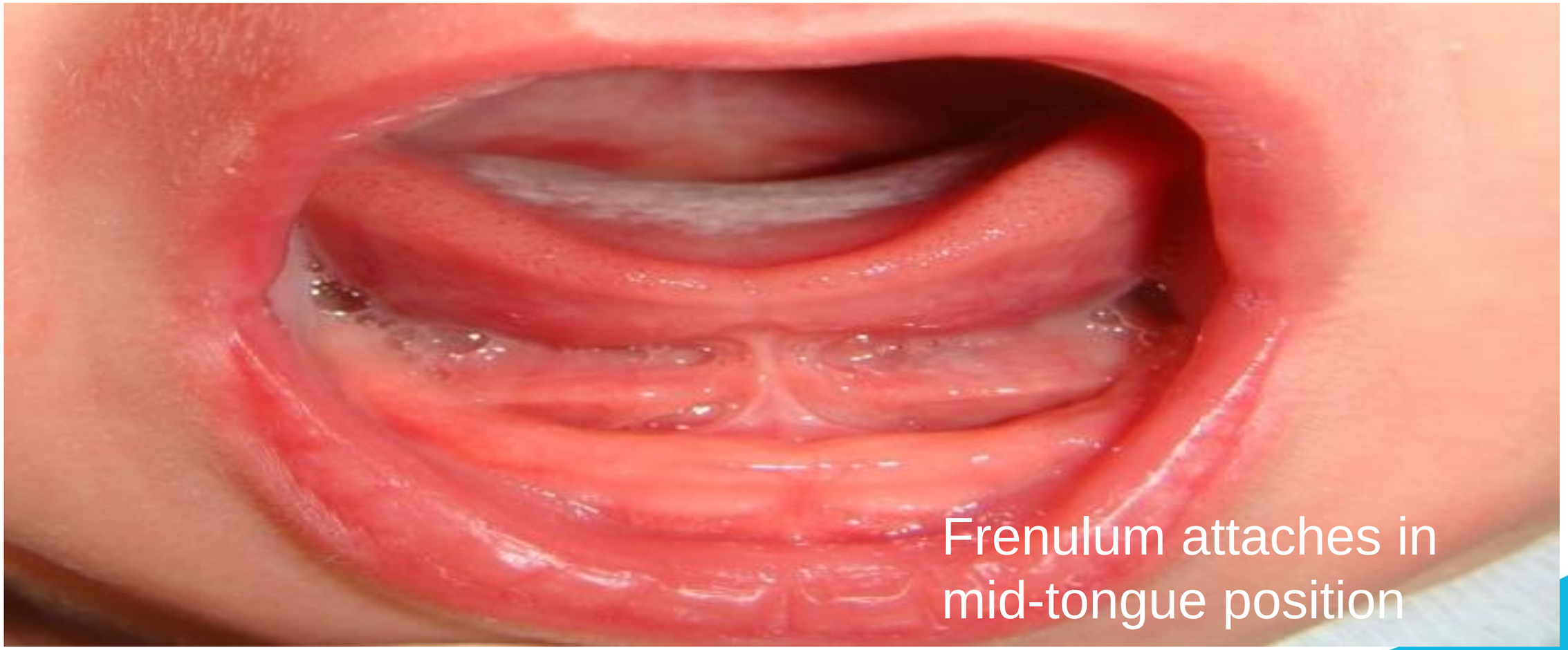
Coryllos 2004

Type 2 Anterior



Coryllos 2004

Type 3 Mid



Coryllos 2004

Type 4 Posterior

Coryllos 2004

Lip tie

Maternal symptoms

- Nipple appearance after feeding
- creased, flat or blanched
- Nipple trauma
- cracked, blistered, bleeding
- Discomfort whilst feeding
- Blocked ducts
- Thrush or mastitis
- Sleep deprivation

Baby symptoms

- Difficulty latching
- Gumming / chewing whilst feeding
- Gassiness / aerophagia
- Poor weight gain
- Excessive drooling
- Inability to adequately drain breast
- Choking on milk / coming off to gasp during feeding
- Falling asleep during feeds, then waking a short time later to feed again
- Sleep deprivation
- Long feeding time
- Clicking during sucking

HCP opinion

- Messner* surveyed 1500 health professionals
- 90% paediatricians and 70% ENT surgeons indicated TT never or rarely caused problem
- Most LC's believed TT did cause problem, particularly with breastfeeding simply relieved by frenotomy
- AAP and NICE acknowledge TT is significant entity which should be treated early to avoid breastfeeding problems

**Messsner AH. Int J Pediatr Otorhinolaryngol. 2000;54:123-31*

Frenotomy: feeding

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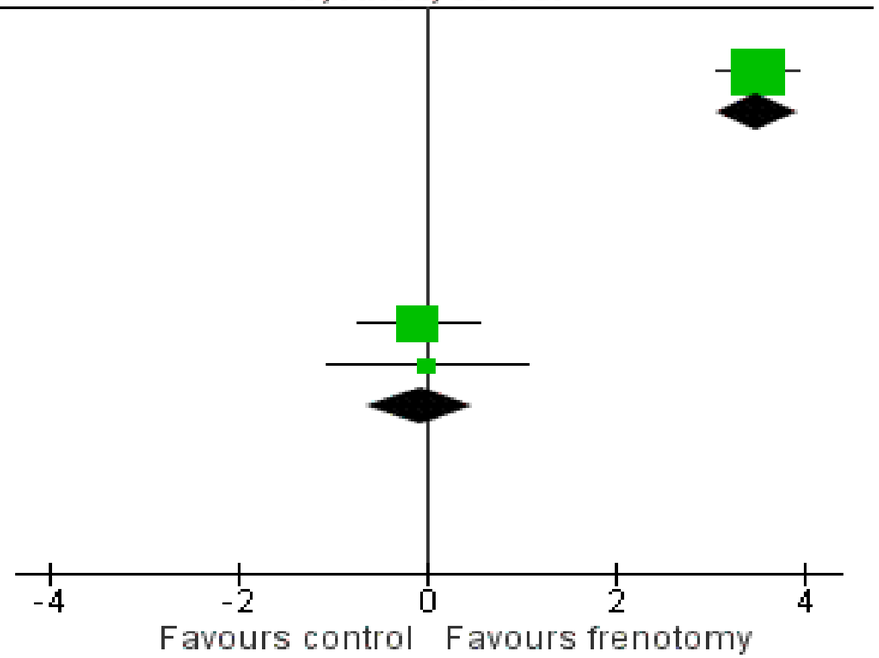
Study or Subgroup	Frenotomy Mean	SD	Total	Control Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
1.1.1 IBFAT scores following procedure								
Buryk 2011	11.6	0.8	30	8.1	0.9	28	100.0%	3.50 [3.06, 3.94]
Subtotal (95% CI)			**30**			**28**	**100.0%**	**3.50 [3.06, 3.94]**
Heterogeneity: Not applicable								
Test for overall effect: Z = 15.61 (P < 0.00001)								
1.1.2 LATCH scores following procedure								
Emond 2013	8.4	1.8	53	8.5	1.6	52	73.4%	-0.10 [-0.75, 0.55]
Dollberg 2006	6.8	2	25	6.8	1.9	25	26.6%	0.00 [-1.08, 1.08]
Subtotal (95% CI)			**78**			**77**	**100.0%**	**-0.07 [-0.63, 0.48]**
Heterogeneity: Chi² = 0.02, df = 1 (P = 0.88); I² = 0%								
Test for overall effect: Z = 0.26 (P = 0.80)								



Test for subgroup differences: Chi² = 97.28, df = 1 (P < 0.00001), I² = 99.0%

Cochrane Database of Systematic Reviews
11 MAR 2017 DOI: 10.1002/14651858.CD011065.pub2
http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD011065.pub2/full#CD011065-fig-0004

Frenotomy: Nipple pain

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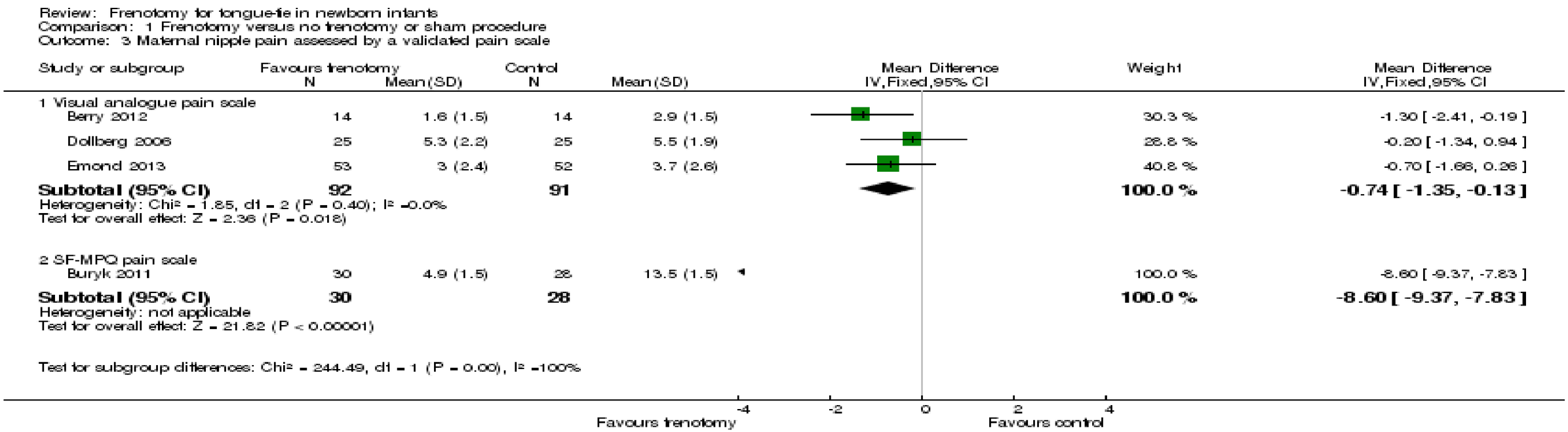

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http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD011065.pub2/full#CD011065-fig-00103

48 hours: Parent assessment of feeding

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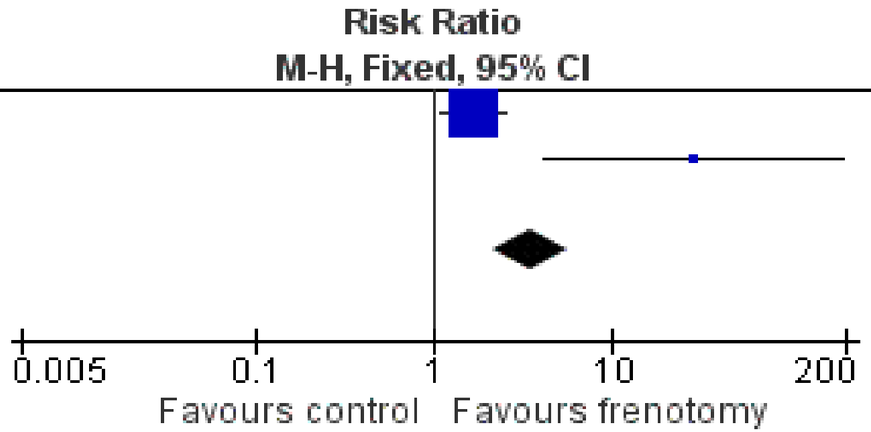
Study or Subgroup	Frenotomy Events	Total	Control Events	Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Berry 2012	21	27	14	30	93.1%	1.67 [1.08, 2.57]
Hogan 2005	27	28	1	29	6.9%	27.96 [4.07, 192.12]
Total (95% CI)		**55**		**59**	**100.0%**	**3.48 [2.18, 5.56]**
Total events	48		15			

Heterogeneity: Chi² = 15.63, df = 1 (P < 0.0001); I² = 94%
Test for overall effect: Z = 5.22 (P < 0.00001)



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Cochrane Conclusion

Improved maternal nipple pain

No consistent effect on infant feeding

No serious complications

However

Quality of evidence low – moderate

Only 5 studies

Study design not optimal: controls offered frenotomy

NICE Guidance: 2005*

Evidence found similar result as recent Cochrane

Specialist advisors

- Considered procedure established practice
- Frenotomy more commonly performed for speech issues
- Selection must be careful to ensure only problematic TT are divided
- Alternative option is counselling and advice from LC

Noted controversy regarding significance of TT in relation to breastfeeding difficulties

* National Institute Clinical Excellence UK. Minor maintenance 2012

Timing of frenotomy

- 107 term infants < 2 weeks age randomised
- Outcome: feeding 5 days post frenotomy or advice only
- Eligibility : HATLFF score 6 – 12, LATCH score ≤ 8
- Control group 15.5 % increase in bottle feeding vs frenotomy 7.5% increase
- 44 of 52 controls requested frenotomy
- Conclusion: early frenotomy did not improve breastfeeding but did improve maternal self efficacy

Emond. Arch Dis Child FN Ed 2014;99:F189

Laser Frenotomy

No published studies comparing efficacy of laser vs scissors

- Laser is more time consuming than scissors
- Parents are not able to be with baby during procedure
- Delayed onset pain vs immediate with scissors
- Expensive (equipment costs)
- Dentists most familiar with laser oral surgery
- Post procedural complications higher

Tongue Tie - Summary

- 50 % of infants with short, tight frenulum will not have difficulty breastfeeding
- Milk may have to “come in” before efficiency of breastfeeding can be evaluated
- Symptomatic tongue-tie needs specialist evaluation for consideration of frenotomy (simple and safe)
- Basic ethic of avoiding unnecessary procedures
- Published evidence remains controversial on benefit for infant breastfeeding however maternal self efficacy definitely benefits

Hot Topics in Lactation Research

ISRHML

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International Society for Research in Human Milk and Lactation

October 7 – 11, 2018

Japan

Breastfed infants (population survey)

- higher rate dental caries when breastfed > 6 months
- iron deficiency

  - do not routinely practice delayed cord clamping as worried about jaundice due to polycythemia

  - first foods are not iron fortified

- CMV infection in premature infants:

  - source mother’s own milk

INSPIRE project

8 different countries

Exploring variations / similarities in maternal and infant microbiome
Includes breastmilk microbiome

412 women and their babies

INSPIRE findings

Common bacteria in different proportions according to region

- all breastmilk has Streptococcus, Staphylococcus and Corynebacterium

Influence of diet

- no milk – more firmicutes
- meat eaters – more propionibacteria

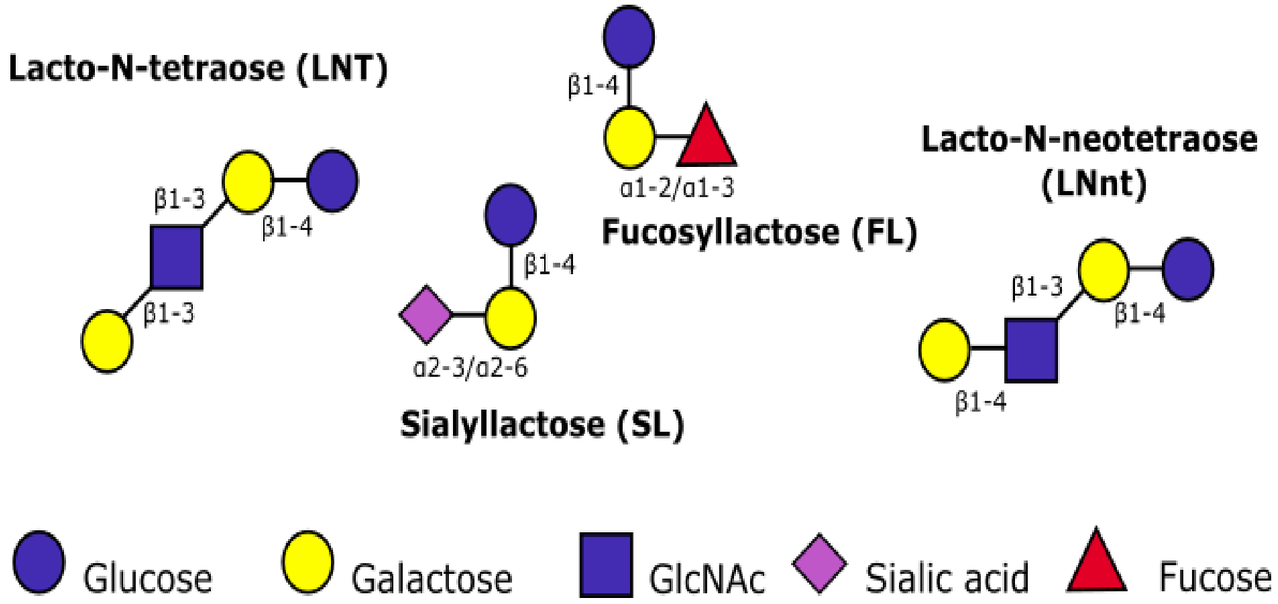
HMO’s

Human Milk Oligosaccharides are complex sugars

Lactose at reducing end

Add

- Fucose
- Sialic acid
- Disaccharide



150 – 200 variations producing individual “Fingerprint”

Later Benefits of HMO’s

- Obesity
- Cows Milk Allergy
- Chronic Inflammatory disease
- Cognitive Development

Anti-microbials

- Bacterial, viral, and protozoan infections are most common causes of infant mortality.
- Many of these pathogens use lectins (glycan-binding proteins), to attach to on epithelial surfaces,
- HMO resemble some of these cell surface glycans,
- serve as decoy receptors that block pathogen attachment
- HMO act as anti-adhesive antimicrobials, part of the innate immune protection provided with human milk

HMO and Microbiome

- Specific Bacteroides and Bifidobacterium species that commonly colonize breastfed infants efficiently utilize HMO as carbon sources. *(eg B. infantis)*

- HMO fermentation by microbiotia produces short-chain fatty acids promoting the growth of beneficial bacteria.

- Gut bacteria and the immune response are tightly interrelated

More Milk for Daughters

2 large long-term population studies compared

CHILD (2009 – 2012) vs ALSPAC (1990's)

- no difference in breastfeeding intention or initiation
- at 4 months age boys significantly less likely to be breastfed
- boys 15 – 44% more likely to receive formula
- sons 36-43% more likely to be fed solids earlier
- boys more likely to stop breastfeeding 2.5 weeks earlier than girls

Animal studies show mothers synthesise sex differentiated milk

Laboratory research

Breast cells are being grown in collagen gel

Organise themselves into breast structure

Now growing lactating breast cells

Comparisons made between cell types of resting and lactating breast

- resting breast has less secretory cells
- lactating breast has fewer basal cells

Examine gene expression within resting and lactating breast cell cultures

Thank-you

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Questions ?