Feeding in the first year of life:

Why breastfeeding and introducing solids matters.

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Swansea University

Diet in the first year of life matters

Important

- What babies are fed
- When they are fed it

But …

- ***How they are fed it***
- Learning experience
- Interactions

Responsive feeding

WHO & Responsive Feeding

'… being sensitive to their hunger and satiety cues'

'Feed slowly and patiently, and encourage children to eat, but do not force them'

'If children refuse many foods experiment with different food combinations, tastes, textures and methods of encouragement'

'Remember that feeding times are periods of learning and love – talk to children during feeding, with eye contact.'

http://www.who.int/nutrition/publications/guiding_principles_compfeeding_breastfed.pdf

But don’t the guidelines keep changing?

- Only two changes have been made in recent years – in 2003 (6 months) and 1994 (4 – 6 months)
- Until 1920s typical around 12 months – prior to this often even later

Why six months?

- Kramer & Kakuma (2002) – lower gastrointestinal infection risk whilst no impact on growth

- Other studies show lower risk of respiratory infections, ear infections, allergies and obesity (but not always conclusive)

Kramer, M. S., & Kakuma, R. (2002). Optimal duration of exclusive breastfeeding. *Cochrane Database Syst Rev*, *1*(1).

Why?

- Immature digestive system
- Enzymes
- Immature kidneys
- Sensitisation
- Contamination
- Detracts from the amount of milk consumed
- Lower in calories
- Interferes with absorption of nutrients

Just no need in a breastfed baby

But, but, but … what about allergies?

- Extremely (deliberately?) confusing literature / debate
- Recent research despite some claims not actually conclusive
- Difficulty encouraging infants to eat the amounts specified
- Very high breastfeeding rates
- **Other RCT show no impact**

LEAP Study

- Randomised high risk children for allergy to avoidance / consumption of peanut at 4 – 11 months old. Children in avoidance group did not eat peanut until 3.

- At screening, median age of babies was 7.8 months (interquartile range, 6.3 to 9.1); the mean (±SD) age was 7.8±1.7 months – **NOT EARLY INTRODUCTION OF SOLIDS!**

- Those who did eat the allergen did have a lower risk than those who did not (1.9% versus 13.7%)

http://infantfeedingmatters.com/leaping-to-conclusions-about-infant-diet/

EAT

- Randomized babies to have small amounts of allergenic foods from 3 months of age alongside continued breastfeeding versus 6 months exclusive breastfeeding

- No impact in intention to treat group but small impact in adhered group for peanut and egg allergy

- Peanut group 2.5% versus 0%
- Egg group 5.5% versus 1.4%

How do breastfeeding duration and timing and mode of solids affect weight and eating behaviour?

Breastfeeding, weight & eating behaviour

- **Breastfeeding reduces childhood overweight by around 15 – 30%**

Owen, C et al (2005). Effect of infant feeding on the risk of obesity across the life course: a quantitative review of published evidence. *Pediatrics*, *115*(5), 1367-1377.

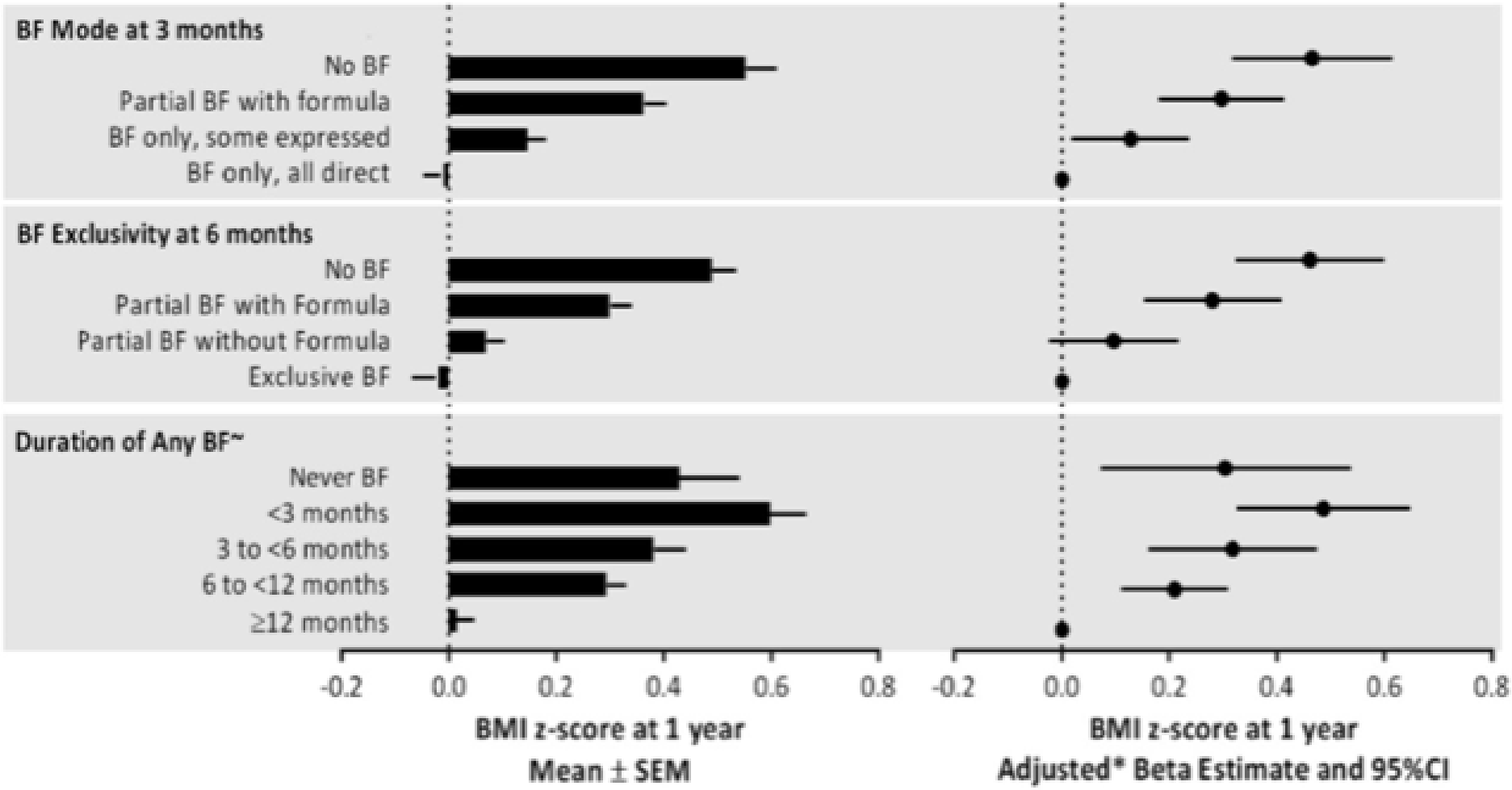
- **Breastfeeding associated with better satiety responsiveness**

Brown, A., & Lee, M. (2012). Breastfeeding during the first year promotes satiety responsiveness in children aged 18–24 months. *Pediatric obesity*, *7*(5), 382-390.

- **Breastfeeding associated with lower fussy eating**

Nicklaus, S., & Remy, E. (2013). Early origins of overeating: tracking between early food habits and later eating patterns. *Current Obesity Reports*, *2*(2), 179-184.

Breastfeeding & BMI in CHILD



Timing solids, weight & eating behaviour

- **Early introduction more likely to be overweight (not all conclusive)**

Pearce, J., et al(2013). Timing of the introduction of complementary feeding and risk of childhood obesity: a systematic review. International journal of obesity, 37(10), 1295.

- **Interaction with milk type – formula + early = 6 x risk obesity at three**

Huh, S. Y., Rifas-Shiman, S. L., Taveras, E. M., Oken, E., & Gillman, M. W. (2011). Timing of solid food introduction and risk of obesity in preschool-aged children. Pediatrics.

- **Early intro more likely fussy eater**

Abraham EC, Godwin J, Sherriff A, Armstrong J. Infant feeding in relation to eating patterns in the second year of life and weight status in the fourth year. Public Health Nutr. 2012;15:1705–14

Self feeding, weight & eating behaviour?

- **At 18 – 24 months, spoon-fed babies a kilo heavier than baby-led babies, more satiety responsive, less fussy**

Brown A, Lee M. Breastfeeding during the first year promotes satiety responsiveness in children aged 18–24 months. Pediatric obesity. 2012 Oct 1;7(5):382-90.

- **As pre school children, baby-led babies less likely to be overweight**

Townsend, E., & Pitchford, N. J. (2012). Baby knows best? The impact of weaning style on food preferences and body mass index in early childhood in a case–controlled sample. BMJ open, 2(1), e000298.

- **At one year no difference in weight, but baby-led rated as less fussy**

Cameron, S. L., Taylor, R. W., & Heath, A. L. M. (2015). Development and pilot testing of Baby-Led Introduction to Solids-a version of Baby-Led Weaning modified to address concerns about iron deficiency, growth faltering and choking. *BMC pediatrics*, *15*(1), 99.

Differences in content of milk

- Calves double their birth weight by 47 days, whereas a baby doubles its birth weight by 180 days - cows milk higher levels of protein, insulin and minerals to emphasise growth

- Human milk has many bio-active properties that control appetite not found (or in different levels) in formula milk: leptin, adiponectin, resisten & ghrelin

Savino, F., Liguori, S. A., Fissore, M. F., & Oggero, R. (2009). Breast milk hormones and their protective effect on obesity. *International journal of pediatric endocrinology*, *2009*(1), 327505.

Microbiome?

- Differences in infant gut bacteria based on feeding method
- Research is in infancy, but the bacteria profile of breastmilk appears to protect against obesity
- Human milk oligosaccharides important

Emmanouil, A., & Raoult, D. (2018). Gut microbiota modifications and weight gain in early life. *Human Microbiome Journal*.

Differences in consumption

- Day One: Breast 9.6 ml/kg/day; Formula 18.5 ml/kg/day
- Day Two: Breast 13.0 ml/kg/day; Formula 42.2 ml/kg/day

- Rate at Two weeks: Breastfed infants drink on average 8 ml per minute versus 28.5ml for formula.

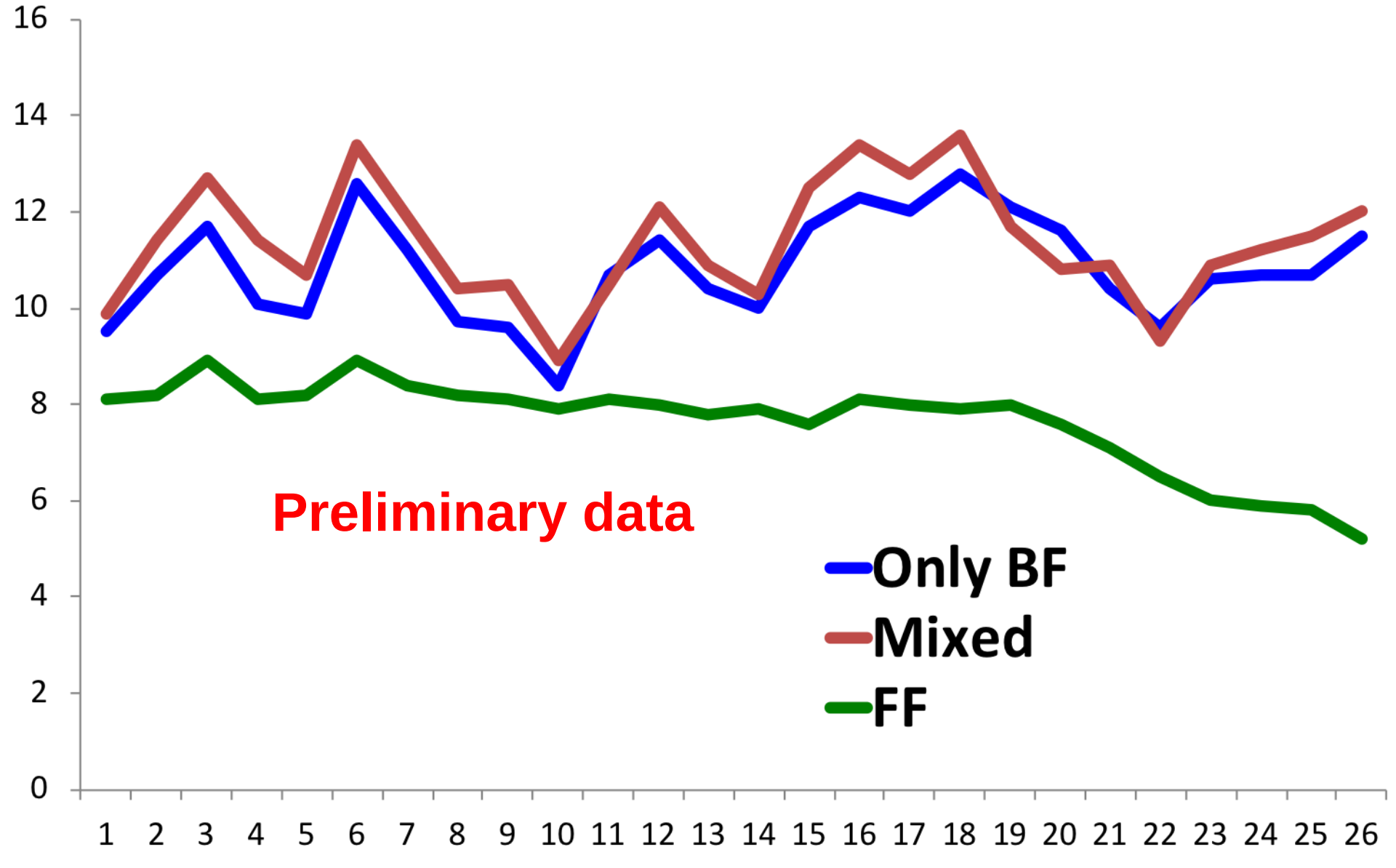
- Breastfed infants spend more time in sucking pauses

Fomon, S.J., Owen, G.M., & Thomas, L.N. (1964). Milk or formula volume ingested by infants fed ad libitum. *American Journal of the Disorders of the Child,* 108, 601 – 612. Heinig et al (1993). Energy and protein intakes of breast-fed and formula-fed infants during the first year of life and their association with growth velocity: the DARLING Study. *AJCN*, *58*(2), 152-161.

Differences in frequency of feeds

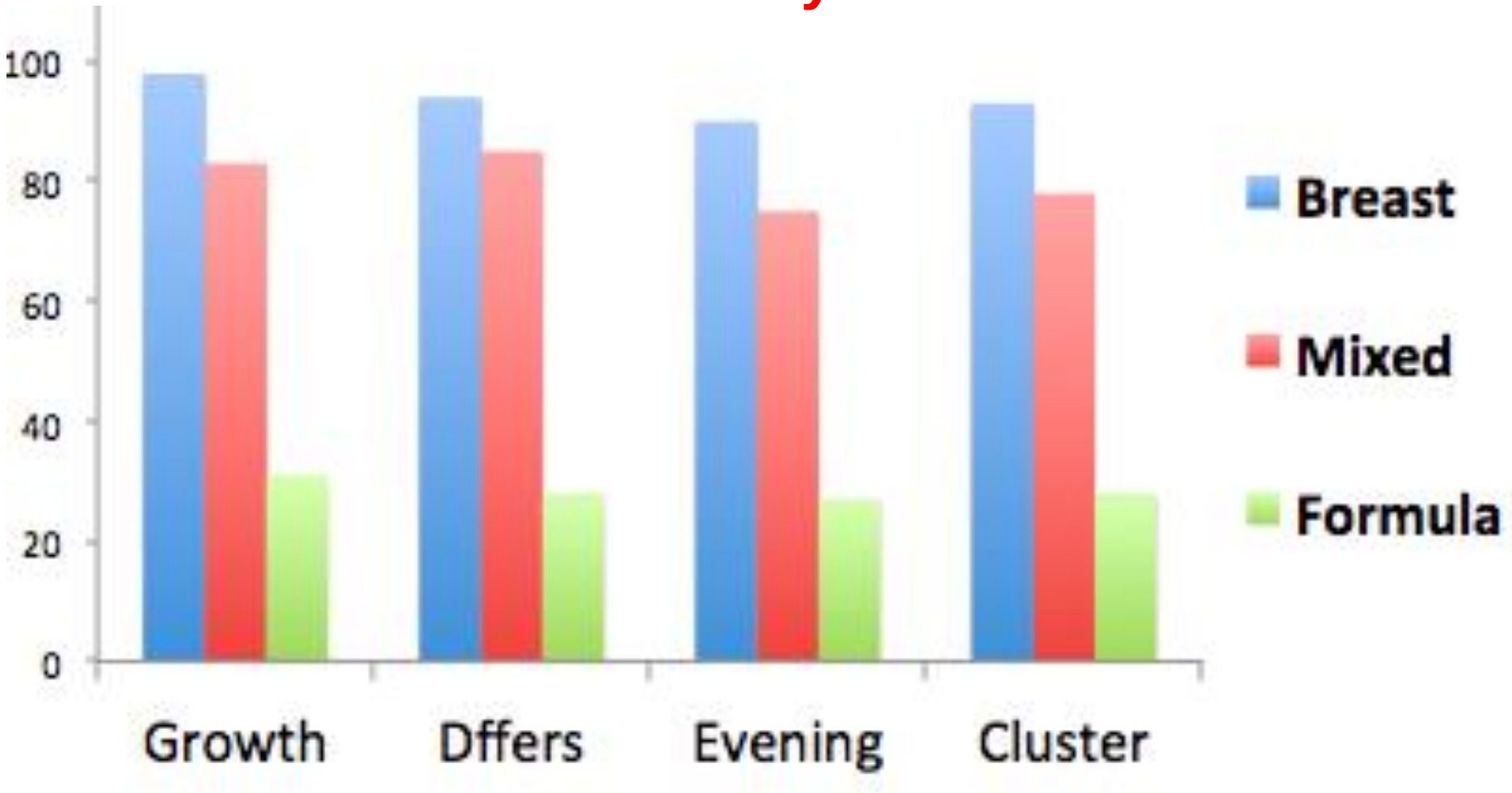
- Breastfed babies feed more frequently and irregularly – in part due to faster digestion
- Bf mothers notice differences in appetite and hunger
- Helped by changing content of breastmilk

Milk type: Only BF, Mixed, Formula



Variation in feeding

Preliminary data



WHO & Responsive Feeding

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http://www.who.int/nutrition/publications/guiding_principles_compfeeding_breastfed.pdf

Importance of responsive feeding

- **Higher prolactin levels**

Tay, C.C.K., Glasier, A.F. and McNeilly, A.S., 1996. Twenty-four hour patterns of prolactin secretion during lactation and the relationship to suckling and the resumption of fertility hi breast-feeding women. *Human Reproduction*, *11*(5), pp.950-955.

- **Longer duration of breastfeeding**

Brown, A. and Lee, M., 2013. Breastfeeding is associated with a maternal feeding style low in control from birth. *PloS one*, *8*(1), p.e54229.

- **Fewer breastfeeding difficulties**

Brown, A., Raynor, P., & Lee, M. (2011). Maternal control of child-feeding during breast and formula feeding in the first 6 months post-partum. *JHND*, *24*(2), 177-186..

- **Increased milk supply**

De Carvalho, M., Klaus, M.H. and Merkatz, R.B., 1982. Frequency of breast-feeding and serum bilirubin concentration. *American journal of diseases of children*, *136*(8), pp.737-738.

Maternal feeding interactions

- **Breastfeeding mothers feed more responsively – less likely to feed to a routine, monitor or manipulate milk intake**

Brown, A., & Lee, M. (2013). Breastfeeding is associated with a maternal feeding style low in control from birth. *PloS one*, *8*(1), e54229.

- **Breastfeeding mothers look for more baby-led and subtle cues of satiety**

Shloim, N., Vereijken, C. M. J. L., Blundell, P., & Hetherington, M. M. (2017). Looking for cues–infant communication of hunger and satiation during milk feeding. *Appetite*, *108*, 74-82.

Mothers who introduce solids later are more responsive

Brown, A., & Lee, M. D. (2015). Early influences on child satiety-responsiveness: the role of weaning style. *Pediatric obesity*, *10*(1), 57-66.

Mothers who follow BLW more responsive

- Lower pressure to eat
- Lower restriction
- Lower monitoring
- Lower concern for child weight

Brown, A., & Lee, M. (2011). Maternal control of child feeding during the weaning period: differences between mothers following a baby-led or standard weaning approach. Maternal and child health journal, 15(8), 1265-1271.

Flavour learning during milk feeding

- **Breastfed babies exposed to greater flavour variation**

- **Some studies suggest more likely to accept foods mother has eaten**

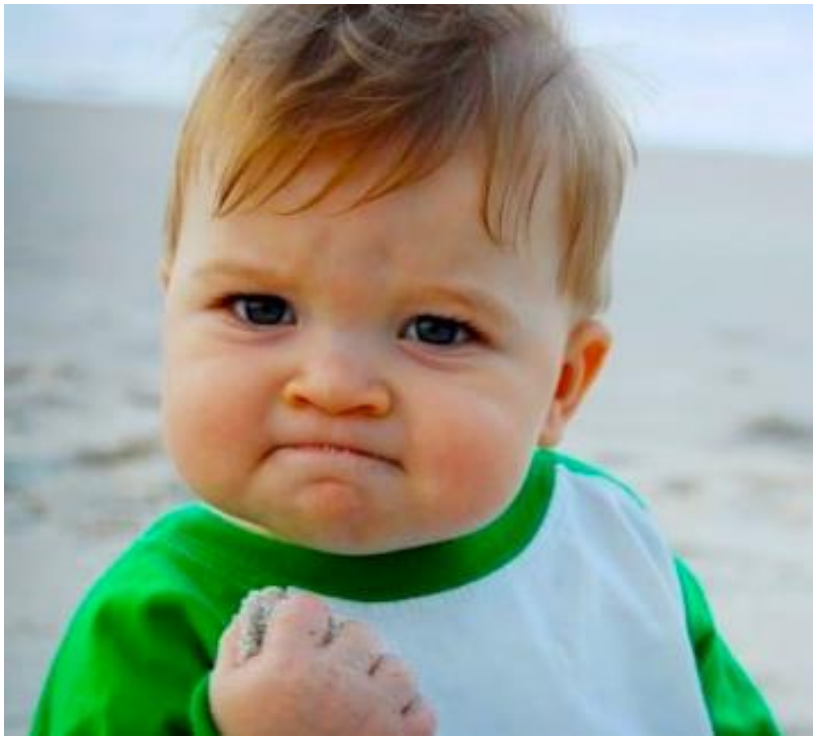
Hausner, H., Nicklaus, S., Issanchou, S., Mølgaard, C., & Møller, P. (2010). Breastfeeding facilitates acceptance of a novel dietary flavour compound. *Clinical Nutrition*, *29*(1), 141-148.

Flavour learning during weaning - different nutrient intake

- Earlier weaning foods are typically baby rice and rusks
- Babies who are BLW have greater intake of vegetables and protein at start of weaning
- Babies who are BLW more likely to join in family mealtimes – role of handling food

Key messages

- Exclusive breastfeeding = good!
- Responsive feeding = good!
- Solids at around six months = good!
- Lots of tastes and textures = good!



But …

Society damages responsive breastfeeding feeding by:

Not understanding it

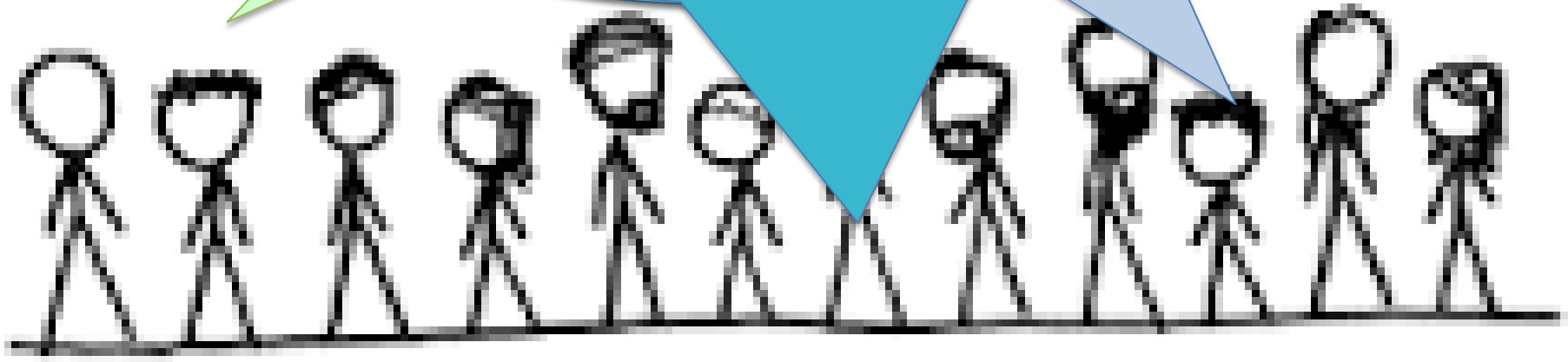
Dissuading or preventing it

Persuading other things more important

Creating anxiety over it

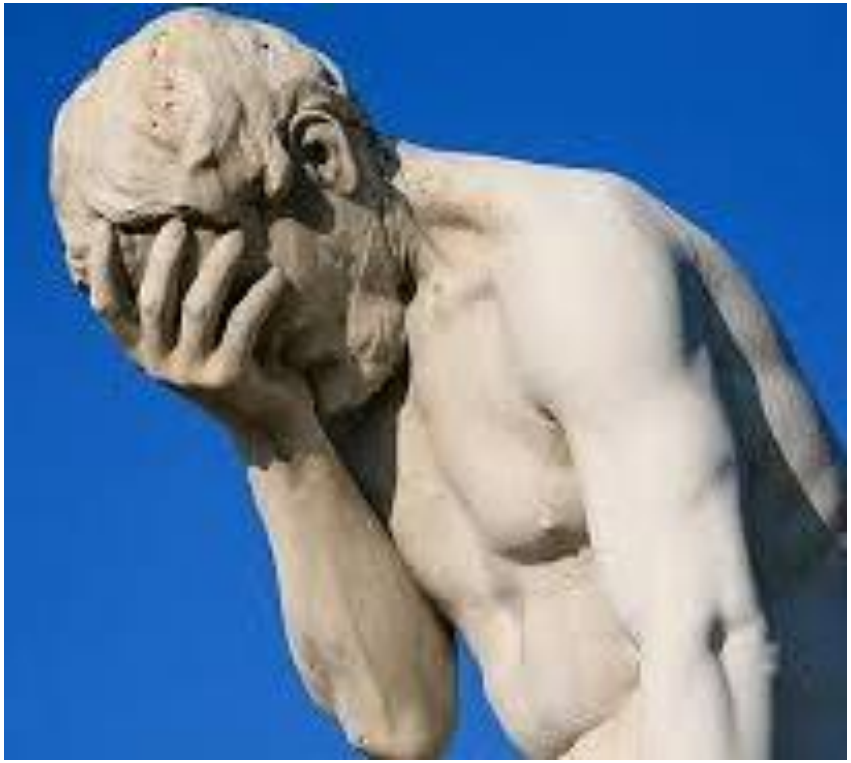
Brown, A., Raynor, P., & Lee, M. (2011). Maternal control of child-feeding during breast and formula feeding in the first 6 months post-partum. *JHND*, *24*(2), 177-186.

YOU'RE JUST DOING IT ALL WRONG!!!!!



And again for solids…

- Solids will help sleep
- Pop some rice in his bottle
- He's chewing his fists
- He's feeding too often
- Big babies need solids
- He's watching you eat



- But you were weaned at 2 weeks old and you're fine…

Brown, A., & Rowan, H. (2016). Maternal and infant factors associated with reasons for introducing solid foods. *Maternal & child nutrition*, *12*(3), 500-515.

Encourage far more than is needed

- Estimations from WHO:
- 200 kcal/day for infants aged 6–8 months
- 300 kcal/day for infants aged 9–11 months
- 550 kcal/day for children aged 12–23 months
- Milk should play major role

http://www.firststepsnutrition.org/pdfs/Eating_well_the_first_year_Sep_17.pdf

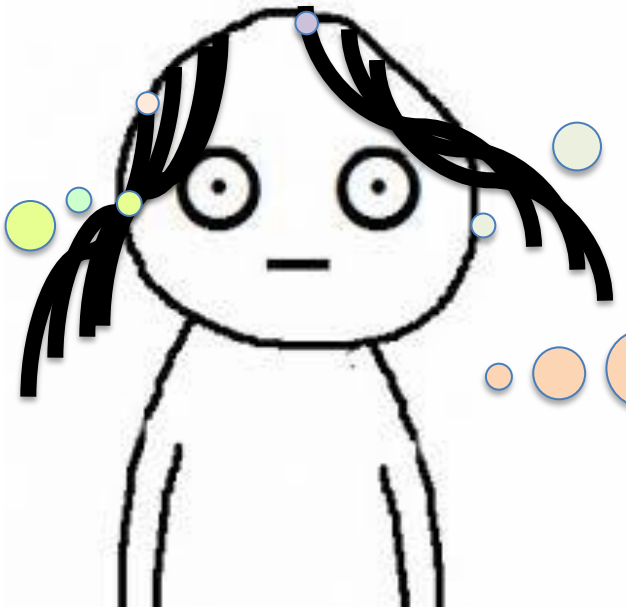
Well a bit of baby rice can't hurt

Maybe he does need more

Maybe I should try a top up

What if I'm starving him?

Well he is a big boy…



Is he really meant to be feeding again?

What if I'm just doing it all wrong?

The more anxious a mother feels…

- **Try to breastfeed to a routine**
- **Move to formula milk**
- **Introduce solids early**
- **Be less responsive**

Brown, A., Raynor, P., & Lee, M. (2011). Maternal control of child-feeding during breast and formula feeding in the first 6 months post-partum. *Journal of Human Nutrition and Dietetics*, *24*(2), 177-186.
Brown, A. (2016). Differences in eating behaviour, well-being and personality between mothers following baby-led vs. traditional weaning styles. *Maternal & child nutrition*, *12*(4), 826-837.

A revolutionary device

Imagine a standard nipple shield which tells you how much milk flows through it - this is the Coro!

Our patented sensor is non-invasive and tiny. The size of the feed-area is no different to shields currently available and the device can be used in exactly the same way.

No need for wires or chargers as the unit is completely self-contained.

We really need to recognise and support normal baby feeding behaviour

Google

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how to get your baby to sleep through the night

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About 40,200,000 results (0.60 seconds)


Fill
squeeze

Celebrity trend: Victoria Beckham, model Miranda Kerr and presenter Myleene Klass all managed to get back into shape just weeks after having a baby

Maria Fowler shows off post-baby 'mummy tummy' as she starts weight loss 'blitz' to lose 2 stone

FORMER The Only Way Is Essex star Maria Fowler only gave birth to her baby girl 6 weeks ago – but she's already training to get her bikini body back.


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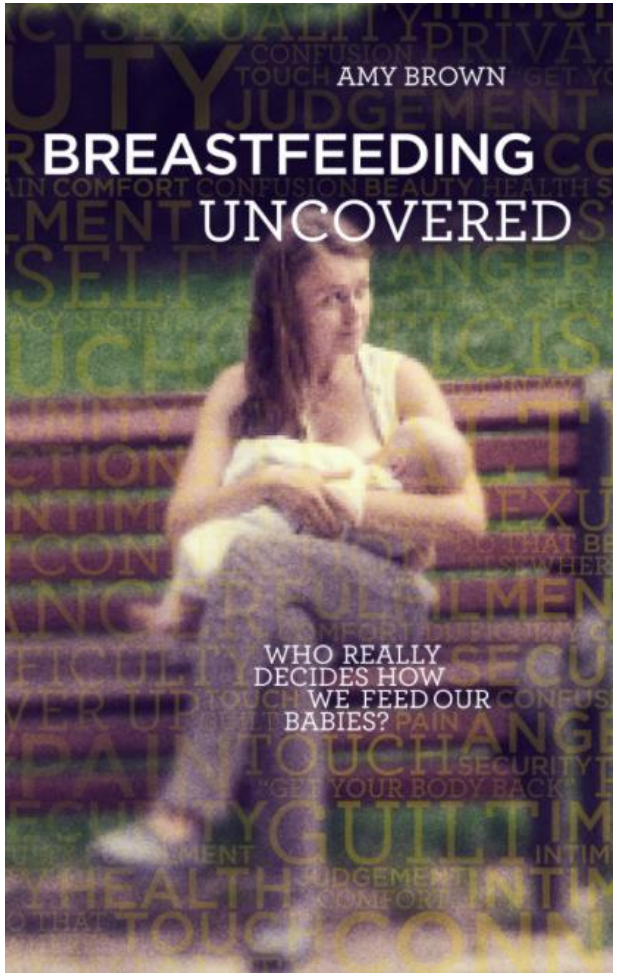
26.3.16
DAY 1
1 DAY AFTER C-SECTION
6.6.16
DAY 73
6 WEEKS REST
4 WEEKS HIIT CLASSES

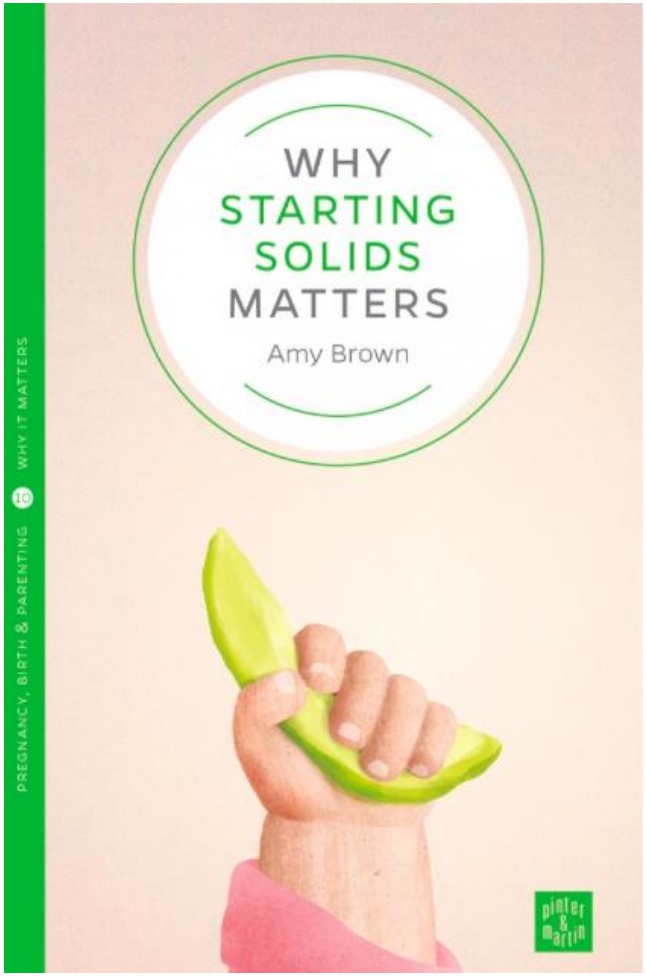
Weight, diets and non responsive feeding

- Mothers on a diet or with poor body image:
- Less likely to breastfeed
- More likely to introduce solids sooner
- More likely to try to use a routine for milk feeds
- Less likely to be responsive during weaning

Brown A, Rance J, Warren L. Body image concerns during pregnancy are associated with a shorter breast feeding duration. Midwifery. 2015 Jan 31;31(1):80-9
Brown A. Maternal restraint and external eating behaviour are associated with formula use or shorter breastfeeding duration. Appetite. 2014 May 1;76:30-5.

We need to convince society to value and care for our new mothers better


AMY BROWN
BREASTFEEDING
UNCOVERED
WHO REALLY
DECIDES HOW
WE FEED OUR
BABIES?


WHY
STARTING
SOLIDS
MATTERS
Amy Brown
PREGNANCY, BIRTH & PARENTING
WHY IT MATTERS
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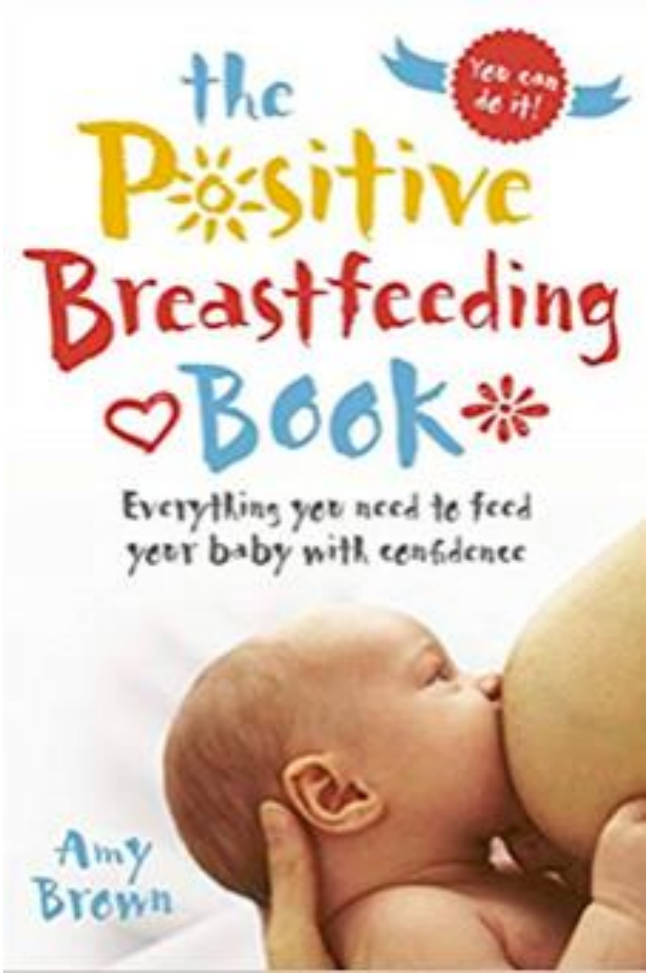
You can do it!
the Positive
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Everything you need to feed
your baby with confidence
Amy
Brown