

Supporting mothers who breastfeed:

A guide for trainee and qualified doctors



Patricia Wise

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CONTENTS

Preface	6
Foreword	7
1. Setting the scene	9
Relevance – why do doctors need to know about breastfeeding?	9
2. How does lactation work?	11
1. Breastfeeding naturally follows birth	11
2. Anatomy	11
3. Normal physiology	12
3.1 Milk supply	12
3.2 Milk removal	14
3.3 Ineffective attachment	14
4. Structural interference- baby	15
4.1 Cleft lip or palate	15
4.2 Tongue-tie	15
4.3 Cranial tension	17
5. Structural interference- mother	18
3. Breastfeeding and health	19
1. Health outcomes in the UK	19
2. Taking care with language	22
4. Why do women breastfeed, or not?	23
1. Mothers’ decisions	23
2. Social and cultural influences	23
3. Media	24
4. Fear of feeding out and about	25
5. Promotion of breastmilk substitutes	26
6. Psychological influences	27
7. Availability of skilled and social support	28

8. Challenges in nurturing a baby	30
8.1 Normal behaviour	30
8.2 Expectations around sleep	33
8.3 Crunch points	34
9. Assessing how breastfeeding is going	35
10. How to be supportive	35
5. How do we know the situation?	36
1. UK breastfeeding rates	36
2. UK norms	38
3. Data collection	39
6. What does breastmilk contain?	41
1. Nutritional components	41
2. Immunological and other components	42
2.1 Immunoglobulins and the microbiome	43
2.2 Lactoferrin and lysozyme	44
2.3 Oligosaccharides and nucleotides	44
2.4 Other components	44
7. The transition from womb to world	46
1. Birth practices	46
2. Skin-to-skin contact	47
3. Sleepy babies on postnatal wards	49
4. Normal breastfeeding	49
8. Feeding and relationships	53
9. Complications of breastfeeding	55
1. Engorgement	55
2. Mastitis	56
3. Thrush	57
4. Other causes of breast and nipple pain	58
10. Illness in the mother	60
1. Infectious illnesses	60
2. Postnatal depression	61
11. Challenges originating in the baby	63
1. Colic	63
2. Allergy/intolerance	63
3. Reflux	64
4. Jaundice	65
5. Hypoglycaemia	66
6. Prematurity and congenital medical conditions	66

12. When may breastfeeding be contraindicated?	68
1. Medication	68
2. HIV	69
3. Not contra-indicated with disability	69
13. Expressed milk and milk banks	71
14. The baby milk issue and global initiatives	75
1. Baby milk issue and the WHA International Code	75
2. Ethical implications for medical professionals	77
3. Baby Friendly Hospital Initiative	78
4. Global Strategy	80
5. Environmental impact of infant feeding	81
15. How doctors can provide effective support for mothers	82
1. During 1:1 care	82
2. In the workplace (surgery, hospital....)	83
3. Ideas for student activities	83
16. Resources	84
1. Sample breastfeeding policy	84
2. Employment matters	84
3. Breastfeeding support organisations	84
4. Mental health	85
5. Drugs in lactation	85
Now test yourself	87
References	89

PREFACE

Trainee and practising doctors are busy people. The aim of this book is to provide you with a relatively short account of breastfeeding that links the physiology and underlying science with the experiences of women so that you can better understand what it is like to be a breastfeeding mother in the UK today. You can then offer basic evidence-based information in a supportive way and refer her to more specialised sources of help (such as a local infant feeding lead, third sector breastfeeding counsellor or drop-in support group) where appropriate.

In writing this book I have drawn on more than 30 years of experience as an NCT breastfeeding counsellor, with its annual CPD to remain registered, and 15 years as a tutor training breastfeeding counsellors, plus work on local and UK committees to improve support for breastfeeding. It is a joint effort with members of the GP Infant Feeding Network ([GPIFN: 2018](#)) as their input has been invaluable. I would particularly like to thank Louise Santhanam, Sophie Camron and Victoria Thomas, who has since cofounded the Hospital Infant Feeding Network ([HIFN](#)). In addition I would like to thank my colleague, specialist health visitor Alison Spiro, for her input.

In 2015-16 I was heavily involved with assessing the state of breastfeeding support in the UK as a member of the World Breastfeeding Trends Initiative (WBTi) UK Steering Group, which led to the launch of our report in November 2016 at the Houses of Parliament ([Gray et al: 2016](#)). I took the lead on Indicator 5 (health professional training). I therefore became familiar with the standards set by the General Medical Council (GMC) and the curricula set by the Royal Colleges (RCGP, RCPCH, RCOG). Those like me who work with mothers who breastfeed had been aware for a long time that sadly many doctors (but not all as some are brilliant!) lacked basic knowledge about breastfeeding. The WBTi work showed how limited the coverage of breastfeeding is in training.

Some progress is happening, however. The GMC updated its Generic Professional Capabilities Framework in 2017 ([GMC: 2019](#)) and it now includes a domain about health promotion and illness prevention. The medical royal colleges then embarked on reviewing their curricula. The RCPCH has a detailed [policy statement](#) that is very supportive of breastfeeding and also increased the breastfeeding content of Level 2 of the Paediatrics Curriculum in 2018. The [RCGP produced a supportive policy statement in 2018](#) that links to an e-learning module (RCGP: 2019). Unicef UK Baby Friendly Initiative has recently updated its e-learning packages for paediatricians and GPs (Unicef UK BFI: 2019).

Each chapter of the book ends with a very brief summary in the form of key points and you can also test your learning at the end. Chapter 16 lists useful resources. I very much hope that you will find this book to be a handy resource to underpin your work with patients who are breastfeeding.

Patricia Wise

FOREWORD

All doctors recognise the need to support and sustain breastfeeding, as it is one of the health behaviours most critical to infant and later health. Paradoxically, however, interactions between lactating mothers and health professionals all too often actually serve to undermine breastfeeding. This book is therefore what you need to help you advise accurately and support effectively, while avoiding the pitfalls that tend to discourage breastfeeding.

We have all grown up in what is still a bottle feeding culture, where it is all too easy to unconsciously absorb the advertising messages all around us and to assume that formula milk is a near equivalent to breast milk. It can be hard to remember that breastfeeding is the physiological norm, while bottle feeding formula is not.

The evidence is now clear that anything other than breast taken by an infant aged under 6 months carries a risk for the infant, however convenient and harmless it may seem. The science and practice of lactation has advanced in the last 30 years from a minority enthusiasm to a mainstream imperative. The ever growing body of epidemiological research has demonstrated the manifold health risks associated with not breastfeeding, while the discovery of ever more constituents and functions of breast milk have revealed it as a complex biological substance with a vital immunological and developmental role, far beyond its function simply as a food.

Breastfeeding is usually something to be relished and celebrated, but almost all mothers have worries, while many have difficulties in establishing and sustaining lactation. While infants are hardwired to seek and suckle the breast, successful lactation is not innate and the skills involved have to be learned. In order for doctors to support this learning, they need to understand the mechanics and the physiology of breastfeeding and how baby friendly practices are designed to support these.

Breastfeeding places a substantial burden on mothers, so advice has to be supportive and practical. Successful breastfeeding requires a concentration of effort in the early weeks, and this is the time when support from partners and family is most important, particularly for those having 2nd and subsequent children. It can be tempting to introduce mixed feeding at this point, but the use of other milks is associated with a greatly increased risk of lactation failure, while the expression and freezing of breast milk now provides a valuable backup, particularly when going back to work. The reward for this effort is the closeness and bonding provided by breastfeeding, and the less visible effect on infant health, reducing the risk of the sleepless nights and hospital admission caused by infections, as well reducing the future risk of breast cancer for the mother.

As a clinical epidemiologist I have seen many risk factors for child health come and go, while the evidence of the importance of breastfeeding has grown ever stronger. Now, as clinicians, we need to ensure that our patients realise the importance of breastfeeding and of doing so exclusively and that we can effectively support them to achieve this.

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Setting the scene

Relevance – why do doctors need to know about breastfeeding?

What is your role as a doctor in supporting breastfeeding? You are very well-placed to have a positive impact through being supportive of a mother's decision to breastfeed. The bottom line is to do no harm, and harm can result from lack of knowledge. The bigger picture is the beneficial effect on public health of supporting women to start and continue breastfeeding (see [Chapter 3](#)).

Many studies have shown that babies fed on infant formula rather than breastmilk tend to have poorer health and developmental outcomes. Therefore it is important to protect breastfeeding, where that is a mother's intention. Yet in the UK that intention can often readily be undermined, for example by inappropriate advice or even casual comments, so breastfeeding can be a fragile choice. Having an understanding not only of how breastfeeding works physically, but also the psychosocial influences operating on mothers, can help to minimise the risk of undermining it.



© Photo by Paul Carter/ wdiip.co.uk

Some fascinating facts about breastfeeding

- Mammals are named after the mammary gland - used for feeding their young.
- Every mother's milk is unique.
- Human milk varies, always responding to the baby and the environment.
- A mother of triplets can produce enough milk for all of them.
- An adoptive mother can stimulate her breasts to produce breastmilk.
- Breastfeeding a child for several years is normal in many cultures.
- Malnourished mothers can still produce adequate breastmilk.
- Breastmilk is the most locally produced food there can be and its production has minimal impact on the environment.

In any area of knowledge, having a basic understanding is necessary for a person to know what they don't know – the known unknowns – and thus recognise the limits of their knowledge and skills. Providing information outside the limits of one's knowledge and skill is potentially damaging, and breastfeeding is no exception. There is no need to go beyond personal limits as there are specialists available all over the UK who can help with breastfeeding. These include health professionals like infant feeding specialists, breastfeeding counsellors trained by relevant charities, and international board certified lactation consultants (IBCLCs).

It is important that mothers who would benefit from skilled support with breastfeeding are encouraged to seek it. If they don't receive the help they need, and urgently, it can often be an emergency situation for the breastfeeding since babies need to be fed frequently. If breastfeeding is not going well enough, which often means there is a mechanical problem in that the baby is not transferring enough milk from the breasts or the mother is suffering pain, the mother is very likely to start using infant formula. While it is possible to revert to full breastfeeding, that is usually a challenging option, especially if the mother has switched to total formula feeding.

Doctors and other health professionals are sometimes faced with medical conditions in mothers and babies associated with infant feeding, such as mastitis, thrush and reflux. This book considers many aspects of breastfeeding – anatomy and physiology of lactation, health outcomes, psychosocial influences on mothers, composition of breastmilk, impact of birth, normal breastfeeding and the more common medical breastfeeding challenges. There is also guidance on how doctors can effectively support mothers who are breastfeeding ([Chapter 15](#)) and a list of useful resources ([Chapter 16](#)).

Key point:

'Doctors who are encouraging and knowledgeable about breastfeeding can have a significant positive impact.'

2

How does lactation work?

1. Breastfeeding naturally follows birth

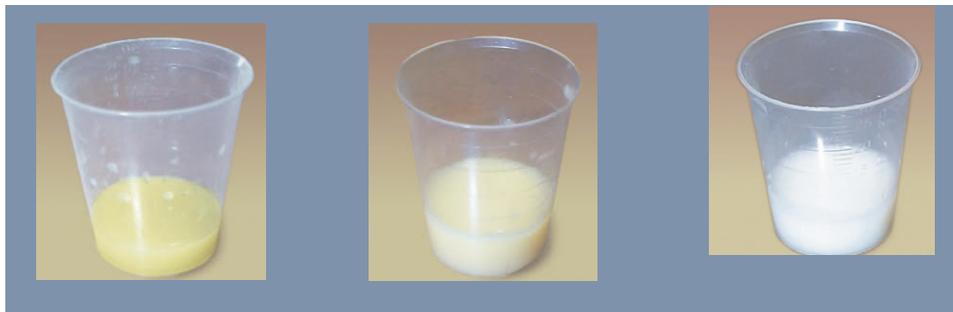
Physiologically, lactation follows pregnancy and birth. Growth of ducts and secretory cells in the breasts during pregnancy help to prepare them for lactation. When the placenta is expelled after birth, the accompanying drop in progesterone and oestrogen levels triggers milk production and secretion, whether the mother intends to breastfeed or not.

2. Anatomy

The term 'mammal' derives from the mammary glands such animals possess. It is hypothesised that the glands arose as part of the immune system to provide protection for the young. Although the focus with breastfeeding tends to be on providing nutrition, the immunological function is still very important.

Breasts comprise glandular (secretory) and adipose (fatty) tissue loosely supported on a framework of connective tissue (Cooper's ligaments) with blood vessels, lymphatic drainage and nerves. The 2nd to the 6th intercostal nerves supply the breasts and the 4th is particularly significant as it is the main route for nerve signals to the nipple and surrounding areola. During pregnancy the breasts develop under the influences of the hormones oestrogen, progesterone and prolactin; the blood flow volume to the breasts approximately doubles. This increased flow continues throughout the time of lactation and is associated with increased metabolic activity and breast temperature.

The secretory Montgomery's tubercles on the areola enlarge during pregnancy and are thought to have several functions – lubrication of the areola to protect against mechanical stress and pathogens and to communicate with the baby by odour. Although small amounts of the concentrated form of milk called colostrum are produced during pregnancy, the drop in levels of oestrogen and progesterone when the placenta is expelled after the birth triggers milk production. As a result, around Day 3 after the birth, the viscous, usually yellow, colostrum is diluted and the milk produced is white and fluid. While on Day 1 the baby may only take around 7ml at a feed, the volume needed now increases considerably, usually being 30-60ml by Day 7.

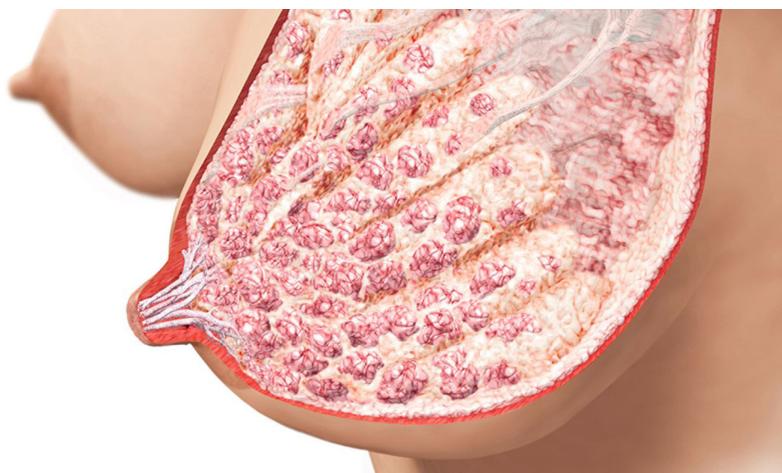


Colostrum, changing and mature milk

© Photographs by courtesy of Mothers and others Guide.

www.mothersguide.co.uk

The anatomy and physiology of lactation was overlooked for decades with the result that the model used until 2007 was based on the careful dissection work of Sir Astley Cooper in the 1840s in which he injected wax into the ductal system of deceased lactating mothers to show the structure ([Ramsay: 2005](#)). He found a branching arrangement with small ducts draining into main ducts which each ended at the nipple. Donna Geddes' ultrasound work ([Geddes: 2007](#)), showed that on average there are fewer main ducts than thought (only 4-14) and that the ducts are compressible so do not store much milk but widen temporarily as milk is transported down them. The ducts are intertwined like the roots of a tree and tend to be near the surface of the breast. The glandular, milk-producing tissue tends to be more in the forward part of the breast, including directly under the nipple. Larger breasts contain more fatty tissue.



Internal breast structure

Image, based on Geddes' work, © Medela

Diagram of the breast www.medela.co.uk

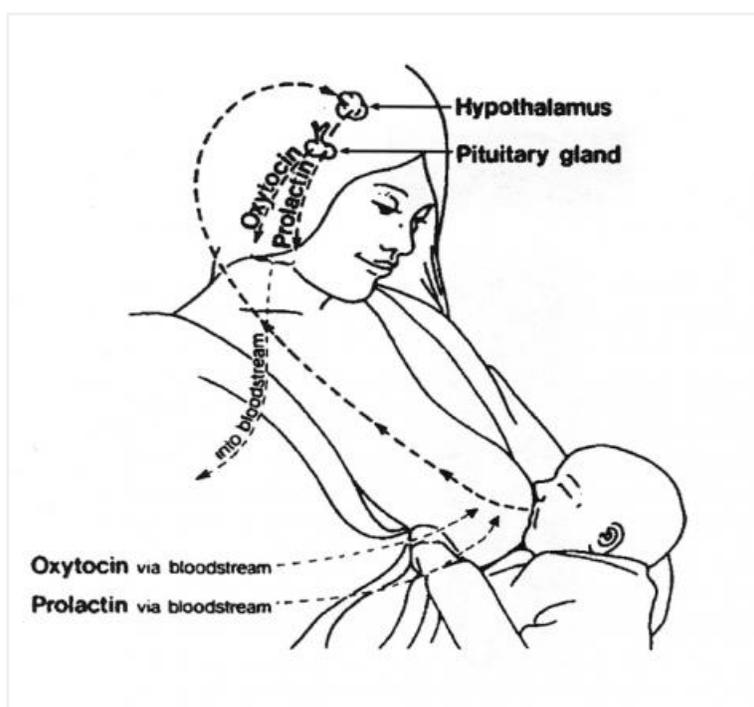
3. Normal physiology

3.1. Milk supply

The release of milk for the baby or for collection by expressing (the term for extracting milk by pump or manually) depends on the hormonal milk ejection (or letdown) reflex. Stimulation of the nipple triggers nerve signals to the hypothalamus, which signals to the posterior pituitary gland to release oxytocin.

This travels in the bloodstream to the milk-producing cells in the breast (the alveoli) where it causes the surrounding myoepithelial cells to contract, forcing milk into the ducts. There are normally several milk ejections in a breast during a feed although the mother may only feel the initial ones, if she does experience them at all. Milk ejection can be adversely affected by severe stress as adrenaline blocks it.

Adequate milk removal is crucial to maintaining the milk supply. During breastfeeding, the hormone prolactin triggers milk synthesis. As a breast fills, the binding of prolactin to its receptor membranes lessens and milk production slows. As milk is removed from a breast and the alveoli empty, there is more binding of prolactin and the synthesis rate increases. During the days following birth, prolactin receptors are primed (switched on). Lots of early effective breastfeeding results in many active receptors and that sets the maximum level of milk production high. However, if there is little effective breastfeeding in the early days, the maximum is set at a lower level, although it can still be sufficient.



Hormonal pathways

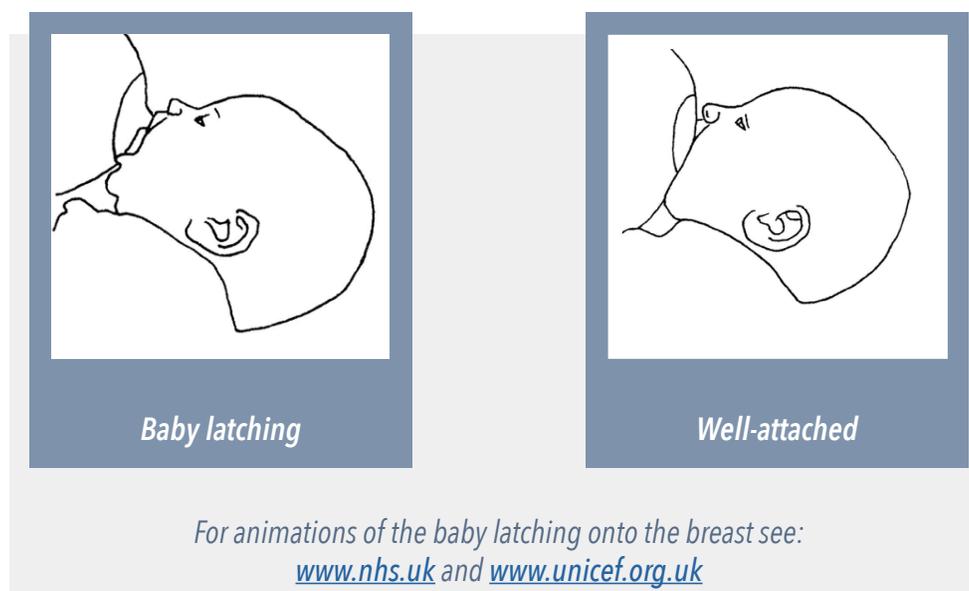
Image courtesy of the Australian Breastfeeding Association

www.breastfeeding.asn.au

In addition to the prolactin control mechanism, there is the Feedback Inhibitor of Lactation (FIL), a small protein which builds up in the alveoli as they fill with milk and slows down further production. Again, as milk is removed, the inhibitory effect lessens ([van Veldhuizen-Staas: 2007](#)). Once breastfeeding is established, FIL is the main factor determining the amount of milk produced. These two feedback mechanisms result in the milk supply responding to the baby's requirements, with the result that is possible for a mother to fully breastfeed twins, or even triplets.

3.2. Milk removal

In order to take the milk effectively it has been found that the baby needs to gape wide and take a large mouthful of breast. The nipple points towards the roof of his mouth, almost reaching the junction of the hard and soft palates. The baby's chin presses against the breast. The baby's nose is then sufficiently clear of the breast that he can coordinate breathing, sucking and swallowing. This constitutes effective attachment (latching).



The baby's tongue is crucial to breastfeeding. During breastfeeding, as the tongue moves downwards the pressure in the baby's mouth is lowered. The lowest pressure corresponds to the lowest position of the tongue and is the point at which milk released by the milk ejection reflex flows from the nipple into the baby's mouth ([Geddes et al: 2008](#)).

Biomedical engineer Professor David Elad tracked the positions of the nipple and tongue, frame by frame, in ultrasound videos. The up-and-down movement of the tongue follows that of the mandible (lower jaw). The anterior part of the tongue, which is next to the nipple and areola, moves up and down like a rigid body but the posterior part shows an undulating movement, necessary for swallowing (see: www.eng.tau.ac). Professor Elad created a biomechanical model which indicated that the pressure needs to oscillate in order to extract milk from the breast ([Elad: 2014](#)).

3.3. Ineffective attachment

The most likely reason for mechanical problems with breastfeeding is that the baby is not well enough attached at the breast. This results in poor transfer of milk from breast to baby and can lead to the baby having faltering growth (not putting on sufficient weight), feeds being long (often an hour or more) and frequent, and/or the mother having sore and damaged nipples. A baby who is not obtaining enough milk will tend to be miserable after feeds, soon showing feeding cues again, have scanty stools and put on little weight. In some cases the baby may sleep for several hours if not woken for feeds. And as the baby is not removing much milk, the mother's supply reduces. Skilled help with improving

the attachment can make a dramatic difference. It may also help increase the baby's intake enough if the mother expresses in addition to breastfeeding the baby. A baby who has lost a worrying amount of weight (usually over 10% of birthweight) unsurprisingly may not regain his birthweight until he is around three weeks old rather than the usual two weeks.

For damaged nipples, expressing a few drops of breastmilk and letting the nipples dry in the air, or using nipple creams can help with symptoms, speeding up the healing process and leading to softer scabs in wound healing, but it needs attention to the underlying cause of ineffective attachment to resolve the problem.

4. Structural interference - baby

Usually the mechanical process described above works very well, once the baby's mouth is wide and appropriately oriented to the breast, and provided the baby is able to coordinate breathing, sucking and swallowing. However, there are structural anomalies which can interfere.

4.1. Cleft lip or palate

A cleft in the lip or palate can make it harder to achieve the necessary pressure reduction in the mouth. For more information about clefts, see the website of the Cleft Lip and Palate Association (CLAPA). www.clapa.com

Babies with a cleft lip can normally breastfeed provided the mother uses strategies to seal the gap so that the baby can create suction in his mouth. Feeding is more challenging with a cleft palate and the mother may need to pump off (express) some of her milk and give it in a bottle for the baby to take enough, or hand express directly into the baby's mouth.

4.2. Tongue-tie

Some 4-11 per cent of babies have a frenulum (membrane under the tongue) that is tight and thus restricts the movement of the tongue ([Edmunds et al: 2011](#)). This is called tongue-tie (ankyloglossia) and was known to the Ancient Greeks. It is estimated that at least half of those babies manage to feed well enough that the tongue-tie does not need to be released to help the feeding.



A baby with a tongue tie
© photo by Kate via Flickr
[Creative Commons](#)

There are many images on the internet showing the variation in appearance, such as: [tongue-tie images](#)

However, it is function, not appearance, that is significant. A baby with a very noticeable tongue-tie, with the frenulum attached near or at the tip of the tongue, may manage to breastfeed well enough, yet a baby with a tongue-tie which is further back under the tongue and may even be scarcely visible, may struggle to feed. For photographs of tongue-ties with descriptions see: www.cwgenna.com

Tongue-tie can also make it harder for a baby to bottle feed but the impact tends to be greater for breastfeeding as that requires the tongue to be extended. For those babies in whom feeding is affected, a trained health professional carrying out the quick procedure of dividing the tongue-tie can result in a significant improvement in their ability to feed. Division is usually carried out by cutting the frenulum with scissors but a few dentists who offer division use laser treatment.

It is crucial that a practitioner skilled in helping with breastfeeding assesses the feeding before any decision is made to divide the frenulum because improvements to the attachment at the breast may be sufficient. Surgically treating a baby unnecessarily is highly undesirable. However, if skilled help does not resolve the situation and the baby cannot properly extend, lift or laterally move his tongue, a referral to a tongue-tie service is appropriate, preferably with minimal delay.

NICE guidelines on ankyloglossia were produced in 2005 ([NICE: 2005](#)) and state that limited evidence has shown tongue-tie division to be a safe procedure that can improve breastfeeding. Since then some further studies have been carried out, confirming the procedure is useful. The number of trained practitioners has increased considerably since then, and many, but not all, NHS trusts and boards provide a tongue-tie division service. There are also private practitioners available and they partly compensate for gaps in NHS provision, see (Association of Tongue-Tie Practitioners: www.tongue-tie.org.uk)

The main sign that the baby is struggling to extract enough milk from the breast is long and frequent feeds, although in some cases the baby cannot even manage to latch and suckle. Often there is pain and nipple damage for the mother. Sometimes temporary use of nipple shields until division is helpful. The mother may pump or hand express (squeeze out by hand) some milk to top-up feeds, which adds to the time needed for feeding her baby so she may feel she does little else. The baby can be offered milk in a cup or bottle, although with the latter there is a risk the baby may learn to prefer the bottle. If breastfeeding is too painful to bear the mother may rest her nipples and only pump or hand express. However, if she is not able to obtain enough milk, she will need to supplement with formula or may switch totally to formula-feeding, and is likely to feel very disappointed. Not dividing a tongue-tie that is having a significant impact on feeding therefore has negative health and emotional consequences.

Example

Natalie saw her GP because she was concerned about her perineal stitches. When the GP asked generally how things were going with her 2 week old baby, Natalie said it was hard because she also had pain in her nipples when breastfeeding and she didn't think she could keep going much longer, although she really wanted to breastfeed. She said the midwife had shown her how to hold the baby and help her latch on well, with her chin pressed against Natalie's breast, yet feeding was still painful. The GP noticed that the end of the baby's tongue looked heart-shaped and Natalie confirmed that she hadn't seen her baby extend her tongue beyond her lower lip. The GP suggested the baby may have a tongue-tie which was affecting feeding and strongly encouraged Natalie to attend the hospital's breastfeeding clinic for an assessment, explaining that division of a tongue-tie is a minor procedure available at the hospital if the assessment indicates that it would help.

4.3. Cranial tension

Another source of interference with feeding appears to arise because the mechanical forces on a baby's head during birth may lead to tension within the skull and pressure on nerves, such as those connecting head and stomach. Such forces on the skull are most likely when Ventouse suction or forceps are used. It may also arise if the baby is stuck in one position for a period of time. This can explain why some babies become distressed when they feed and others appear to have severe intestinal discomfort (often described as colic). Some breastfeeding specialists believe that body work, with a cranial osteopath or chiropractor, can help relieve such tensions. In anecdotal feedback from mothers some report a dramatic improvement in their baby. However, this is a controversial topic and other specialists are more sceptical and want to see more research-based evidence before considering the option.

A Cochrane Library meta-analysis ([Dobson et al: 2012](#)) found that such manipulative therapies were associated with less crying in babies with colic, but the association was only significant if the parents knew that the baby had received treatment. However, chiropractor Joyce Miller found that 93% of 72 mothers in a study of a joint midwife/ chiropractor clinic reported improvement in feeding after treatment ([Miller: 2016](#)). A Canadian study was published in 2016 in which a single osteopathic session was combined with lactation consultations for babies identified as having dysfunctional biomechanical sucking ([Herzhaft-Le Roy: 2016](#)). Half the 97 babies (average age 15 days) had a genuine treatment and half a sham one, from the same osteopath. The improvement in sucking in the treatment group was clinically significant.

4. Structural interference - mother

In a very few women, the breasts develop little glandular tissue (a condition called hypoplasia) so milk production is low. In these situations the breasts are widely spaced (at least 4cm apart) and may be tubular, often not changing during pregnancy. The impact of polycystic ovary syndrome (PCOS) on milk production varies hugely from mother to mother – it can be overabundant or low, and some with low supply have hypoplastic breasts ([Mohrbacher: 2010, p.765](#)).

Breast implants do not usually affect the functional tissue so breastfeeding is not affected. However, breast reductions involve cutting ducts and possibly nerves, interfering with the structural integrity of the milk-producing system of the breast. Some regrowth of ducts can occur and the mother can usually produce some milk but supplementation of feeds is necessary if there is insufficient milk for the baby's needs. The Breastfeeding After Breast Reduction (BFAR) website (www.bfar.org) is a source of information and support for mothers and a resource for health professionals.

Key points:

Lots of effective breastfeeding in the first two weeks after birth helps to set the potential for breastmilk production at a high level.

Effective breastfeeding requires effective attachment at the breast.

Breastfeeding and health

1. Health outcomes in the UK

Although deciding whether to breastfeed is an individual decision, the consequences at a population level are significant for public health. Public Health England (PHE) has produced infographics to illustrate the benefits to baby and mother in its commissioning guidance on infant feeding services: assets.publishing.service.gov.uk

The health outcomes evidence is compelling and cost savings to the NHS of increases in breastfeeding rates have been estimated ([Renfrew: 2012](#)). Unicef UK commissioned the report and concluded that 'This report shows that investment to increase and sustain breastfeeding rates will provide a rapid financial return on investment.' Also, 'Low breastfeeding rates in the UK lead to an increased incidence of illness in the UK that has a significant cost to the health service.'

For their **Category 1** outcomes, Renfrew's team found the research evidence to be robust enough to make quantitative estimates of cost savings. Category 1 includes four acute conditions for infants – gastrointestinal disease, respiratory disease, otitis media and necrotising enterocolitis (NEC) – and breast cancer in mothers. For a moderate increase in breastfeeding rates, an estimated £17million could be saved annually in the NHS.

Category 2 - narrative analyses indicate the scale and scope of the savings that could be possible for cognitive outcomes, early years obesity and Sudden Infant Death Syndrome (SIDS).

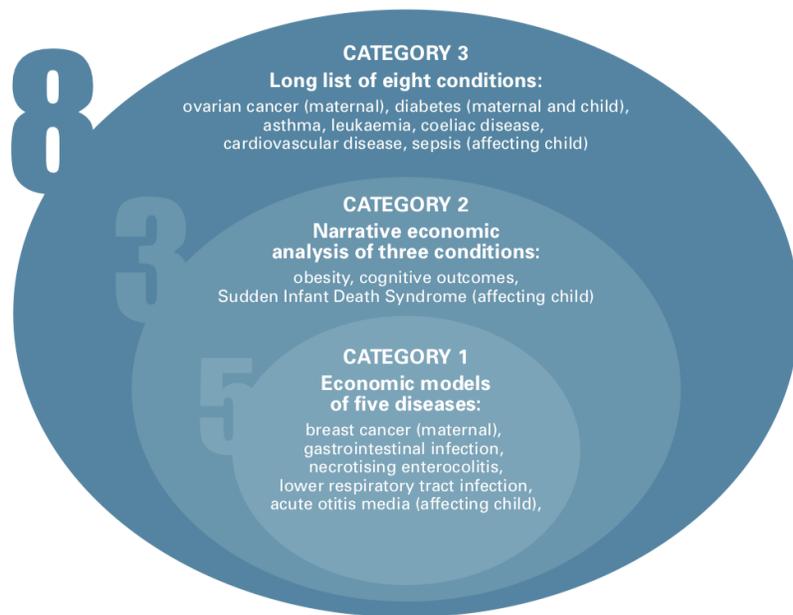
Category 3 – this comprises eight outcomes where the research data is insufficient for cost savings to be estimated so more research will be needed. It includes some costly chronic diseases:

For mothers – ovarian cancer and Type 2 diabetes.

For children – asthma, diabetes, leukaemia, coeliac disease, cardiovascular disease and sepsis.

Category 4 – a further 45 outcomes were identified where there appears to be a detrimental association with not breastfeeding.

Figure 1
Diagrammatic representation of the costs resulting from disease and developmental deficit resulting from low rates of breastfeeding in the UK (illustrative, not representative). Conceptually the costs estimated in section 4 are likely to be a small sub-set of the real NHS costs associated with low breastfeeding rates.



©Image courtesy of Unicef UK / www.unicef.org.uk

The Chief Medical Officer's 2012 Annual Report, *Our Children Deserve Better: Prevention Pays*, summarised the value of breastfeeding and the challenge of the current situation:

We know that breastfeeding is very important in promoting child health and is linked with fewer hospital admissions of infants for diarrhoea, vomiting and respiratory infections; less risk of sudden unexpected death in infancy; improved cognitive attainment; and a lower lifetime risk of obesity and diabetes. Additionally, there are benefits for the mother, such as improved breast and ovarian cancer survival.

Breastfeeding promotion is cost-effective for both the families themselves and society. Despite this knowledge, there are local authorities where the breastfeeding initiation rate is as low as 42% and those where it is as high as 94%. For breastfeeding at 6–8 weeks the range is 20%–83% (a four-fold variation).

([Chapter 2: p.7](#))

Since breastfeeding rates tend to be lower where the family has lower socioeconomic status, this exacerbates the existing health inequalities associated with such status.

In general, breastfeeding has a dose effect on health, with more breastfeeding associated with better outcomes. Receiving some breastmilk is better than receiving none, and exclusive breastfeeding maximises health advantages.

The high concentration of immunoglobulins (antibodies) in colostrum, the viscous first form of breastmilk present in the breasts during pregnancy and for the first few days after birth (sometimes referred to as 'liquid gold'), means that the early feeds are similar to vaccination, as recognised by the Lancet in 1994:

Immunisation is preventative medicine par excellence. If a new vaccine became available that could prevent 1 million or more child deaths a year and that was moreover cheap, safe, administered orally and required no cold chain, it would become an immediate public health imperative. Breastfeeding could do this and more...

(Lancet editorial 5 Nov.1994)

Turning briefly to the global situation, Save the Children's report in 2013, [Superfood for babies](#), estimated that 830,000 babies' lives could be saved annually (22% of newborn deaths) if all babies were breastfed within an hour of birth. This is in addition to the improvement in health and thus quality of life that continuing to receive breastmilk confers.

A special Lancet series ([Lancet: 2016](#)) on breastfeeding highlighted the health impact of not breastfeeding and the associated economic effect.

With all the evidence of better health outcomes with breastfeeding it would seem logical for the NHS to invest in skilled breastfeeding support to improve public health and lessen NHS costs. In 2006, the then-new NICE Postnatal Care guidelines stated: 'All maternity care providers (whether working in hospital or in primary care) should implement an externally evaluated, structured programme that encourages breastfeeding, using the Baby Friendly Initiative as a minimum standard.' ([NICE: 2014,1.3.3](#)). The Initiative, part of the Global Baby Friendly Hospital Initiative started by WHO and UNICEF in 1992, provides external accreditation for maternity units and community services which meet required standards of breastfeeding support. These standards include policies, training and audit, and it is the only such accrediting body. Yet, in the UK, the percentages of births taking place in fully accredited units were, by 2016 ([Unicef UK BFI: 2016](#)):

COUNTRY	% OF BIRTHS
England	52
Scotland	100
Wales	61
N. Ireland	100

England and Wales lag way behind Scotland and Northern Ireland.

Yes, there is a cost to implementation and being assessed, but it is an investment in public health. Unicef is a charity with no external funding so must cover its costs of assessing by charging for its services. Although the overall cost is several thousand pounds, for a maternity unit which has several thousand births a year that is perhaps only a couple of pounds per baby, and the gain for the babies is a high chance of improved health for life.

For more information about the global picture see [Chapter 14](#).

2. Taking care with language

Breastfeeding is often presented as an ideal to aspire to rather than the physiologically normal way to feed a baby. Using language such as 'the benefits of breastfeeding' or 'better health outcomes from breastfeeding' conveys that aspirational view. Yet, viewing breastfeeding as the physiological norm, and then comparing outcomes of formula feeding with breastfeeding as the norm, means using instead terms such as 'the risks of not breastfeeding' and 'poorer health outcomes from formula feeding'. Such terms can be upsetting for mothers who feel they failed at breastfeeding, and also for health professionals who are parents and have had or been close to such an experience. However, using the language of breastfeeding as normal is highly relevant to those who commission and provide services so that they regard breastfeeding outcomes as the benchmarks and are very much aware of the risks to public health if high quality breastfeeding support is not provided.

Key point:

Investing in skilled support for breastfeeding would save the NHS money.

4

Why do women breastfeed, or not?

1. Mothers' decisions

Much health promotion work can involve persuading people to change their behaviour. With breastfeeding, however, as indicated by the relatively high initiation rates in the UK (81% in the last, 2010, [Infant Feeding Survey – McAndrew et al](#)), many mothers are already motivated to do it so the challenge is to minimise the negative influences – the barriers - that prevent them from continuing. In some areas, though, the low initiation rates demonstrate there are barriers even to starting breastfeeding.

**BREASTFEEDING
CAN BE ENJOYABLE
AND SATISFYING**



©Photo by Kimberley Seals Allers/ mochamanual.com

2. Social and cultural influences

But do mothers make logical decisions based on the evidence when choosing how to feed their babies? The five-yearly Infant Feeding surveys (1975 – 2010) consistently showed that initiation rates increase with increasing maternal age, years of education and socio-economic status. Do these factors have a direct effect, or are they all markers for the influences of family, friends and the local neighbourhood? For a girl brought up in a family where breastfeeding is regarded as the norm, to do anything else might seem to be abnormal behaviour. However, for a girl brought up in a family where bottle feeding formula is the norm, she will need to be strong-minded, even rebellious, to opt for a different behaviour. People like to conform to perceived social norms and, perhaps particularly for young mothers, behaving in a way seen as acceptable by their peers can be very important.

Ethnicity is also relevant, with white mothers being least likely to breastfeed. Some religions and cultures are explicit about support for breastfeeding. The Koran is positive about breastfeeding and various cultures have supportive beliefs:

'Mothers may breastfeed their children two complete years for whoever wishes to complete the nursing [period].'

(quran.com)

'Breastfeeding is highly valued in Hindu and Jain Gujarati families, providing health, promoting perfect nutrition in pure white, God-given fluid for the new infant.'

([Spiro A: 2007](#))

From a historical perspective, breastfeeding was seen as the norm until artificial milk became widely available in the 20th century. It has often been represented in art as an everyday activity but also as being powerful, as in Rubens' *Origin of the Milky Way*:



Rubens 'The Birth of the Milky Way'
Prado Museum, Madrid/ www.museodelprado.es

3. Media

As well as the local social and cultural influences described above on whether mothers initiate and continue breastfeeding, there is likely to be a broader cultural influence, in particular through the media. Articles which describe how a mother, often a journalist, felt pressured to breastfeed and which include upsetting experiences of breastfeeding may have a negative effect on mothers' decisions. While new mothers are likely to find the experience of breastfeeding a baby less of a shock if they have realistic expectations about it, negative stories may undermine their confidence. A positive yet realistic approach is needed.

Perhaps if the media could present breastfeeding as unremarkable yet valued, mothers would be more likely to feel supported to continue. Those around the mothers, their significant others, who have negative views of breastfeeding may even feel more accepting if they see that society values breastfeeding.

4. Fear of feeding out and about

How do mothers feel about breastfeeding when out and about in the UK? On the positive side there has been legal protection from harassment in Scotland since 2005 and in England, under the Equalities Act, since 2010. In reality, many mothers do breastfeed in public. However, some mothers feel very apprehensive about breastfeeding out and about, not knowing whether some people might react adversely, resulting in them feeling embarrassed and perhaps even ashamed. Some mothers use covers and others use a bottle to cope with the uncertainty. If they do not have expressed/pumped breastmilk available will use formula, rather than breastfeed directly. For some mothers with unsupportive families, the experience of feeding in the home can be like feeding in public.

This is very different from the attitude to [breastfeeding in Mongolia](#), as described by Canadian-born [Ruth Kamnitzer \(2009\)](#), who lived there for three years:

When I breastfed in the park, grandmothers would regale me with tales of the dozen children they had fed. When I breastfed in the back of taxis, drivers would give me the thumbs-up in the rearview mirror and assure me that Calum would grow up to be a great wrestler. When I walked through the market cradling my feeding son in my arms, vendors would make a space for me at their stalls and tell him to drink up. Instead of looking away, people would lean right in and kiss Calum on the cheek. If he popped off in response to the attention and left my streaming breast completely exposed, not a beat was missed. No one stared, no one looked away - they just laughed and wiped the milk off their noses.

Contrast the Mongolian attitude with this quote from a mother in a disadvantaged area of London ([Islam: 2014](#)):

I come from a really anti-breastfeeding background, my immediate family, my parents and my siblings kind of look down on breastfeeding and it shouldn't be done in public.

[Amir \(2014\)](#) describes the ambivalence in western societies such as the UK. For the product, breastmilk, there is a conflict between whether it is viewed as pure, like tears, or as dirty, like the bodily fluids sweat and urine. In addition, the producer, the mammary gland, may be viewed both as a source of nutrition and comfort or as a sexual organ, the latter not to be displayed in public, with an assumption that it must be one or the other, not both. This ambivalence is evident when Page 3 photos of topless models are seen as acceptable but breastfeeding in public is not.

Despite the 2010 Equality Act, in December 2014, new mother Louise Burns was asked to cover up with a large napkin when breastfeeding her 12 week old daughter:



Photos by Lou Burns/ www.bbc.co.uk

The napkin probably drew more attention than the fact that she was breastfeeding!

It is hardly surprising then that some UK mothers feel apprehensive about whether there will be a reaction if they breastfeed in public and, if there is, what that reaction might be.

5. Promotion of breastmilk substitutes

Infant formula is a necessary product for those babies whose mothers are not breastfeeding. First stage milks are suitable to 12 months and after that the baby can have full fat cows' milk. However, the aim of commercial promotion is to increase sales. Follow-on formula milks are marketed for babies over 6 months but are unnecessary. Adverts for follow-on milks incorporate text and visual messages that imply that breastfeeding is short-term and difficult, thus undermining confidence in breastfeeding and encouraging the use of formula. While it is legal in the UK to promote follow-on milk, it is illegal to promote first stage formulas. The companies often circumvent this distinction by making adverts unclear about the age of the baby, thus in effect promoting first stage formulas. The Advertising Standards Authority has upheld some complaints, but damage to maternal confidence may already have occurred by the time an advert is withdrawn.

A typical supermarket display

Can you tell the different stage formulas apart?



Photo by Patricia Wise

Advertising is not the only form of promotion. Special offers on formula by retailers are illegal in the UK yet do occur. Company leaflets do not provide independent information and indeed in effect advertise the brand or company name.

Other forms of promotion include sponsorship and free gifts. People like to believe they will not be influenced but being funded to attend a conference or receiving free refreshments is likely to engender a sense of loyalty to the company which conflicts with the commitment to objective help for the best interests of patients or clients. There is thus a conflict of interest. This is not only important for the practitioner's own ethical stand but in how it is perceived by others. For example, a health professional using a free pen marked with a formula company logo may be perceived by a mother as endorsing that company's brands and as signifying that the health professional does not really support breastfeeding.

For more about the baby milk issue, the International Code and avoiding conflicts of interest see [Chapter 14](#).

6. Psychological influences

Everyone has psychological influences at work on them. For example, the UK Infant Feeding surveys have shown that more mothers initiate breastfeeding with a first baby than a later baby. Breastfeeding a first baby for more than six weeks is associated with a high initiation rate for the second baby whereas breastfeeding the first for less than six weeks is associated with a much lower rate. In the latter situation, it is likely that the mother feels safer not even trying breastfeeding with the next baby so that she avoids risking pain and disappointment.

A mother's confidence is a crucial factor with breastfeeding, both confidence in the process generally and in her own ability to succeed. Behaviour change theory uses the concept of self-efficacy, which comprises an individual's expectancy that she can act and persist in that action, plus a belief in her ability to bring about the

desired outcome. If her expectancy is high, she will put more effort into mastering the behaviour and persist for longer. Four ways have been identified that seem to increase self-efficacy ([Bandura: 1994](#)) and the examples added are relevant to breastfeeding:

- performance accomplishments – the more times a mother breastfeeds in a way that feels successful to her, the more confident she feels in her ability
- vicarious experience – positive stories, seeing other mothers breastfeeding, role play with dolls in antenatal sessions
- verbal persuasion – encouragement from others, although without her feeling pressurised
- understanding of physiological states – e.g. severe stress may interfere with the breasts releasing milk so a mother can help herself by deliberately trying to relax

Thus if the breastfeeding ‘performance’ is not going well, the mother’s confidence is likely to decline. Negative stories and verbal discouragement from significant others can have the same effect. For example, advice to give a bottle is likely to be discouraging and lead to the mother believing she has not been feeding successfully. Similarly, comments that suggest the baby should be sleeping for hours at night are out of touch with real baby behaviour and can lead to the mother feeling inadequate. Swansea University’s animation [“Should babies sleep through the night?”](#) addresses this (College of Human and Health Sciences: 2016)

Self-efficacy helps to explain why some mothers are willing to persist despite great difficulties, like severe nipple pain, while others appear readily to switch to formula feeding, despite having a goal to breastfeed.

7. Availability of skilled and social support

The 2006 NICE Postnatal guidance stated clearly under the subheading A supportive environment for breastfeeding (and reiterated in the 2014 revision):

‘Breastfeeding support should be made available regardless of the location of care.’

and ‘All maternity care providers (whether working in hospital or in primary care) should implement an externally evaluated, structured programme that encourages breastfeeding, using the Baby Friendly Initiative as a minimum standard.’

The Unicef UK Baby Friendly Initiative is the only relevant programme. In January 2019 in the UK, 61% of maternity units and 65% of community (health visiting services) were fully accredited. 91% of maternity units and 89% of health visiting services were working towards accreditation ([Unicef UK BFI: 2019](#)). Yet NICE had described accreditation as the minimum standard in 2006 and thirteen years later 9% of maternity units and 11% of health visiting services were not even on the ladder leading to it!

The NICE guidance refers to a minimum standard so NHS staff who work with mothers and babies have a basic level of skill and knowledge. However, there are also breastfeeding specialists available as some situations are more challenging. Many maternity units and community trusts have an infant feeding lead. Lactation consultants (IBCLCs) are professionals and may be in private practice or employed by the NHS. There are several charitable support organisations which train mothers as breastfeeding counsellors. The counsellors are very knowledgeable and trained in skilled use of listening and counselling skills. The national organisations are ABM ([Association of Breastfeeding Mothers](#)), BfN ([the Breastfeeding Network](#)), LLL ([La Leche League](#)) and NCT ([formerly the National Childbirth Trust](#)).

BREASTFEEDING SPECIALISTS

ROLE TITLE	PREREQUISITES	SPECIALIST TRAINING/ QUALIFICATION	NATURE OF ROLE
NHS Infant Feeding lead/ coordinator	Normally a midwife or health visitor	None required but may have	Coordinates, trains other staff and supports individual mothers in a maternity unit or NHS community trust area
IBCLC (International Board-Certified Lactation Consultant (IBCLE: 2013-16))	Relevant health professional or breastfeeding counsellor meeting requirement for many clinical practice hours and preparatory study	Internationally accredited exam and recertify every 5 years; CPD requirement	Specialist in the clinical management of breastfeeding
Voluntary sector breastfeeding counsellor (ABM, BFN, LLL, NCT)	Mother with several months of personal experience of breastfeeding	Organisation's training course, approximately 2 years part-time, externally validated for BFN and NCT:CPD requirement	Mother-to-mother support using listening/ counselling skills and offering evidence-based information
Peer supporter	Mother with personal experience of breastfeeding	Short training of 8-12 weekly sessions, provided by voluntary organisation or NHS	Offer primarily mother-to-mother listening and social support as part of a local peer support scheme

The length of time for which a mother breastfeeds (duration) depends on her intention, self-efficacy and social support (adapted from [Meedya: 2010](#)). Supportive friends and relatives have always been important but, over the last fifteen years, organised social support has become more widespread in the form of breastfeeding peer supporter programmes. Peer supporters have a good basic understanding of breastfeeding. They act as approachable role models, can provide basic relevant information and signpost to more skilled services where needed. In areas of low rates their support may help to challenge the patterns of infant feeding that are repeated from one generation to the next.

There are also regular breastfeeding support drop-ins in many areas, some commissioned under the Baby Cafe scheme (run by the charity NCT), which provide social support as well as skilled help with breastfeeding (www.thebabycafe.org).

Apps can be very helpful, such as the Baby Buddy app developed by the charity Best Beginnings to provide tailored information and a virtual companion. The app is aimed at parents of all ages and backgrounds, including young parents and those for whom English isn't their first language. It's available on the NHS app store and endorsed by many organisations, including RCPCH, RCOG, RCPsych, RCM, CPHVA, iHV and RCLST.

However, many areas do not have a peer supporter programme or drop-ins and breastfeeding mothers can feel isolated and alone, especially in places with low breastfeeding rates. An app avatar can help greatly but is not a replacement for real people.



©NCT- used with permission/
www.thebabycafe.org



Image courtesy of Best Beginnings
www.bestbeginnings.org.uk

8. Challenges in nurturing a baby

8.1. Normal behaviour

The normal behaviour mammals show in caring for their young is linked to the composition of the milk they produce ([Mohrbacher: 2010](#)). Cache mammals like seals and rabbits leave their young in a safe place (the "cache") for up to 12 hours at a time and their milk is high in fat and protein. Follow mammals, like

calves and giraffes, have offspring which are born mature enough to walk after their mothers, so feeds are more frequent and milk lower in fat and protein. Nest mammals, such as the cat and dog, return to their offspring's nest frequently so their milk is also lower in fat and protein.



Baby rabbits in cache

*Photo credit: Andre Mouraux
via Flickr Creative Commons*

Quite different from the cache category are the carry or continuous contact mammals, like apes and kangaroos. Their young are the most immature at birth and are carried constantly so are kept warm by the mother's body. Their milk is the lowest in fat and protein so the babies need to feed very frequently. Humans are apes so are carry mammals. Also, for most mammals, the newborn's brain is about 80% of the adult size but the brains of newborn humans are less than half adult size so most brain growth occurs after birth.

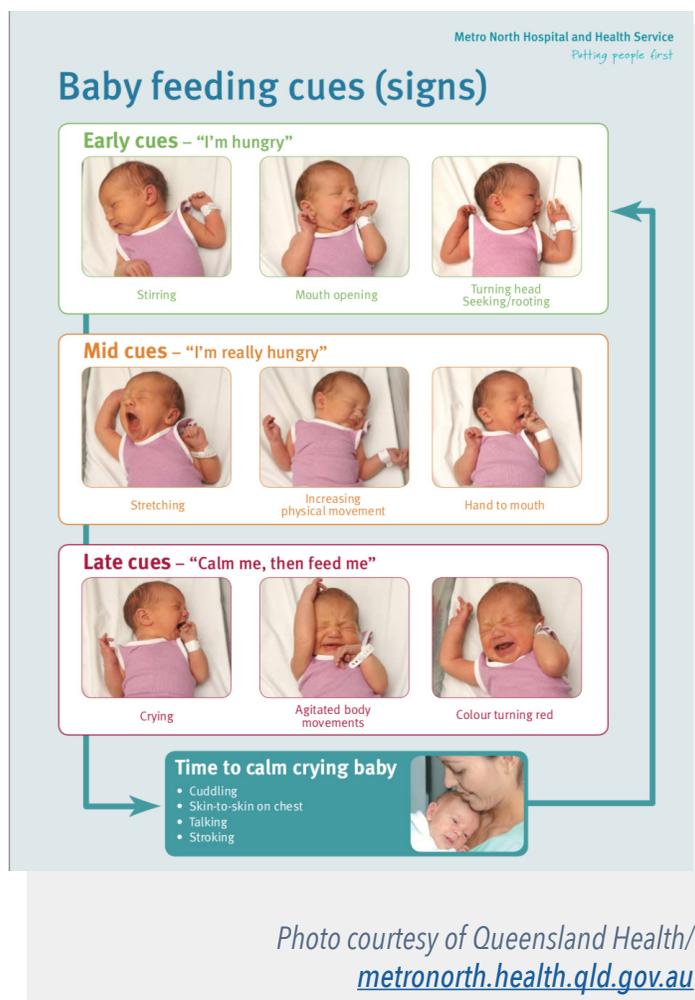
Does a first-time human mother know what is normal baby behaviour? Some new mothers have had little or no prior contact with babies. If the mother does not know that human babies are frequent feeders, she may interpret the behaviour of a baby who breastfeeds every couple of hours as abnormal and indicating that she is not producing enough milk. In terms of self-efficacy, her performance does not feel successful. In fact, the baby is feeding frequently to ensure he obtains what he needs and this is normal behaviour.



Nursing baby gorilla and mama

*Photo by Patrick Bolger
@ Dublin Zoo/ zooborns.typepad.com*

Expectant parents often assume that a baby signals hunger (and other needs) by crying. Actually, crying is a late signal and if the parents can respond to the baby's earlier cues, the situation is much easier for the whole family. Crying raises a baby's stress hormone levels and the baby normally then needs to be calmed down before he can latch on well.



Other normal behaviour which parents can find worrying includes cluster feeding, in which the baby wants to feed very frequently for several hours, often in an evening. Appetite spurts (also known as growth spurts), during which a baby can seem almost insatiable for a couple of days, anecdotally often occur around 3, 6 and 12 weeks postpartum. Mothers can worry that their milk supply is dwindling around 6 weeks after the birth because their breasts feel softer but that is normal. In some cases, the mother tends to overproduce in the early weeks, as though her body had been primed for twins, and by 6 weeks the milk supply is likely to have adjusted downwards to meet the requirements of one baby.

Example

When Sarah saw her GP for her 6 week postnatal checkup, she was worried that she was not producing enough milk, saying that her baby was feeding all the time. The GP asked how feeding had been going since birth and Sarah explained that she thought it had been going well until two days before, when her baby started feeding every hour or two, including at night. The GP explained to Sarah that such changes are common around 6 weeks with the very frequent feeding usually only lasting for a couple of days. She presented the situation differently by pointing out that the baby was making sure he was obtaining enough milk by feeding frequently, thus encouraging Sarah to trust her baby’s instincts. The GP also suggested Sarah attend a local breastfeeding support drop-in for ongoing support.

Parental anxiety may be linked to the baby's stools. Seeing the tarry black meconium in a nappy produced in the first couple of days after birth can be a shock to unprepared new parents. While stooling daily, and usually at least twice a day, in the early weeks is normal, from around 6 weeks postpartum some breastfed babies become super-efficient and only stool once every few days, or even once a week! This is not constipation, which is highly unlikely in a breastfed baby anyway, because the stools are still soft and yellow. Occasional green stools indicate that the milk has passed through the intestines relatively quickly, and in the absence of other symptoms, are unlikely to be significant.

The contents of the nappies are a very useful guide for parents and professionals. Copious stools and urine indicate plenty of milk has been taken in. The NCT's *What's in a nappy?* information sheet provides real-life colourful illustrations:



In the first couple of weeks after birth, many babies are more wakeful at night than during the day, a pattern which parents can find a real shock. Viewing the situation as like doing night shifts can help some mothers be more willing to compensate for the short spells of sleep at night by taking naps during the day.

8.2. Expectations around infant sleep

In western societies it was normal for mothers and babies to sleep together until the 20th century and it is still the norm in many cultures today, such as Japan. Babies in close proximity to their mothers attach themselves to the breast and the mother may barely wake. Professor Helen Ball's anthropological research at the University of Durham showed that mothers who are breastfeeding naturally adopt a protective curve around their baby and place the baby at breast level (see How Parents Bed-Share, (www.basisonline.org.uk))

However, during the 20th century, cultural norms shifted, led by assumptions about caring for babies at night that were not based on evidence, towards separation of mothers and babies, and a belief in encouraging independence. Now it is recognised that independence is best enabled by responding sensitively to the infant's needs. Mothers acquire expectations from family, friends and wider society, and if these are that babies will sleep in the evening, be willing to be put down on their own in a crib, and have few feeds at night, actual infant behaviour is likely to be perceived as problematic.

There are very real concerns about smothering and Sudden Infant Death Syndrome (SIDS) in co-sleeping and indeed, sleeping with a baby on a sofa is risky as the baby may become trapped. Also, western beds and bedding are not designed with co-sleeping in mind. In reality, most mothers in the UK share their bed with their baby at least occasionally. It is therefore essential that any bedsharing is planned so that potential risks are minimised. The Lullaby Trust (www.lullabytrust.org.uk) provides guidance on safe sleeping, BASIS (www.basisonline.org.uk) has very useful information and Unicef UK provides specific guidance for parents in the leaflet *Caring for your baby at night*. (www.unicef.org.uk)

Place of sleep decisions involves balancing a behaviour that has evolved over millions of years and enables easy breastfeeding with current cultural expectations and equipment.

8.3. Crunch points

As well as variations in intention, self-efficacy and social support, there is considerable variation in the feeding challenges mothers face. Former GP [Dr. Pat Hoddinott \(2012\)](#) identified that there can be crunch points on a mother's breastfeeding journey at which she faces a dilemma between idealism and realism. Her ideal would be to continue breastfeeding but the reality is that it requires too much from her. There may be conflicts with family needs, for example if she feels that breastfeeds are taking a long time. Restoring family well-being by stopping breastfeeding or introducing solids is a more immediate goal than the long-term benefits of breastfeeding. Skilled support to enable breastfeeding to be more effective and to consider how family demands could be managed better is likely to help the mother make her ideal a reality.

The Infant Feeding surveys showed that the reasons mothers give for stopping early include sore nipples, feeds taking a long time and baby not satisfied, all of which can be linked with the baby not being well enough attached at the breast. The mother experiencing pain may feel she does not have the stamina to cope with such pain perhaps ten times a day for an unknown length of time. At every feed she may be making the decision as to whether to continue breastfeeding or not. Stopping breastfeeding resolves the uncertainty. Significant others may urge the mother to stop because they assume that will help her or it may be to relieve their own distress at seeing her, instead of helping her resolve the breastfeeding difficulty.

Thus for a mother who is finding breastfeeding a challenge, skilled help with how the baby latches at the breast and accurate information about normal baby behaviour can make a huge difference to how well she copes and boost her confidence.

Yet, even two mothers with apparently the same situation, for example the baby putting on weight relatively slowly, can experience the situation differently, and finding out her perceptions is crucial, so listening carefully to the mother's story is the first step in effective helping.

9. Assessing how breastfeeding is going

An open question from a health professional such as "How is the feeding going?" may be sufficient for the mother to describe the situation. Following this by asking some specific questions helps to clarify details such as the baby's age, frequency of feeds, whether the nappy contents are plentiful, any nipple or breast pain and the mother's worries. If the baby's behaviour seems to be in the standard range and the mother does not have any symptoms such as nipple pain, it is likely to be sufficient to normalise the situation, and that has the bonus of boosting the mother's confidence. If it seems that the baby is not obtaining enough milk or the process results in pain for the mother, the health professional needs to encourage the mother to seek skilled help to improve the latch.

10. How to be supportive

Swansea University has produced a video animation [How you can help support a breastfeeding mum...](#) that lists some of the barriers and also describes how individuals can help, while making the point that creating a supportive environment is everyone's responsibility.

Example

When Anita took her 12 month old baby, Florence, to the surgery because she was unwell, Florence was upset. The GP asked whether Anita breastfeeds and then suggested she feed Florence while he carried out various checks such as taking her temperature and pulse and listening to her chest. He then commented to the more junior doctor who was present how much easier it is to check over a little one while they are breastfeeding, especially if they are upset. Anita felt really supported.

Key point:

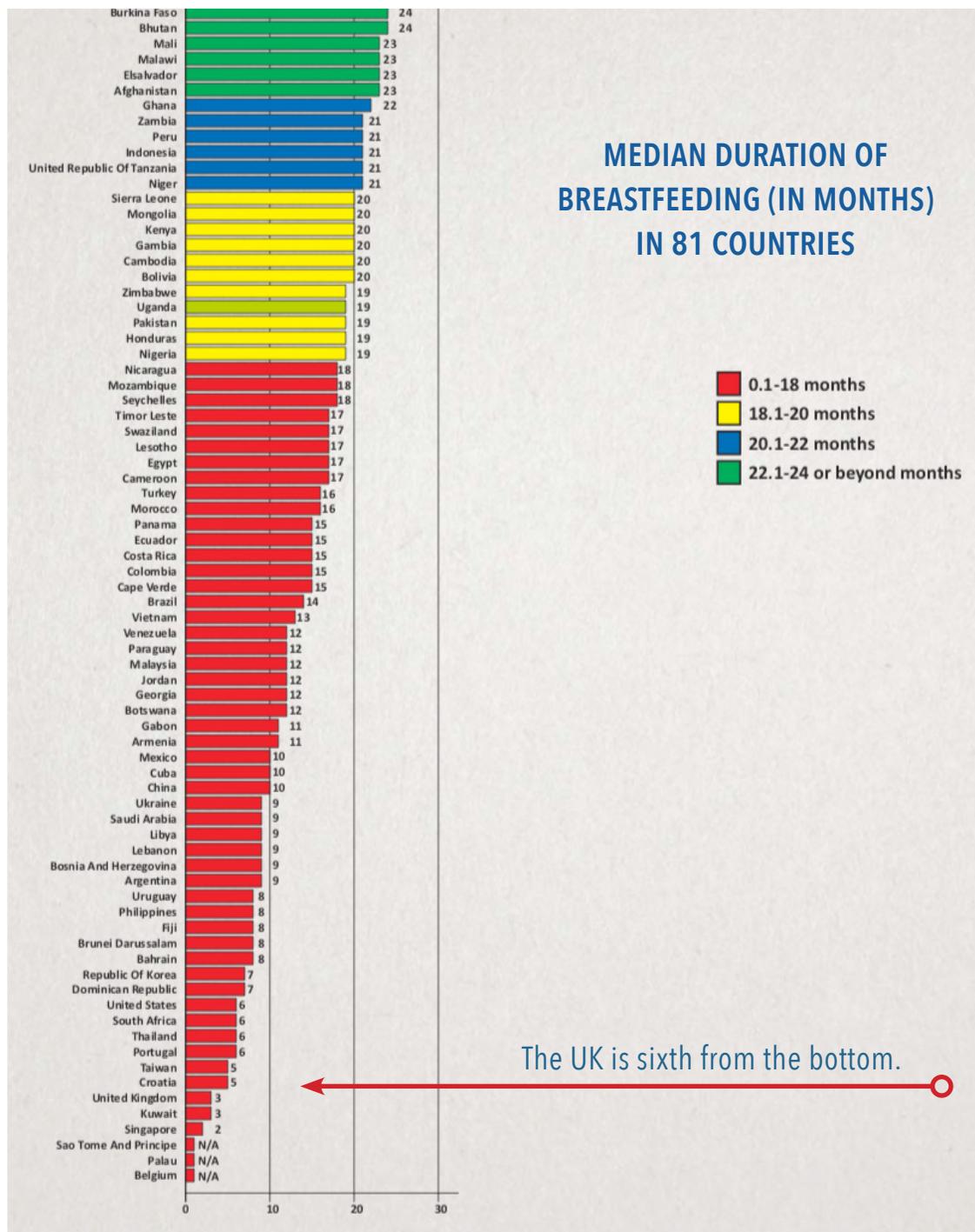
There are many influences on a mother's decision-making and negative influences undermine a mother's intention to breastfeed.

How do we know the situation?

1. UK breastfeeding rates

Data on breastfeeding rates and analyses of trends in the different countries of the UK are available from the five-yearly surveys commissioned by the Department of Health from 1975 to 2010. These surveys collected data on samples of mothers from different socioeconomic groups and then analysed trends. Without accurate data it is impossible to know whether rates are changing, and how, and whether any initiatives are having an impact. Reliable data collection thus needs to underpin breastfeeding support.

Although the media can tend to portray UK mothers of infants as either breastfeeders or formula feeders, in reality the vast majority do both. Over 90% use infant formula at some stage, either concurrently (mixed feeding) or consecutively. The UK's breastfeeding rates are among the lowest in Europe, and rates in Europe and the USA are among the lowest in the world. A World Breastfeeding Trends Initiative ([WBTi](#)) comparison of 81 countries illustrates the range. In terms of the median duration of breastfeeding (the age in months at which 50% of the infants are no longer breastfed) the UK is close to the bottom of the chart at 3 months, with the longest duration shown being 30 months (the WBTi UK report had to use 2010 data).



From WBTi 84 country report (2008-2016) p.78' www.worldbreastfeedingtrends.org

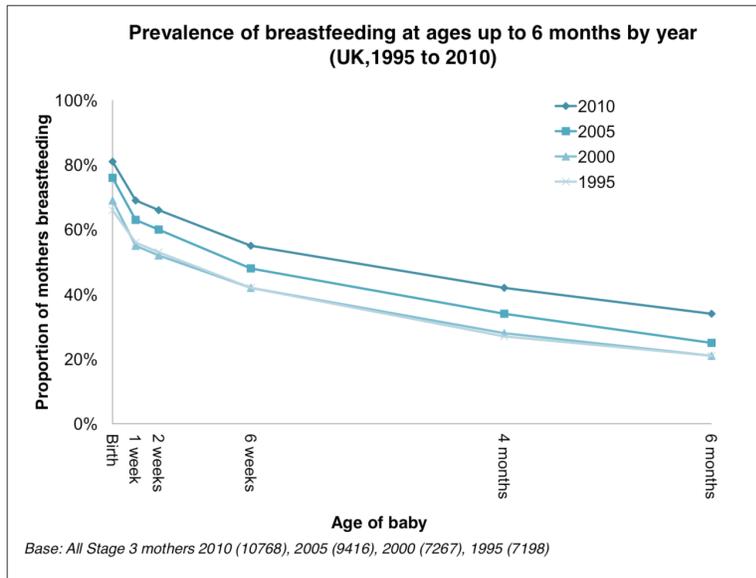
The UK initiation rate of 81% in the last Infant Feeding Survey ([McAndrew et al: 2010](#)) strongly suggests that four out of five UK mothers would like to breastfeed.

The World Health Organisation and UK Departments of Health recommend that babies are exclusively breastfed for around the first six months after birth, and that breastfeeding is then continued alongside solid foods, yet only 34% of UK babies receive any breastmilk at all at 6 months and only 1% are exclusively breastfed at this age ([McAndrew et al: 2012](#)). Thus there is a huge mismatch between recommendation and reality.

Although the breastfeeding rate at any given age of infant gradually increased from 2000 to 2010, the pattern of decline, steepest soon after birth, remained

the same, as shown by the graph below, which compares prevalence of any breastfeeding at different infant ages for the last four surveys.

Figure 2.7



Prevalence of breastfeeding at ages up to 6 months by year (UK, 1995 to 2010)

Fig 2.7, 2010 Infant Feeding survey p42/ files.digital.nhs.uk

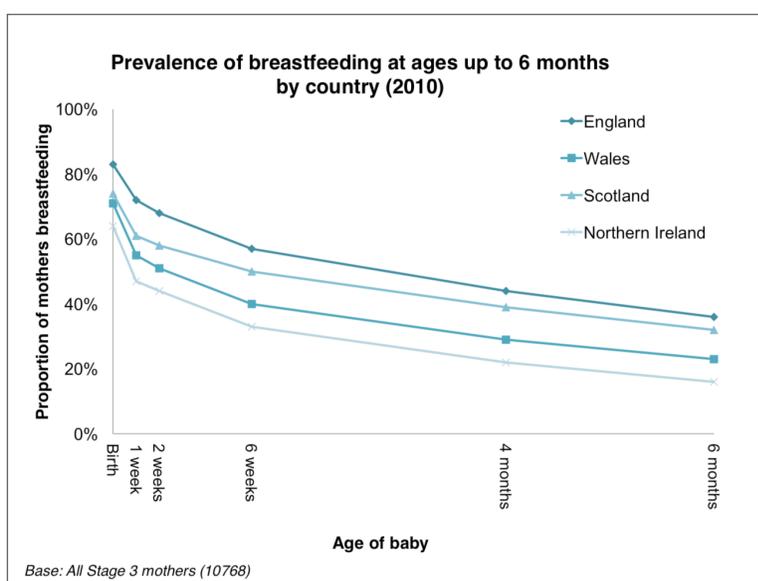
Source: Health and Social Care Information Centre (NHS Digital)

Contains public sector information licensed under the Open Government Licence

2. UK norms

Humans are mammals, named for their ability to produce milk for their offspring. Thus breastfeeding is the physiological norm. Yet, at a point soon after 6 weeks postpartum, fewer than half of UK babies were receiving any breastmilk at all according to the 2010 survey. Formula feeding in effect becomes the cultural norm as breastfeeding mothers then become a minority group. There are significant differences between the countries of the UK, as shown below by the prevalences up to 6 months in 2010:

Figure 2.6



Prevalence of breastfeeding at ages up to 6 months by year (UK, 1995 to 2010)

Fig 2.6 (2010 Infant Feeding Survey) p41/ files.digital.nhs.uk

Source: Health and Social Care Information Centre (NHS Digital)

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COUNTRY	INFANT AGE AT WHICH LESS THAN HALF THE MOTHERS ARE BREASTFEEDING AT ALL
England	around 3 months
Scotland	6 weeks
Wales	2 weeks
Northern Ireland	5 days

*Median duration of breastfeeding in the countries of the UK
(Based on data in Table 2.11 of the 2010 Infant Feeding Survey)*

3. Data collection

The last 5-yearly UK-wide survey was in 2010. As health is a devolved matter, each country of the UK decides what data to collect. Scotland chose to run its own maternal and infant nutrition survey in 2017 ([Scottish government: 2018](#)).

From 2003-4 there was a quarterly submission by PCTs (Primary Care Trusts) of breastfeeding initiation statistics, and also since 2008-9 collection of prevalence data at 6-8 weeks, for the Department of Health (DH) in England. In 2013, PCTs were replaced by Clinical Commissioning Groups (CCGs) and overall responsibility for the birth data transferred from the DH to NHS England and for 6-8 week data to Public Health England; publication is by NHS Digital. Local authorities are responsible for collecting the 6-8 week data and reporting is voluntary. Data needs to be collected from more than 95% of the relevant mothers to be considered valid and therefore published. Because not all areas achieve the 95% coverage there are gaps in the overall picture.

Public Health England reported an average initiation rate in 2016-7 of 74.5% for those NHS Trusts submitting valid data ([PHE: 2018](#)). This was the average of a huge range, from 48.4% of mothers starting to breastfeed in Knowsley, Merseyside, so those mothers were in a minority from birth, to 96.7% reported for Newham, London. This average initiation rate, at 74.5%, was lower than the 83% for England found in the 2010 survey, so there is a sizeable discrepancy between the population data collection and the sampling approach of the survey. What has been consistent throughout the period of collection is the huge variation in rates between areas.

With regard to continuation, for 2018 the overall prevalence at 6-8 weeks was found to be 47%, lower than the 55% of the Infant 2010 Feeding Survey. Among the 73 (out of 150) local authorities with valid data, the lowest prevalence was Redcar and Cleveland at 20% and the highest prevalence for Tower Hamlets (London) CCG at 93%; again, a huge range ([PHE: 2019](#)).

	INFANT FEEDING SURVEY (2010)	POPULATION DATA (COLLECTED LOCALLY) 2018
Initiation rate (%)	83	74 (range 35-93)
Prevalence (6-8 wks) (%)	55	47 (range 20-93)

The existence of data collection for NHS England was a reason given by the Department of Health for the cancellation of the 2015 Infant Feeding Survey. Yet the above discussion illustrates the system is not yet reliable enough and there are only two data points. Also, there is little quantitative analysis of the data and no qualitative analysis, unlike the 5-yearly surveys.

The statistics given above illustrate the difficulty of collecting accurate data but the pattern of rapid drop-off in breastfeeding rates in the first few weeks after birth, both for exclusive and partial breastfeeding, is clear. This drop-off is largely not intentional. Two-thirds of mothers stopping by the end of the 2010 survey (baby 8-10months old) and four out of five stopping in the first week would have liked to breastfeed for longer, so behind the data lies a great deal of disappointment, guilt and often feelings of failure. (files.digital.nhs.uk)

Key point:

Most new mothers in the UK want to breastfeed yet rates drop rapidly in the first days and weeks after birth.

What does breastmilk contain?

1. Nutritional components

What is in breastmilk? It is a complex living fluid which provides the basic nutritional components of fats, sugars, proteins, vitamins and minerals. The relative proportions of these vary with the mother, baby's age and time of day. Thus breastmilk is not only specific to a species but unique to a mother, and unique for her at each point in time. In contrast, a particular infant formula always has the same composition, if made up correctly, except that the concentrations of the vitamins tend to be slightly high when the formula is fresh and drop as the formula ages and they deteriorate ([Crawley & Westland: 2019, p.24](#)).

Breastmilk has been found to contain over 250 components. Some of the components and breakdown products of food the mother has eaten pass directly from her bloodstream into the alveoli of the glandular tissue of the breasts while other molecules are synthesised in the alveoli.

The uniqueness and complexity of breastmilk is like that of blood. Artificial forms of blood have focussed on one of its functions – carrying oxygen. Infant formula is a mix of only 30-40 constituents, adequate to meet one function of milk - nutrition. However, the specific fats and proteins are different in breastmilk and formula as the latter is manufactured from non-human milk, usually cows' milk; this means that babies fed on breastmilk and on formula incorporate some slightly different molecules in their tissues so are biochemically subtly different from one another.

The dietitians at the charity [First Steps Nutrition Trust](#) provide detailed information on manufactured infant milks, independently of the manufacturers.

Current Vitamin D guidelines for the UK recommend that all infants and children aged 1 to 4 years old ([SACN: 2016](#)) and breastfed infants under one year receive a daily dose. For breastfed babies ([SACN: 2018](#)), this would seem to contradict the idea that the composition of breastmilk is always appropriate to their needs. However, people in the UK live very differently now from how they did when humans evolved, with much less exposure to sunlight. The supplementation is recommended as a precaution to protect

the population as a whole from the possibility of musculoskeletal problems, like rickets, that arise from Vitamin D deficiency. It is considered to be a safe low dose (8.5-10micrograms/day for infants under 1 and 10 micrograms/day for children of 1-4 years) as there are not enough data to set recommended nutrient intake values (RNIs).

2. Immunological and other components

But breastmilk is much more than food as it contains many immunological and growth factors. Although the formula manufacturers do add various components that they claim provide immunological protection, merely adding a component to formula is no guarantee that it will act in the same way in the baby as it does when received via breastmilk.

This poster created by students at Douglas College, British Columbia, Canada, shows at a glance how many more components there are in breastmilk than infant formula:

DID YOU EVER WONDER WHAT'S IN... ?

BREASTMILK	FORMULA
<p>WATER</p> <p>CARBOHYDRATES (energy source)</p> <p>Lactose</p> <p>Oligosaccharides (see below)</p> <p>CARBOXYLIC ACID</p> <p>Alpha hydroxy acid</p> <p>Lactic acid</p> <p>PROTEINS</p> <p>(Building muscles and bones)</p> <p>Whey protein</p> <p>Alpha lactalbumin</p> <p>HAHAET (Human Alpha lactalbumin Made Lethal to Tumour cells)</p> <p>Lactoferrin</p> <p>Many antimicrobial factors (see below)</p> <p>Casein</p> <p>Serum albumin</p> <p>NON-PROTEIN NITROGENS</p> <p>Creatine</p> <p>Creatinine</p> <p>Urea</p> <p>Uric acid</p> <p>Peptides (see below)</p> <p>Amino Acids (the building blocks of proteins)</p> <p>Alanine</p> <p>Arginine</p> <p>Asparagine</p> <p>Cysteine</p> <p>Glutamate</p> <p>Histidine</p> <p>Isoleucine</p> <p>Leucine</p> <p>Methionine</p> <p>Phenylalanine</p> <p>Proline</p> <p>Serine</p> <p>Taurine</p> <p>Threonine</p> <p>Tryptophan</p> <p>Tyrosine</p> <p>Valine</p> <p>Carnitine (amino acid compound necessary to make use of fatty acids as an energy source)</p> <p>Nucleotides (chemical compounds that are the structural units of RNA and DNA)</p> <p>5'-Adenosine monophosphate (5'-AMP)</p> <p>5'-Cyclic adenosine monophosphate (5'-cyclic AMP)</p> <p>5'-Cytidine monophosphate (5'-CMP)</p> <p>Cytidine diphosphate: choline (CDP-choline)</p> <p>Guanosine diphosphate (GDP)</p> <p>Guanosine ribophosphate (guanosine)</p> <p>5'-Uridine monophosphate (5'-UMP)</p> <p>5'-Uridine monophosphate (5'-UMP)</p> <p>Uridine diphosphate (UDP)</p> <p>Uridine diphosphate hexose (UDP-H)</p> <p>Uridine diphosphate Nucleofuranosyl (UDP-N)</p> <p>Uridine diphosphate uracilic acid (UDP-U)</p> <p>Several more novel nucleotides of the UDP type</p>	<p>WATER</p> <p>CARBOHYDRATES</p> <p>Lactose</p> <p>Corn maltodextrin</p> <p>PROTEIN</p> <p>Partially hydrolyzed reduced mineral whey protein concentrate (from cows milk)</p> <p>FATS</p> <p>Palm olein</p> <p>Soybean oil</p> <p>Coconut oil</p> <p>High oleic safflower oil (or sunflower oil)</p> <p>M. alpha oil (Trigal DHA)</p> <p>C. cohen oil (Algal ARA)</p> <p>MINERALS</p> <p>Potassium citrate</p> <p>Potassium phosphate</p> <p>Calcium chloride</p> <p>Calcium phosphate</p> <p>Sodium citrate</p> <p>Magnesium chloride</p> <p>Ferrous sulphate</p> <p>Zinc sulphate</p> <p>Sodium chloride</p> <p>Copper sulphate</p> <p>Potassium iodide</p> <p>Manganese sulphate</p> <p>Sodium selenate</p> <p>VITAMINS</p> <p>Sodium ascorbate</p> <p>Inositol</p> <p>Choline bitartrate</p> <p>Alpha-tocopheryl acetate</p> <p>Niacinamide</p> <p>Calcium pantothenate</p> <p>Riboflavin</p> <p>Vitamin A acetate</p> <p>Pyridoxine hydrochloride</p> <p>Thiamine mononitrate</p> <p>Folic acid</p> <p>Phylloquinone</p> <p>Biotin</p> <p>Vitamin D3</p> <p>Vitamin B12</p> <p>ENZYMES</p> <p>Tyrosinase</p> <p>AMINO ACID</p> <p>Taurine</p> <p>L-Carnitine (a combination of two different amino acids)</p> <p>NUCLEOTIDES</p> <p>Cytidine 5-monophosphate</p> <p>Dicoum uridine 5-monophosphate</p> <p>Adenosine 5-monophosphate</p> <p>Dicoum guanosine 5-monophosphate</p> <p>Soy Lecithin</p>
<p>VITAMINS</p> <p>Vitamin A</p> <p>Beta-carotene</p> <p>Vitamin B6</p> <p>Vitamin B8 (Inositol)</p> <p>Vitamin B12</p> <p>Vitamin C</p> <p>Vitamin D</p> <p>Vitamin E</p> <p>alpha-tocopherol</p> <p>Vitamin K</p> <p>Niacin</p> <p>Folic acid</p> <p>Paraethenic acid</p> <p>Biotin</p> <p>MINERALS</p> <p>Calcium</p> <p>Sodium</p> <p>Potassium</p> <p>Iron</p> <p>Zinc</p> <p>Chloride</p> <p>Phosphorus</p> <p>Magnesium</p> <p>Copper</p> <p>Manganese</p> <p>Iodine</p> <p>Selenium</p> <p>Choline</p> <p>Sulphur</p> <p>Chromium</p> <p>Cobalt</p> <p>Fluorine</p> <p>Nickel</p> <p>METAL</p> <p>Molybdenum (essential element in many enzymes)</p> <p>GROWTH FACTORS</p> <p>aid in the maturation of the intestinal lining)</p> <p>Cytokines</p> <p>-interleukin-1B (IL-1B)</p> <p>IL-2</p> <p>IL-4</p> <p>IL-6</p> <p>IL-8</p> <p>IL-10</p> <p>Granulocyte-colony stimulating factor (G-CSF)</p> <p>Macrophage colony stimulating factor (M-CSF)</p> <p>Platelet-derived growth factor (PDGF)</p> <p>Vascular endothelial growth factor (VEGF)</p> <p>Hepocyte growth factor -a (HGF-a)</p> <p>HGF-B</p> <p>Tumor necrosis factor-a</p> <p>Interferon-gamma</p> <p>Epithelial growth factor (EGF)</p> <p>Transforming growth factor-a (TGF-a)</p> <p>TGF-B1</p> <p>TGF-B2</p> <p>Insulin-like growth factor I (IGF-I) (also known as somatomedin C)</p> <p>Insulin-like growth factor- II</p> <p>Nerve growth factor (NGF)</p> <p>Epithropoietin</p> <p>PEPTIDES</p> <p>(combinations of amino acids)</p> <p>HMGF I (Human growth factor)</p> <p>HMGF II</p> <p>HMGF III</p> <p>Cholecystinin (CCN)</p> <p>beta-endorphin</p> <p>Parathyroid hormone (PTH)</p> <p>Parathyroid hormone-related peptide (PTHrP)</p> <p>beta-defensin1</p> <p>Calcitonin</p> <p>Gastrin</p> <p>Motilin</p> <p>Bombesin (gastric releasing peptide, also known as neurectin B)</p> <p>Neurotensin</p> <p>Somatostatin</p> <p>HORMONES</p> <p>(chemical messengers that carry signals from one cell, or group of cells, to another via the blood)</p> <p>Cortisol</p> <p>Triiodothyronine (T3)</p> <p>Thyroxine (T4)</p> <p>Thyroid stimulating hormone (TSH) (also known as thyrotropin)</p> <p>Thyroid releasing hormone (TRH)</p> <p>Prolactin</p> <p>Oxytocin</p> <p>Insulin</p> <p>Corticosterone</p> <p>Thrombopoietin</p> <p>Gonadotropin-releasing hormone (GnRH)</p> <p>GnRH</p> <p>Leptin (aids in regulation of food intake)</p> <p>Ghrelin (aids in regulation of food intake)</p> <p>Adiponectin</p> <p>Feedback inhibitor of lactation (FIL)</p> <p>Eicosanoids</p> <p>Prostaglandins (enzymatically derived from fatty acids)</p> <p>PG-E1</p> <p>PG-E2</p> <p>PG-F2</p> <p>Leukotrienes</p> <p>Thromboxanes</p> <p>Prostaglandins</p> <p>ENZYMES</p> <p>(catalysts that support chemical reactions in the body)</p> <p>Amylase</p> <p>Arylsulfatase</p> <p>Catalase</p> <p>Histaminase</p> <p>Lipase</p> <p>Lyszyme</p> <p>PAF-acetylhydrolase</p> <p>Phosphatase</p> <p>Xanthine oxidase</p> <p>ANTIPROTEASES</p> <p>(thought to bind themselves to macromolecules such as enzymes and as a result prevent allergic and anaphylactic reactions)</p> <p>alpha-1-antitrypsin</p> <p>alpha-2-macroglycoprotein</p> <p>ANTIMICROBIAL FACTORS</p> <p>(are used by the immune system to identify and neutralize foreign objects, such as bacteria and viruses.)</p> <p>Leukocytes (white blood cells)</p> <p>Phagocytes</p> <p>Basophils</p> <p>Neutrophils</p> <p>Eosinophils</p> <p>Macrophages</p> <p>Lymphocytes</p> <p>B lymphocytes (also known as B cells)</p> <p>T lymphocytes (also known as T cells)</p> <p>alpha A (Secretory immunoglobulin A) (the most important anti-infective factor)</p> <p>IgA2</p> <p>IgG</p> <p>IgM</p> <p>IgD</p> <p>IgE</p> <p>Complement C1</p> <p>Complement C2</p> <p>Complement C3</p> <p>Complement C4</p> <p>Complement C5</p> <p>Complement C7</p> <p>Complement C8</p> <p>Complement C9</p> <p>Glycoproteins</p> <p>Mucins (adheres to bacteria and viruses to prevent them from clinging to mucosal tissue)</p> <p>Lactadherin</p> <p>Alpha-lactoferrin</p> <p>Alpha-2 macroglobulin</p> <p>Eicosanoids</p> <p>Ribonuclease</p> <p>Haemagglutinin inhibitors</p> <p>Bifidus factor (increases growth of Lactobacillus bifidus - which is a good bacteria)</p> <p>Lactoferrin (Binds to iron which prevents harmful bacteria from using the iron to grow)</p> <p>Lactoperoxidase</p> <p>B12 binding proteins (deprives microorganisms of vitamin B12)</p> <p>Fibrinectin (makes phagocytes more aggressive, minimizes inflammation, and repairs damage caused by inflammation)</p> <p>Oligosaccharides (More Than 200 Different Kinds)</p>	<p>WATER</p> <p>CARBOHYDRATES</p> <p>Lactose</p> <p>Corn maltodextrin</p> <p>PROTEIN</p> <p>Partially hydrolyzed reduced mineral whey protein concentrate (from cows milk)</p> <p>FATS</p> <p>Palm olein</p> <p>Soybean oil</p> <p>Coconut oil</p> <p>High oleic safflower oil (or sunflower oil)</p> <p>M. alpha oil (Trigal DHA)</p> <p>C. cohen oil (Algal ARA)</p> <p>MINERALS</p> <p>Potassium citrate</p> <p>Potassium phosphate</p> <p>Calcium chloride</p> <p>Calcium phosphate</p> <p>Sodium citrate</p> <p>Magnesium chloride</p> <p>Ferrous sulphate</p> <p>Zinc sulphate</p> <p>Sodium chloride</p> <p>Copper sulphate</p> <p>Potassium iodide</p> <p>Manganese sulphate</p> <p>Sodium selenate</p> <p>VITAMINS</p> <p>Sodium ascorbate</p> <p>Inositol</p> <p>Choline bitartrate</p> <p>Alpha-tocopheryl acetate</p> <p>Niacinamide</p> <p>Calcium pantothenate</p> <p>Riboflavin</p> <p>Vitamin A acetate</p> <p>Pyridoxine hydrochloride</p> <p>Thiamine mononitrate</p> <p>Folic acid</p> <p>Phylloquinone</p> <p>Biotin</p> <p>Vitamin D3</p> <p>Vitamin B12</p> <p>ENZYMES</p> <p>Tyrosinase</p> <p>AMINO ACID</p> <p>Taurine</p> <p>L-Carnitine (a combination of two different amino acids)</p> <p>NUCLEOTIDES</p> <p>Cytidine 5-monophosphate</p> <p>Dicoum uridine 5-monophosphate</p> <p>Adenosine 5-monophosphate</p> <p>Dicoum guanosine 5-monophosphate</p> <p>Soy Lecithin</p>



Developed as a student project for the Breastfeeding Course for Health Care Providers, Douglas College, New Westminster BC, Canada - © 2007 by Cecily Hedder, Sherri Hedberg and Haley Bumble.

Details of the infographic below about the many components of breastmilk found so far can be seen by clicking here (www.human-milk.com) and enlarging the image:



www.human-milk.com

The science resources (shop.human-milk.com) available also include postcards providing information about lactoferrin, oxytocin, HMOs and alpha-lactalbumin (which can become HAMLET).



Images credit: Human Milk Foundation and Tiny Humans

2.1. Immunoglobulins and the microbiome

The baby's defence system against pathogenic micro-organisms takes several years to mature but is first helped in utero by immunoglobulin G antibodies that pass from the mother's blood via the placenta and help to protect the baby's blood and tissues. Born vaginally and then placed in skin-to-skin contact with his mother the baby quickly acquires some of her micro-organisms, mainly bacteria, which start his microbiome. Breastfeeding aids the colonisation process and oligosaccharides in breastmilk feeds the beneficial bacteria. This early establishment of a healthy microbiome helps the maturation of the infant's immune system so that it recognises which are beneficial microbes or infant tissues and does not attack them, but does attack harmful microbes.

The mother's milk contains components which help the baby fight infections and, unlike the situation in older humans, without an accompanying inflammatory response so the baby can use the energy from the milk for growth. Exposure to microbes also seems to help with the baby developing an immunological tolerance to substances like food and pollen. ([Hanson: 2004](#)).

The main antibody in breastmilk is Immunoglobulin A and its level is higher in the milk of mothers of premature babies and in colostrum. The latter is the concentrated, usually yellow, form of milk produced in the breasts during pregnancy and in the first few days after birth, until it becomes diluted and looks white. In effect, the colostrum gives the baby oral vaccinations of antibodies, starting with the first feed after birth.

If microbes enter the mother via her respiratory or gastrointestinal tract, her body produces antibodies to those microbes which are soon secreted in her milk, helping to protect her baby. Thus breastmilk provides both personalised nutrition and personalised medicine.

2.2. Lactoferrin and lysozyme

Another major breastmilk protein, also used for defence, is lactoferrin, which can kill some microbes and promotes the growth of beneficial bifidobacteria. Since it binds to iron, it not only increases the bioavailability to the baby's body but also reduces the free iron available that pathogens would use for growth. The protein lysozyme can split the walls of certain bacteria; its highest level is around 6 months after birth, perhaps helping to protect the intestines when other foods (solids) are added to the baby's diet ([Jones: 2013, pp 31-33](#)).

2.3. Oligosaccharides and nucleotides

The carbohydrate components include dozens of different oligosaccharides (sugar chains), which produce a protective coating on the intestinal wall and have a prebiotic effect as they can be digested by beneficial bacteria, positively affecting the composition of the gut microbiome. Among the nitrogen-containing components are nucleotides, needed for making RNA and DNA, and they enhance maturation of the intestinal membranes.

2.4. Other components

There are many other types of molecule present, such as hormones and growth factors. They include leptin, which is involved in appetite regulation, and the bifidus factor, which contributes to a lower pH in the intestines, less favourable for pathogens to grow. There are also various types of cells, such as lymphocytes, and these may be responsible for an enhanced response to vaccines in breastfed babies. In addition, they increase the tolerance to the mother's tissues to the extent that a kidney donated by a mother to her child will function better if the mother had breastfed the child ([Hanson: 2004, p.55](#)). A larger thymus produces more lymphocytes and it has been observed that exclusively breastfed babies can have a thymus twice the size of that in a non-breastfed baby.

Breastmilk also contains stem cells from the mothers' breasts and Hassiotou's research (2014) on mice found them in several different tissues when they reached adulthood, including the brain, liver, kidneys, thymus and pancreas. The presumed evolutionary advantage of the stem cells is not yet clear but they have the potential for treating diseases of different organs, especially as they are able to transfer from one person (mother) to another (baby).

This video, [Human milk—tailor-made for tiny humans](#), mentions several of the more amazing components.

The mother's body prioritises milk production, producing milk of an appropriate composition to meet her baby's needs. Ensuring she has a balanced diet and sufficient fluid intake is about looking after herself so that she is best able to cope with the challenges of caring for her baby.

Some molecules passing directly into the milk are characteristic of various foods, probably resulting in slight variations in the flavour of breastmilk. This is consistent with [Menella and Beauchamp's findings in 1991](#) that when mothers ate garlic the intensity of the odour of their milk increased. Odour contributes to flavour. These molecules from food make a diet of breastmilk a more interesting sensory experience and may help a baby in accepting the different flavours of solid foods when they are introduced. In contrast, a particular formula always tastes much the same. [Sullivan and Birch in 1994](#) showed that repeated exposure to a vegetable led to increased acceptance of a new food in babies of 4-6 months, and breastfed babies increased their intake faster.

Key point:

A mother's milk has a unique composition, appropriate to her baby's current needs.

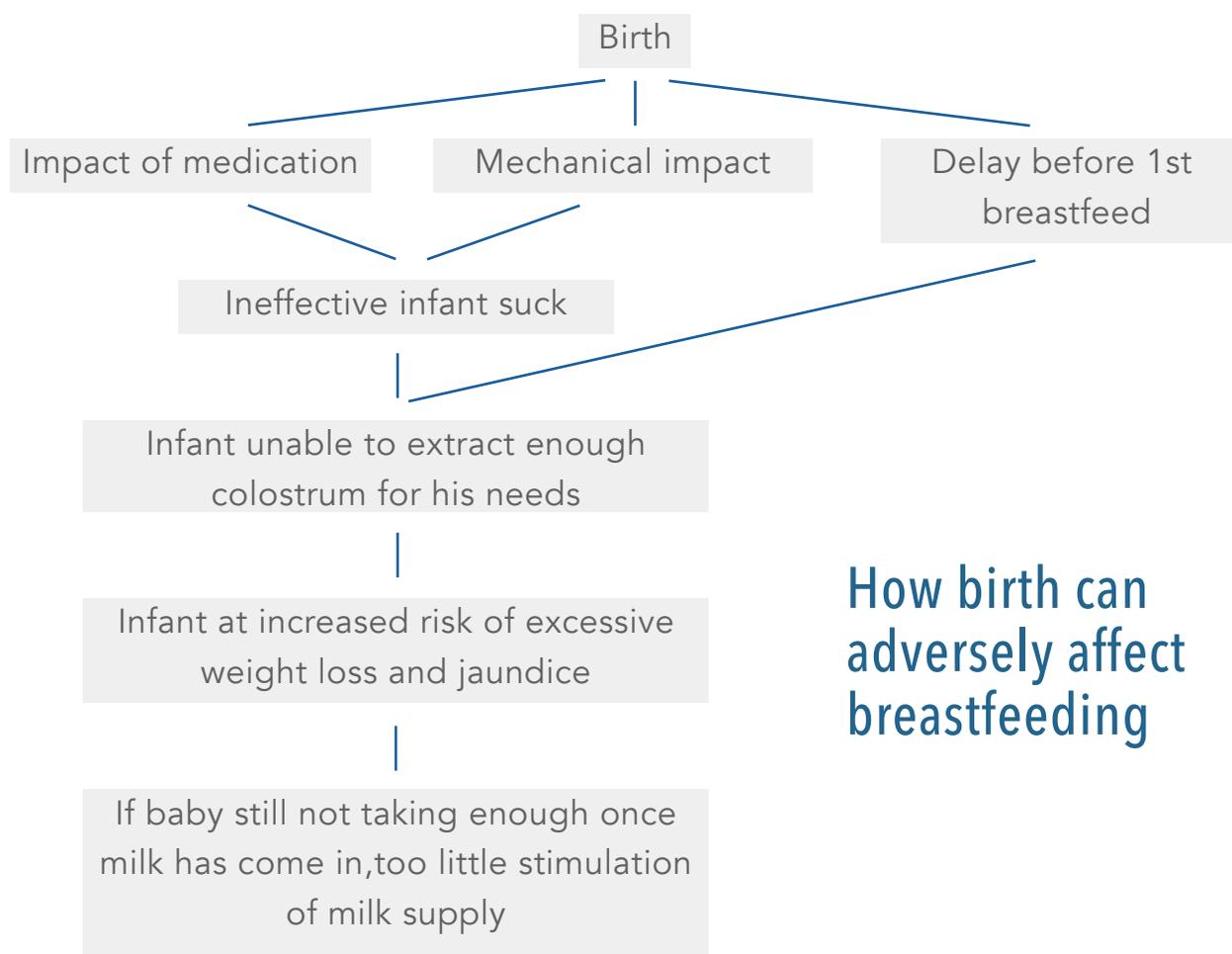
The transition from womb to world

1. Birth practices

Although there is a continuum for the baby from womb to world, research on birth practices often does not consider their impact on breastfeeding, and vice versa breastfeeding research often does not consider the possible impact of birth. Nevertheless, there is evidence of links, for example as described by [Linda Smith \(2010\)](#) in her book *Impact of Birthing Practices on Breastfeeding*:

- Having a non-medical birth companion alongside normal care is associated with fewer maternal and infant complications and better maternal experiences.
- Pain relief drugs given during labour can affect babies' instincts and mothers' ability to respond to their babies.
- Mechanical forces during birth can affect the alignment of babies' bones, which in turn can affect nerve and muscle function, and thus feeding, and provides an explanation why treatment by a cranial osteopath or chiropractor may help (see [p.17](#)).

Thus initiating breastfeeding is likely to be easier following vaginal births in situations where the mother feels well-supported and uses non-drug pain relief. In other situations extra help may be needed with breastfeeding.



How birth can adversely affect breastfeeding

2. Skin-to-skin contact

Being born is a highly stressful experience for a baby, and the baby can best be helped to calm down immediately after birth by being placed in skin-to-skin contact with his mother's chest. This applies however he has been born, whether vaginally, assisted by forceps or Ventouse, or by Caesarean section operation. Skin-to-skin contact triggers the release of oxytocin and helps stabilise the baby's breathing, heart rate and temperature; it is more effective than an incubator. In addition he continues to hear his mother's heartbeat, familiar to him from the womb. Skin-to-skin contact also helps mothers' breastfeeding self-efficacy ([Aghdas et al: 2014](#)). A recent study showed that mothers who had skin-to-skin contact within the first 30 minutes after birth were more likely to initiate breastfeeding within the first hour ([Lau: 2017](#)).

Only in the late 1980s was it realised that human babies, like other mammals, have instinctive behaviours that enable them to move unaided to the mother's breast, helped by sight and smell (called breast crawl). This happens if they have not been affected by pain relief medication given to the mother during labour.



Newborn breast crawl
Image courtesy of breastcrawl.org

The newborn baby shows a sequence of nine behaviours, including finding and attaching to the breast, which can take up to an hour (sometimes called the Magical or Golden Hour). The behaviours are:

- the birth cry
- relaxation
- awakening
- activity – increased mouthing and sucking movements
- rest, which can occur at any point
- crawling to the nipple
- familiarisation – the newborn licks the nipple and massages the breast with his hands
- suckling, after attaching by himself to the breast
- sleep – which usually occurs by about 2 hours after the birth

([Brimdyr: 2011](#))

Interrupting the process, for example to weigh the baby, results in the baby initiating the sequence again and then he may fall asleep (stage 9) before he has attached to the breast and fed. Does this matter? Yes. Suckling at the breast within two hours of birth is associated with obtaining more milk on day 4 compared with babies who started suckling later; there is also more likelihood of exclusive breastfeeding and better mother-infant interactions ([Brimdyr et al: 2012](#)). The challenge is to ensure that staff routines in busy maternity units protect this important sensitive time. ([Widstrom et al: 2019](#))

Example

When Ana's labour stopped progressing and a Caesarean section was essential as the baby was getting distressed, she was worried that she wouldn't be able to have skin-to-skin contact when her baby was born. However, the consultant obstetrician said it would help breastfeeding and keep the baby warm and calm; also, that it was just as important for babies born by Caesarean. Her baby was laid on her chest as soon as possible after he was born, and Ana was delighted.

Skin-to-skin contact enables the baby to be colonised with his mother's skin bacteria and assists establishing a healthy microbiome. With the increasing understanding of the significance to a person's general health of their microbiome, particular in the gut, skin-to-skin contact immediately after birth clearly has an important health role as well as being a lovely experience for mother and baby. (www.unicef.org.uk)

Skin-to-skin contact is likely to be particularly important for babies born by Caesarean section as they have not been exposed to the mother's vaginal microbes, so will otherwise be colonised first by microbes in the operating theatre. Research work is being carried out by microbiologist Dr. Dominguez-Bello in New York on taking a vaginal swab and transferring microbes to babies born by Caesarean section to enable some maternal colonisation to occur. For excerpts from an interview with Dr. Dominguez-Bello see: lactobacto.com



*Kangaroo care
John-and-Magnus
photo courtesy of Mary-Esther
Malloy/ www.orgasmicbirth.com*

Premature babies can be held skin-to-skin for extended periods to help stabilise their physiological functions, even if they are on oxygen. Kangaroo care (also known as kangaroo mother care) comprises skin-to-skin contact, exclusive breastfeeding and support for the mother-baby dyad that enables zero separation. Paediatrician Dr. Nils Bergman in South Africa is passionate about skin-to-skin contact and researches its impact. ([Bergman 2014](#)). He strongly encourages kangaroo care. ([Bergman: 2012-18](#)).

3. Sleepy babies on postnatal wards

Sleepy babies are a frequent challenge on postnatal wards and are most likely to be sleepy due to the mother's pain relief in labour. If they have not had a first breastfeed in their short wakeful period after birth their blood sugar level may be tested to check for hypoglycaemia (low blood glucose level). Blood glucose naturally drops after birth, returning to a higher level around 48hrs post-birth, but babies can use ketones as an energy source. The temptation if the level is too low is to suggest formula, despite its various negative effects - on the mother's confidence, prolactin receptors, the baby's gut microbiome and possible interference with the body's ability to use ketones (www.unicef.org.uk) - but instead the mother can hand express the small amounts of colostrum that are sufficient for the baby at this stage.

(See Hypoglycaemia section on [p.66](#))

4. Normal breastfeeding

So what is the experience of normal, successful breastfeeding like? Every mother is different so her experiences are unique to her and normality covers a wide range, but there are general patterns.

In the first couple of days, some babies sleep a lot and have well-spaced feeds whereas others show feeding cues frequently. Crying is a late indicator of a need not being met so it is much less stressful for baby and parents if the baby is put to the breast whenever he shows early feeding cues, where possible (see [p.32](#)).

If the baby does become upset, he usually needs to be calmed before he can latch on well. Lots of cuddles help to ease the transition from being in the warm amniotic fluid in the womb to the outside world. Touch and skin contact are very soothing as they raise levels of the hormone oxytocin, which has a calming, anti-stress effect in all humans.

If the baby is well latched on, the mother will feel comfortable sensations as the baby feeds, although she may have some transient nipple pain at the start of feeds for a few days. Discomfort in her womb area during feeds is due to oxytocin released during breastfeeding triggering her uterus to contract, which is a good sign as it needs to shrink back to its pre-pregnancy size.

The mother's breasts normally feel larger and heavier around the third or fourth day as the colostrum is diluted to form milk ('milk coming in') and frequent feeding helps to prevent them from becoming overfull. From the baby's perspective, frequent feeds are appropriate as his stomach is small, research suggesting only 20ml on average for a term baby in the early days ([Bergman: 2013](#)).

The mother may experiment with different positions for holding the baby, discovering which ones the two of them prefer. Many mothers like to sit and cradle the baby in their arms but others prefer an underarm hold or side-lying position. Lying back in the post-birth skin-to-skin position is relaxing for the mother and stimulates the baby's innate reflexes to search for the breast and latch on himself.



Laid-back breastfeeding position

©NCT - used with permission www.nct.org.uk

For other examples of mothers
in laid back positions see:

www.biologicalnurturing.com

If the baby is receiving enough colostrum or milk, he will generally be satisfied after feeds, often coming off the breast with a half-drunk expression of satisfaction. Also, the number of heavy wet nappies increases to at least six over the first week and the tarry meconium in the baby's nappies will become greenish after a couple of days following birth and then to the yellow, runny stools typical of a breastfed baby. Some babies stool at every feed at first but others stool a couple of times a day. Parents can therefore monitor the baby's intake of breastmilk themselves through the baby's behaviour and nappy contents. (see [p.33](#))

Having the baby weighed also provides a check that the baby is growing enough, but it is important to consider weight gain in the context of whether the baby looks to be thriving, plus nappy contents and his behaviour after feeds. The growth charts in use in the UK since 2009 are based on the WHO charts and show the average growth of healthy breastfed children. For babies who do not seem to be putting on enough weight, there is guidance from NICE on faltering growth (www.nice.org.uk). It is important to protect breastfeeding if that is the mother's choice.

If the baby is attached well at the breast, in general mothers will make enough milk for their baby. This also applies to twins and triplets – more milk is removed so more is made – and it is important that those supporting mothers of multiples know that exclusively breastfeeding multiples is possible so they can help to build confidence. A useful resource is the Twins and Multiple Births Association (TAMBA).

At first, the baby will usually want to feed at unpredictable times, and is often more wakeful at night than during the day, which can feel a relentless commitment. Parents can think they have lost control over their lives. However, as the days and weeks pass, a more predictable pattern emerges and the parents also find they can tune in to their baby's needs better as they get to know him or her. Most babies feed at least 8-12 times in 24 hours, which averages to starting a feed every 2-3 hours, but they may have regular or irregular intervals between feeds. As the baby grows, feeds tend to become shorter and less frequent.

Breastfeeding often feels easier after a few weeks, and for most mothers enjoyable and satisfying, although where mother and baby struggled initially it is likely to take longer to reach this point of feeding being established.

There are lots of myths about what a mother who is breastfeeding should or shouldn't eat. Her body will prioritise making milk for her baby so eating a reasonably healthy balanced diet will help her feel able to cope with caring for her baby. Her body will indicate her needs for food and water – mothers often feel thirsty during breastfeeds and some feel extra hungry in the early weeks. Healthy snacks between meals help to prevent a mother's blood sugar level from falling too low, especially if she might feed her baby several times between meals. There is a risk of her having a low vitamin D level, especially if she is dark-skinned or does not go outside much, and Department of Health guidance is for all adults, including breastfeeding mothers, to take a Vitamin D supplement, but this is a blanket recommendation (SACN: 2016).

As the weeks pass, the mother gains in confidence and is likely to go out and about more. Because breastfed babies feed frequently, she may well need to feed while she is out, and feeling public approval of what she is doing is very likely to make it easier.

Around 6 months of age, babies usually indicate they are physically ready to start solids – able to sit up, hold objects and bring them to their mouth. Babies can be spoon-fed soft solids but, in [baby-led weaning](#) (which could instead be called baby self-feeding), the baby is the only person to put food in his mouth. Food therefore needs to have a firm texture and somewhere the baby can hold it, like a cauliflower floret with a stalk. It is a learning experience at the baby's pace, and therefore fun for the infant. At first, the baby is experiencing the texture of the food but when his body is mature enough he can bite and chew it. Some parents choose to offer a mixture of spoon-fed and baby-led. Some babies may bite at the ends of breastfeeds as the baby teeth emerge but usually soon learn that it is not acceptable behaviour.



*Thomas self-feeding
Image courtesy of Helen Crawley*

Breastfeeding can continue for as long as mother and baby want to. Thus it can continue alongside starting solids, teething, returning to work, the baby starting to ask for a breastfeed, the mother planning to conceive or alongside breastfeeding a younger baby (tandem feeding). It is much more than a source of nourishment as it contributes to the close relationship between mother and baby, is calming and comforting and helps meet the baby's need to feel secure. The World Health Organisation recommends breastfeeding for at least two years to maximise health benefits but it is a personal decision. Why stop if breastfeeding is going well?

Key points:

Uninterrupted skin-to-skin contact for at least an hour after birth helps the baby become calm and follow instinctive steps to a first breastfeed.

A mother does not need a special diet when breastfeeding; a normal healthy, balanced diet is preferable, so that she feels best able to cope with caring for her baby.

A mother normally makes enough milk, provided attachment at the breast is effective, whether she has one baby, twins or triplets.

Feeding and relationships

Feeding is much more than the process of transferring milk. It is a key part of how the mother nurtures her baby and thus an important part of the relationship between mother and baby, which is best when comfortable and relaxed. While mother and baby can become closely attached emotionally, however the baby is fed, breastfeeding facilitates the process. Strathearn (2009) found that [breastfeeding helps to protect against maternal neglect](#).

John Bowlby's attachment theory, developed in the 1950s, proposed that a baby's strong emotional attachment to a caregiver (the primary caregiver is usually the mother) is a basis for lifelong stability and evolved to help vulnerable young seek an adult's protection when under threat. The extent of care and sensitive responsiveness by the caregiver determines the strength of the attachment.

Mary Ainsworth showed that some attachments are insecure. Babies with avoidant insecure attachment appear to cope when separated from the caregiver but then largely ignore the returned caregiver; this appears to result from a parent being intrusive or over-controlling and the baby copes by minimising dependence. Babies with ambivalent -resistant insecure attachment seem anxious and are very distressed when separated from the caregiver and remain upset even when the caregiver has returned; this appears to result from the caregiver inconsistently responding to the baby's needs so the baby copes by emphasising his dependence. There is also a category of disorganised attachment in which the baby shows contradictory behaviour and this is associated with the baby having been frightened by the parent. However, for most families the parenting is good enough and leads to secure attachment so the baby then trusts and seeks support from the caregiver in difficult situations. ([Murray: 2014. p.93](#))

There is a useful representation of the four types of attachment, taken from the book *Patterns of Attachment and Psychological Study of the Strange Situation* (1979) by Mary Ainsworth and colleagues, on the [Kids Cooperate website](#).

More information about attachment theory is available from the Open University's free course [Attachment in the early years](#).

The number of neural connections increases rapidly in babies' brains, particularly in the first year. The brain is at its most adaptable for the first three years, but synapses not used enough will be pruned. Advances in neuroscience have shown that babies are very sensitive to their social environment and that close and loving relationships with babies enable efficient brain development. Much of the time parents respond intuitively to their babies, because they are tuned in to their needs. Also, babies' behaviours have a logic to them in they are actively trying to aid their own development.

Child psychotherapist Dr. Margot Sunderland points out in her *book What every parent needs to know* ([Sunderland: 2007](#)) that consistently helping a baby or child to calm down who feels angry, frustrated or distressed, emotions which trigger high levels of stress hormones like cortisol, has a longer-term beneficial effect as the wiring of the brain is helped to develop an appropriate stress response. On the other hand, if the child is not helped to calm, he can develop an over-active stress response, which later can show as a tendency to depression, anxiety or problems with aggression. However, parents don't have to be perfect. Insensitive responses, like ignoring the child's feelings or shouting at him, can be repaired, for example physically by cuddling, or verbally by apologising. [Tronick \(2011\)](#) found that such repair occurred about 70% of the time in the next interaction, suggesting repair doesn't need to be perfect either.

Responding sensitively to a baby's signals thus helps develop secure attachment, but unfortunately guidance to feed according to a schedule became widely accepted in the early 20th century. However, by the 1980s it was realised that mother and baby were happier and the milk supply better if the mother responded to the baby's communication. Neuroscience has underpinned that further in linking responsiveness, relationships and brain development. Parents who bottle feed are also encouraged to feed in a way that is sensitively responsive to the baby's signals, such as respecting the baby's pauses and signals that he is full, rather than encouraging him to feed quickly and to finish the bottle ([Unicef BFI](#)).

Revision of the Baby Friendly Initiative standards in 2012 led to more focus on encouraging responsive feeding and strong parent-infant relationships, incorporating the developments in neuroscience as described above.

Key point:

Responding to a baby's signals, which indicate his needs, aids the development of secure attachment and thus better emotional health.

Complications of breastfeeding

Breastfeeding does not always go smoothly. The Infant Feeding surveys indicate that around a third of mothers experience difficulties.

If a mother describes pain in her nipples and/or breasts, it is important to eliminate the possibility of unsatisfactory latching as a cause. However, there are some complications that can be severe enough to need medical attention. A very useful book about conditions related to breastfeeding and relevant medications is [Wendy Jones' Breastfeeding and Medication \(2013\)](#).

Disclaimer: the information below is for information only and not to be used as the basis of any medical treatment.

1. Engorgement

Primary engorgement can occur around 3-5 days after birth when the milk 'comes in' and the colostrum is diluted to form mature milk. There is also an increased flow of blood and lymph to the breasts. Later on, engorgement can result when production exceeds removal, for example if the mother expresses a great deal or the feeds are suddenly more spaced. The symptom is swollen and shiny breasts. The most effective actions are frequent feeding and checking that the baby is well latched-on. If the areola is hard it can be more difficult for the baby to latch on but stroking away from the nipple may help to lessen the swelling. The mother can express her milk if feeding her baby directly is not possible. The breasts may feel hot but this does not mean there is an infection. Antibiotics are not needed for engorgement but cold compresses after feeds are soothing and may lessen the swelling.

Gentle massage and warmth on the breasts, for example by applying warm flannels before feeds, may help. For more about therapeutic breast massage and hand expression for breastfeeding mothers see: (bfmedneo.com) Breast massage is widely used in many cultures.

There seems to be a continuum from engorgement to non-infective mastitis (see next section).

2. Mastitis

Mastitis in the breast is usually an inflammation and is often associated with a plentiful milk supply. If part of the breast is not well-drained during feeding or pumping, or engorgement is not cleared, the milk remaining is under pressure and can leak into the surrounding tissues, which triggers an inflammatory response. That part of the breast then becomes hot, red and often lumpy and painful and the mother may have flu-like symptoms. For an image of a severe case see: www.mayoclinic.org

Sometimes mastitis is preceded by a blocked duct, which usually feels like a small, tender lump. The poor drainage may be a result of ineffective latching or of pressure, for example from tight clothing. Feeding frequently and improved attachment at the breast can be sufficient to reverse the effects, leading to the symptoms subsiding. It may help to start the feed on the affected breast. Expressing milk by hand just from the affected area can help by targeting it rather than pumping from the whole breast and increasing milk production further.

However, sometimes mastitis is due to a breast infection. Breastmilk within the breast is never sterile but contains a range of bacterial species, the pattern of species present varying between women. If there are, or have been, cracks in the nipples, pathogenic bacteria can enter the ducts, causing infective mastitis. The symptoms are similar to that of non-infective mastitis, although likely to be more florid. Using antibiotics is the traditional treatment and there are various antibiotics which are compatible with breastfeeding. Ideally, a sample of the breastmilk would be taken and cultured to identify the specific pathogens present but that introduces a time delay. Effective attachment and frequent feeding to help keep the milk flowing complement the medical treatment.

The picture is made more complicated in that non-infective mastitis that does not clear can become infective mastitis. As antibiotics have an anti-inflammatory effect, they can help to reduce the inflammation in both types of mastitis, but concern about overuse of antibiotics and the fact they also destroy beneficial bacteria are relevant factors to consider. In the future, it may be that taking probiotics – for example, doses of beneficial lactobacillus bacteria isolated from breastmilk - will be found to be preferable to using antibiotics and there is some research that indicates this is a promising approach ([Arroyo: 2010](#)).

Mastitis that does not clear can progress to an abscess, although abscesses are more likely to arise directly without being preceded by any symptoms of mastitis. White blood cells attack the infection, leading to some tissue dying and a sealed-off hollow pocket being formed which fills with pus - a mixture of dead cells, white blood cells and bacteria. Ultrasound is useful to confirm a suspected abscess. It is preferable if an abscess can be drained with a needle and syringe but larger ones may need a small incision ([NHS Choices: 2017](#)). However, drainage (aspiration) may need to be repeated a few times. Breastfeeding can usually continue,

even on the affected breast, although the mother may prefer that her baby does not have milk containing pus. Staphylococcus (sometimes MRSA) is the main causative agent.

For more details, NICE has developed guidance on management of mastitis and breast abscess in lactating women; it mentions that a simple analgesic can be prescribed for associated pain or discomfort ([NICE: 2018](#)).

Mastitis probably occurs in fewer than 10% of mothers, and is most likely to occur in the first four weeks after birth. Only some 3% of mothers with mastitis develop an abscess.

However, an abscess is not the only fluid-filled sac that can occur in a breast. A galactocele is a harmless sac filled with milk. It can be aspirated but the process may need to be repeated several times. Breastfeeding can continue.

3. Thrush

Babies can have the *Candida albicans* infection, thrush, in their mouths, which appears as white patches on the tongue and inside of the mouth. However, it is unusual in babies under 6 weeks and, confusingly, in some young babies the tongue naturally looks whitish. Thrush seems to be more likely in babies with tongue-tie as the milk can stay on the back part of the tongue, instead of being removed, providing an environment conducive to thrush flourishing. However, if a white coating on the tongue can be gently wiped off it isn't thrush.

It has been assumed that *Candida* can be transferred between mother and baby during breastfeeding so it is appropriate for both mother and baby to be treated with thrush medication. Certainly, mothers can develop an infection on their nipples, leading to burning pain after feeds and a shiny appearance plus colour change that may be to pink, red or white.

It is essential to check that the baby is well-attached. Calls to the Breastfeeding Network's Drugline illustrate the over-diagnosis of thrush that has occurred because ineffective attachment at the breast has not been excluded first ([Jones: 2013, p.64](#)). [The Breastfeeding Network \(2017\)](#) has a useful document on its website with information for health professionals as well as mothers.

Mothers can also have severe pain in both breasts, often described as 'stabbing', 'burning' or like 'broken glass', within the breasts after every feed, after a period of pain-free breastfeeding, and this has been assumed to be thrush in the breasts (ductal candidiasis). Consistent with this, in some cases, the pain gradually goes when an anti-fungal medication is taken orally. However, in a study in 2009 by Hale and colleagues of women with symptoms *Candida* could only be cultured in one case, suggesting it is not present in the milk ducts! In some cases, in culturing

the milk a persistent bacterial infection has been found which has needed several weeks of antibiotic treatment to clear. This showed uncertainty about causes of 'thrush' in the breasts.

It has been assumed that thrush might be more likely in mothers or babies who have taken antibiotics as beneficial bacteria will then have been destroyed so the opportunistic *Candida* can flare up. Mothers who have had a Caesarean section may have been given prophylactic antibiotics.

However, a recent study ([Jimenez et al: 2017](#)) to identify the microbial species present in symptomatic mothers found certain species of *Staphylococcus* and *Streptococcus* present but not *Candida*. These bacterial species trigger some inflammation but not the heat and redness normally associated with mastitis. The authors of the research therefore suggest calling the condition sub-clinical mastitis and dropping the term 'thrush'. These bacteria can produce thick biofilms in the ducts, narrowing them and increasing the pressure, leading to shooting and burning pains. They can also induce an overgrowth of *Candida* in the infant's mouth.

Symptoms can be slow to clear so repeat prescriptions may be needed. It is recommended that mothers do not freeze milk for later use while they are being treated for thrush as freezing probably deactivates but may not kill the microbes.

4. Other causes of breast and nipple pain

These include:

Vasocompression of the nipple because the latch is not effective and the nipple is squashed, restricting blood flow. The nipple is therefore white when the baby comes off the breast and turns red as the blood flow increases again (vasospasm) ([Jones: 2013, p.53](#)).

Raynaud's phenomenon looks similar to vasocompression but the mother has a history of poor circulation in her extremities. Symptoms are aggravated by cold so keeping the nipples warm helps ([Jones: 2013, p.51](#)).

White spot consists of one or a small number of white spots on the nipple which may either be semi-solid milk blocking the end of ducts or a thin layer of skin growing over a duct opening. Pain is localised in the white spots and relieved by removal of the milk or thin skin layer.

Bacterial infection of the nipple may occur when there has been nipple damage and is usually due to *Staphylococcus aureus* ([Jones: 2013, p.50](#)).

Muscle constriction – if breast pain is not resolved by improvement to the latch and does not seem to be due to fungal or bacterial infection, muscle pain is another possible explanation. It is not a new idea but in a study of 3 cases muscle massage eased the pain ([Kernerman: 2014](#)).

Breast cancer is not a complication of breastfeeding but can occur. As with any cancer, it is important that investigation is not delayed. A breast infection that does not clear can be a sign of inflammatory breast cancer ([Mohrbacher: 2010, p.688](#)).

Key point:

If a breastfeeding mother has pain in her breast or nipple, check first that there is effective attachment at the breast.

Illness in the mother

1. Infectious illnesses

Very few infections are transmitted to the baby via breastmilk, the main exception being HIV. Although transmission can occur with the Hepatitis B virus, with suitable treatment mother and baby can continue to breastfeed. About 1 in 2000 babies develops early-onset GBS (Group B Streptococcal infection) but breastfeeding does not increase the risk ([NHS Choices: 2018](#)).

It will be hard for a mother caring for a baby when she feels ill herself but she is resting while breastfeeding and, at the same time, providing specific antibodies for her baby against that infection and helping to protect against other infections. Hygienic precautions such as hand washing before touching the baby are important to minimise the risk of transfer of the infection by routes such as touch or sneezing. For example, with the herpes virus, the risk comes from sores on the breast but they can be covered to protect the baby from touching them.

Example

Pritti saw a GP because she felt ill and was suffering from nausea and diarrhoea. She said her mother-in-law would help with looking after the baby, who was 9 weeks old. The GP congratulated Pritti on her baby and asked in an interested way how feeding was going. Pritti replied that she had been pleased that breastfeeding was going well and was disappointed that her mother-in-law would have to formula feed the baby, now that she had an infection. The GP explained that she could continue breastfeeding and that would give the baby antibodies to help her fight the virus but it was important to wash her hands thoroughly with soap and water whenever she used the toilet.

2. Postnatal depression

For a mother with postnatal depression who is breastfeeding, it may be the only aspect of her life that feels successful. Breastfeeding is therefore important to her psychological health as well as being beneficial for her long-term physical health. It also helps protect her baby from the negative effects of depression, which can last well beyond childhood, and include depression, anxiety disorders and substance abuse ([Kendall-Tackett: 2015](#)). Yet depressed mothers are likely to stop breastfeeding sooner. Supporting her intention to breastfeed and also enabling the mother to access skilled support with breastfeeding, if needed, thus benefits two generations, mother and baby, and by even more than the usual outcomes of breastfeeding.

Depression is estimated to affect 12-25% of new mothers. It tends to be seen as an emotional disorder linked to giving birth, with a focus on adjustment to the new role, loss and identity crisis. However, it may be that there are underlying factors predisposing a woman towards depression, particularly childhood events, and the processes of birth and becoming a new mother act as the trigger ([Folkman AK: 2014](#)). Previous depression, including antenatal depression, is a risk factor. Whether or not anti-depressants are prescribed, it is important to offer counselling as this can be a helpful intervention. In relation to medication, the [Breastfeeding Network](#) has a pdf on its website, *Antidepressants and Breastfeeding*, and further information can be obtained from the Drugs in Breastfeeding service (email druginformation@breastfeedingnetwork.org.uk).

Biochemically, depression in new mothers seems to be linked to high levels of pro-inflammatory cytokines, the chemical messengers of the white blood cells, and certain proteins in the mother's plasma, meaning there is systemic inflammation. This in turn leads to higher levels of the stress hormone cortisol and lowering of levels of the neurotransmitter serotonin.

The relationship between breastfeeding and depression is complex. [Mezzacappa and Katkin \(2002\)](#) studied mothers who were both breastfeeding and bottle feeding and found that breastfeeding lessens negative mood and bottle feeding lessens positive mood, in the same mothers. [Borra et al \(2014\)](#) found that women's intentions are really important. For mothers who were not depressed antenatally, the lowest risk was if they intended to breastfeed and did so; intending to and not breastfeeding or stopping early increased the risk of PND. This is consistent with the feelings of disappointment, guilt and failure discussed in [Chapter 3](#).

Professor Amy Brown explored the impact of different breastfeeding difficulties and found that mothers who stopped breastfeeding early due to pain or physical difficulties tended to have higher depression scores ([Brown: 2015](#)). Pain is a stressor and stress is a risk factor for depression. Skilled help with breastfeeding to prevent pain can therefore help the mother's mood return to normal and lower the risk. Breastfeeding also helps by lessening the stress response.

Fatigue can both contribute to depression and be a consequence. Even though breastfeeding mothers generally give more feeds, they actually tend to have about 20 minutes' more sleep in 24 hours. If a mother takes as long as 25 minutes to fall asleep she is likely to be at risk for depression ([Kendall-Tackett: 2015, p.29](#)).

Post-traumatic stress disorder (PTSD) can follow from a situation where a person felt in danger of death or injury, and powerless. This can include a birth experience in which the mother felt she had no control over the situation. Breastfeeding may help a mother overcome such birth trauma.

Key points:

A mother with an infectious illness who continues to breastfeed helps her baby by providing antibodies.

Enabling breastfeeding to go well lowers the risk of postnatal depression.



Challenges originating in the baby

The challenges described below are those most likely to occur, but there can be others.

1. Colic

The term 'colic' is a broad term used to refer to a baby's behaviour in which he cries inconsolably for extended periods and seems to be in pain because he draws his legs up, possibly due to intestinal spasms. It often starts when the baby is around 2-3 weeks old and tends to resolve around 3-5 months. There are several possible known causes and sometimes no cause is found. The parents need to discover what helps to soothe their baby, which may include holding in particular positions, breastfeeding, being carried in a sling, rocking and gentle massage of the baby's abdomen in a clockwise direction ([NHS: 2018](#)).

There may be an intestinal problem and this may be due to excessive wind, cows' milk allergy or lactose intolerance. There are products available for treating wind and parents often believe they have improved the situation but the research does not show an advantage over the placebo effect.

Having a colicky baby can be very distressing and frustrating for parents. It is common, affecting around one in six UK families and back in 2001 was estimated to cost the NHS more than £65m a year.

2. Allergy / intolerance

I am using the terms interchangeably to mean an 'adverse physical reaction involving inflammation and immune dysfunction.....to substances other people tolerate.' ([Minchin: 2015, p.9](#)). Only about 5% of breastfed babies are intolerant to a food in their mother's diet, which means that the vast majority of mothers do not need to restrict their diet. The intolerance is mostly to dairy products (cows' milk protein) and, for a breastfed baby, symptoms may be reduced by the mother eliminating dairy products from her diet, coupled with dietary guidance to ensure she still consumes enough calcium. Symptoms in the baby tend to include skin rashes, blocked nose, diarrhoea and vomiting ([NHS: 2019](#)). Other protein foods which can be allergenic include soya egg white, fish, wheat, nuts, corn and pork ([Mohrbacher: 2010, pp 516-520](#)).

For an allergic formula-fed baby, replacing ordinary infant formula, which is derived from cows' milk, in the baby's diet by soya-based formula is not recommended for several reasons – not only because babies can also be sensitive to soya but also the formula contains high levels of sugar and phyto-oestrogens. Hydrolysed protein formula can be used as a replacement ([Jones: 2013, p.55](#)).

True lactose intolerance is exceedingly rare as it is an inherited genetic condition and such babies could not have survived until recently because they cannot tolerate breastmilk. However, there can be temporary lactose intolerance following an intestinal infection, or sometimes if the mother takes antibiotics, which resolves by itself. Premature babies may also have insufficient lactase initially. The lactose intolerance is due to a shortage of the enzyme lactase, which catalyses digestion of the lactose:

With lactase, in the small intestine: lactose -----> glucose + galactose

Without lactase, the lactose moves to the colon and is fermented by bacteria:

lactose -----> fatty acids + carbon dioxide + hydrogen + methane

([NHS: 2019](#))

It's not surprising the baby has intestinal pain and wind with all the gases produced!

Babies who feed from both breasts at a feed when their mother has a very plentiful milk supply can take a large volume of relatively low-fat, high-lactose milk. This can result in excessive windiness with frothy, green stools, due to an imbalance of too much lactose for the amount of the enzyme lactase available. Letting the baby feed from one breast only at a feed, and sometimes for several successive feeds, helps to reduce milk production to a more appropriate level. It can also be useful for a breastfeeding specialist to help the mother achieve an optimum latch so that the baby can transfer more of the fattier milk that occurs when there is less milk in the breast, later in the feed. The result is that the baby has a better balance of fat and lactose so the symptoms lessen.

3. Reflux

Possetting, which is the name given to the process of the baby bringing up some milk after a feed, and sounds better than 'vomiting', is very common and is a laundry rather than a feeding issue. For a breastfed baby, neither posset, nor, at the other end of his body, the stools, smells unpleasant. Some babies may take more milk than their stomach can hold and possetting is their overflow system.

For others, milk may readily flow back up the oesophagus in the early weeks or months because the sphincter between the stomach and oesophagus has low muscle tone and needs to mature. Holding such babies upright for perhaps 20 minutes after feeds helps to minimise possetting ([Mohrbacher: 2010](#)).

For other babies, the process is uncomfortable and the stomach acid mixed with the milk can damage the lining of the oesophagus; this is non-physiological reflux and can warrant medical treatment. In silent reflux the milk remains in the oesophagus so is not visible but the baby still experiences discomfort or pain during and after feeds. Small frequent feeds to avoid overfilling the stomach can help. A breastfeeding specialist can help mother and baby achieve as effective a latch as possible to maximise intake and thus fat from the first breast at a feed, minimising the volume needed to satisfy the baby's hunger. In more severe cases medication that forms a pH-neutral layer on top of the milk seems to improve the situation.

There are relevant NICE guidelines on gastro-oesophageal reflux disease ([NICE: 2015](#)).

4. Jaundice

There can be various causes of jaundice, and it is more likely in a premature baby, but normal newborn jaundice is common because the baby has more red blood cells in utero than he needs once born. Breakdown of the surplus haemoglobin produces yellow bilirubin which accumulates in the baby's blood and tissues. This bilirubin is processed by the liver, transported by bile to the intestines and excreted in the stools.

The yellow tinge to skin colour due to this normal jaundice is usually not visible until the 2nd to 5th day after birth so jaundice that appears in the first 24 hours is pathological as it is likely to be due to a physical problem. Normal jaundice levels usually peak at around the 3rd to 5th days after birth but in some cases jaundice does persist for several weeks ([Mohrbacher: 2010, pp261-273](#)).

Frequent effective breastfeeding minimises the re-uptake of bilirubin from the intestines. If breastfeeding is not effective enough, for example the baby's stools are not changing from the dark meconium to green, on the way to being normal yellow stools, by Days 3-4, the mother needs urgent skilled help with breastfeeding. She may need to express after feeds as well so that her baby receives enough breastmilk and she maintains her milk production.



*Jaundiced baby
(note the yellowish whites of the eyes as
well as skin colour)
by IBCLC Anne Smith
www.breastfeedingbasics.com*

If a baby is jaundiced it can be tempting to suggest formula top-ups but this undermines breastfeeding with harmful side-effects – reducing the mother’s confidence, interfering with prolactin receptors and thus milk production, and altering the baby’s developing microbiome.

NICE guidelines on neonatal jaundice were produced in 2010 ([NICE: 2010](#)) and updated in 2016. They include guidance on prolonged jaundice, meaning lasting more than 14 days in a baby born at greater than 37 weeks gestational age and 21 days in a baby of less than 37 weeks.

5. Hypoglycaemia

Once a baby is born he no longer receives glucose via the placenta but can use his glycogen stores for the first 12 hours and also other sources of energy like ketones. His blood sugar level naturally dips to a minimum 1-2 hours after birth and then rises over the next 3 days. If he doesn’t start to feed effectively or often enough (fewer than 8-12 times a day) his blood sugar level can become too low. He may then be floppy and lethargic and need to be woken for feeds. To his parents such a baby can seem easy to look after but in reality he is too low in energy to show his hunger. Lots of skin to skin contact helps to keep him warm. If he is not feeding effectively, even with skilled help, the mother can hand express colostrum which he can lick directly from her nipples or be given via a syringe ([Mohrbacher: 2010](#)).

Babies particularly at risk of low blood sugar are those who had intrauterine growth restriction or whose mother is diabetic. Some maternity units encourage diabetic mothers to hand express colostrum antenatally, collecting it in small syringes (“colostrum harvesting”), in case the baby needs more breastmilk than he can readily obtain from the breast in the first couple of days.

The British Association for Perinatal Medicine has produced a draft Framework for Practice ([BAPM: 2016](#)).

6. Prematurity and congenital medical conditions

Babies who are born significantly prematurely or with specific congenital problems, such as heart disease, a syndrome diagnosis or neonatal surgical problem like gastroschisis and tracheo-oesophageal fistula, are outside the scope of this book. However, full or partial breastfeeding is possible for many of these babies, with significant benefits likely for mother and baby. Families with ill babies need support, and encouragement to seek specialist help.

If a baby is born early, it greatly helps milk production later if the mother starts expressing as soon as possible and at least eight times in 24 hours. Skin-to-skin contact is part of essential care and colostrum can be used for the baby’s mouth care. The mother can practise holding and attaching her baby before the baby

is mature enough to coordinate sucking/ swallowing and breathing to help the baby start breastfeeding as soon his body is mature enough. Unicef UK Baby Friendly Initiative has produced [Guidance for neonatal units](#), as well as a 2-day course for neonatal staff and a [leaflet for parents](#). Other very useful resources for parents are the [Small Wonders](#) package of videos produced by the charity Best Beginnings and stories on the [Hospital Infant Feeding Network](#) website.

Example

'Izabela felt totally unprepared when her newborn baby Rosa was diagnosed with a diaphragmatic hernia and put on a ventilator. She had assumed she would breastfeed as it felt the natural way to feed her baby and worried that breastfeeding would be impossible. The paediatrician listened and explained that she if she expressed milk frequently that would help ensure Izabela produced more than enough for her baby, and after the surgery she could gradually try Rosa at the breast. If she could express at least 8 times in 24 hours that would be best but whatever she managed to achieve would help. The paediatrician then introduced Izabela to the infant feeding specialist nurse, who would help her learn to express and later help her breastfeed Rosa.'

Key points:

Babies can experience a variety of challenging conditions but breastfeeding can continue.

There are usually official guidelines and these provide more detail.

12

When may breastfeeding be contraindicated?

1. Medication

While it is necessary to be cautious with medication for a mother who is breastfeeding, manufacturers, and others, can be over-cautious in their guidance. Serious acute reactions to drugs seem to be uncommon, as a review by [Anderson et al \(2015\)](#) has shown. For medications which do pass into the milk, the concentration will usually be too low to be clinically significant, and lower than the level the baby receives if he has the medication directly (for those drugs licensed for infant use). If a drug is not licensed for mothers who are breastfeeding, it may be that no licence has been applied for, rather than that it is unsuitable. If there is uncertainty about the safety of a particular drug, there is probably a suitable alternative ([Martindale & Wise: 2005](#)).

The younger the baby, the more susceptible he is likely to be to traces of drug in his mother's milk. To minimise any possible effects of a drug, it is best for the mother to breastfeed immediately before a dose so that by the next feed the plasma concentration of the drug is likely to have fallen, and also for her to take the lowest effective dose for the shortest possible time. The mother can do the same with alcohol if she chooses to have a drink. If necessary, the baby can be monitored for unusual signs.

If breastfeeding is stopped, even temporarily, that introduces a health risk to mother and baby so benefits and risks of taking or not taking the medication need to be weighed up. If stopping is necessary, the mother will need to express/pump her milk if she plans to resume breastfeeding. She will need to start in advance of taking the medication in order to have a stock of expressed milk for her baby. Expressing will also help maintain her supply and minimise the risk of mastitis.

Medication that many mothers use is the contraceptive pill. Progestogen-only pills are preferable with breastfeeding as oestrogen may reduce the milk supply. However, breastfeeding helps to delay the start of ovulation and menstruation after birth (lactational amenorrhoea) and this can be used as a contraceptive method for up to 6 months after the birth provided the mother is fully, or nearly fully breastfeeding and there are no long gaps between breastfeeds ([FPA: 2017](#)).

Useful resources are UKDILAS ([the UK Drugs in Lactation Advisory Service](#)), the [BfN Drug Factsheets](#) and BfN Drugs in Breastmilk Information Service, accessed via e-mail or the Facebook page (www.breastfeedingnetwork.org.uk). Also see the Resources section ([Chapter 16](#)) for details of other sources of information and guidance.

2. HIV

The description of the first case of mother-to-child HIV infection was published over 30 years ago in 1985. Recommendations that mothers in developed countries feed their babies a breastmilk substitute (infant formula) to avoid such transmission followed soon after. [Coutsoudis and colleagues \(1999\)](#) then showed the vital importance of exclusive breastfeeding, backed up by [liff's results](#) a few years later. In 2006 it was realised that babies in [Botswana](#) who were not breastfed had high risks of mortality and morbidity, and it was then recognised that formula feeding needs to be affordable, feasible, acceptable, sustainable and safe for it to be the less risky option. The emotional importance to women of African origin of breastfeeding their baby, as the only acceptable way to feed a child, so mothers who fed formula were stigmatised, was overlooked. The development of anti-retroviral drugs helped greatly in managing HIV.

In 2010, the British HIV Association (BHIVA) and Children's HIV Association (CHIVA) produced a joint position statement on infant feeding in the UK which was adopted by the Department of Health in 2012. The BHIVA guidelines were updated in 2018. The preferred course of action recommended for HIV-positive mothers in the UK is not to breastfeed. However, there is an acknowledgement that mothers can be supported to breastfeed provided certain requirements are fully met, including breastfeeding being exclusive, and they are virologically suppressed on cART medication with good adherence ([BHIVA:2018, p.17](#)).

3. Not contra-indicated with disability

It's certainly not contraindicated if a mother has a disability. Breastfeeding is likely to be easier as the baby can latch on himself. An example is provided by artist Alison Lapper, who was born without arms and with shortened legs ([carlwhetham.photo.blog](#)), whose statue by Marc Quinn occupied the fourth plinth in Trafalgar Square from 2005-7. An inflatable version of the statue was part of the 2012 Paralympics opening ceremony.

Similarly, it can be much easier for a mother who is blind to enable her baby to breastfeed rather than trying to make up bottles.



Statue of Alison Lapper pregnant
www.alilapper.com

Key points:

There are few situations where breastfeeding is contraindicated.

If certain requirements are met, mothers with HIV can breastfeed.

13

Expressed milk and milk banks

Mothers may express or pump milk from their breasts for a variety of reasons. Usually this is either because the baby is struggling to latch so doesn't receive enough milk directly, for example if the baby is premature, or so that someone else can feed the baby. Expressing milk for a baby having difficulty in feeding at the breast both provides breastmilk for the baby and helps to maintain/increase the mother's milk supply. Expressing so that someone else can feed the baby may be to involve another carer, such as a partner or grandparent, to enable the mother to socialise outside the home, or for her to return to work. Another scenario is that the mother needs to have an operation and will not be available to the baby for some hours.

Squeezing out the milk by hand is called hand expressing and is the preferred method in the first few days as colostrum is viscous and small in volume. The milk the mother squeezes out can be sucked up into a small syringe and fed directly to the baby. This NHS video shows hand expressing: [How do I express my milk?](#) and this YouTube one [syringe-feeding](#).

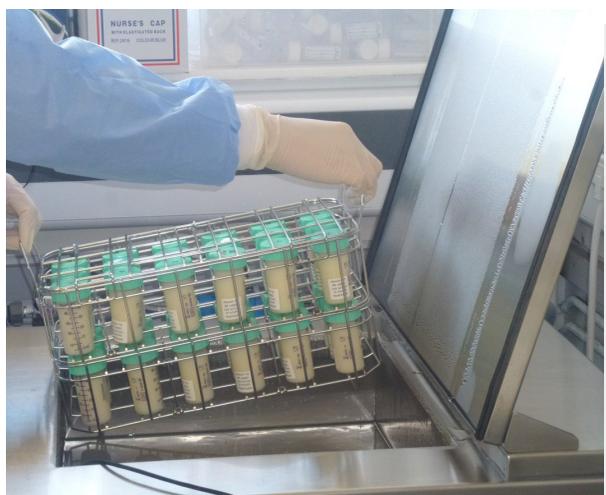
When the milk comes in, usually 3 or 4 days after the birth, the volume increases and the mother may prefer to use a breast pump. There are various pumps available and mothers have a choice of buying or hiring. In reality, mothers often take time to learn to express easily as it is a practical skill and discussing with a breastfeeding specialist how to make the process easier is likely to help. The volume needed for a whole feed can be estimated very roughly using the calculation: baby's wt in kilos x 150ml to give the volume needed over 24 hrs, and then dividing by the number of feeds the baby has in 24hrs.

The expressed milk can be offered to the baby in a cup rather than a bottle. A [Cochrane review in 2016](#) found that babies fed by cup were more likely to be exclusively breastfeeding on leaving hospital and more likely to be receiving some breastfeeds at 3 and 6 months but they were nearly all premature babies in the studies so there is a lack of research on term babies and cup feeding.

This video from Global Health Media shows small babies cup feeding: [Cup Feeding Your Small Baby](#)

If she is at work, the mother needs time, space and support to express. The space aspect includes a fridge for storage of the expressed milk. Employers also benefit from meeting these needs as parents who have a breastfed baby are less likely to take time off work because their baby is ill. In addition, the mother is likely to be a happier employee if she is supported to carry out her preference to continue breastfeeding.

Mothers who have a plentiful supply sometimes express and donate their surplus breastmilk to a Milk Bank. National guidelines require that donors are screened for HIV, hepatitis B and C, syphilis and human T-lymphotropic virus (heartmilkbank.org). The donated milk is screened, tested and pasteurised before being made available to other babies whose mothers are not able to provide enough milk. These are usually premature babies, for whom it is particularly important that they receive human breastmilk to minimise the chance of developing NEC (necrotising enterocolitis), or sick babies. Donor milk can provide a bridge over the stressful early days after birth for those mothers who at first do not provide enough milk for their premature babies. There are also situations where term babies can benefit, for example, while the mother is learning to express. Although the heat of pasteurisation does have some detrimental effect on the immunoglobulins, about 60% of the antibody activity remains, helping the baby to fight infections.



Milk bank pasteuriser
Photo courtesy of Northwest Human
Milk Bank/ www.northwesthmb.org.uk

Example

Amira had had a stressful pregnancy and her baby was born early at 32 weeks gestation. From her culture she expected to breastfeed but had the impression that formula feeding was normal in the UK so wondered what would happen in the hospital. Her baby breastfed briefly after the birth but soon tired. The paediatrician encouraged Amira to start hand expressing drops of her colostrum, which were drawn into a syringe by a neonatal nurse and then given directly to her baby. The paediatrician also mentioned that, if sometimes Amira wasn't able to express quite enough, she could choose to have some donor milk for her baby as well.

There are 16 milk banks in the UK and the charity that supports milk banking is UKAMB (United Kingdom Association for Milk Banking). www.ukamb.org Its motto is 'Every Drop Counts'. Hospitals make individual decisions about the use of donor breastmilk and not all neonatal units have as yet chosen to use it. A neonatal unit not linked to a milk bank would need to buy donor milk from a bank with a surplus, so there is a financial outlay, yet that would reduce the costs of treating NEC. Also, premature babies fed breastmilk are able to tolerate oral feeds six days earlier on average than babies fed formula, reducing the risk of having to treat infections resulting from using an intravenous line for feeding.



Opening of the Northwest Human Milk Bank, the UK's largest, in 2014
Photo courtesy of Northwest Human Milk Bank/ www.northwesthmb.org.uk

NWHMB was formed when existing milk banks at Chester (also covering North Wales) and The Wirral merged. Together they were already providing donor milk to 40 UK hospitals. There were satellite depots at Preston and Hull with plans for more after the merger. www.chester.ac.uk

Hearts Milk Bank, a not-for-profit social enterprise, is the newest Milk Bank and opened in 2017. It aims to facilitate research into the processing, storage and uses of donor milk. A video here explains the importance: heartsmilkbank.org

Some mothers choose to share breastmilk, perhaps to have a single donor for a baby. Unlike Milk Bank donors, they are not screened so there is a risk to the baby if the donor mother does not know she has an infection that can be carried in her milk. Breastfeeding another mother's baby has a long history and in the past wet nurses were employed by wealthy families. In Islamic law, breastfeeding another mother's baby creates milk kinship and the baby involved is regarded as a milk sibling of the mother's own children and cannot marry any of them. This links well with the recent discovery of stem cells in breastmilk, which means that genetic material is transferred to a breastfed baby.

Key points:

Expressing milk can be very useful in diverse situations such as having a premature baby or returning to work.

Like any skill, becoming competent at expressing takes practice.

The baby milk issue and global initiatives

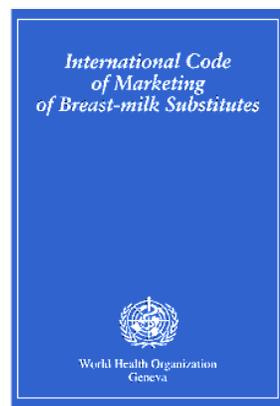
1. Baby milk issue and the WHA International Code

The alternative to breastmilk is a commercial product, infant formula. Manufacturers want to increase sales so promote their products. In the 1930s tinned condensed milk was promoted in some parts of the world.

The damaging impact on infant health of giving sweetened condensed milk instead of breastfeeding in developing countries was first highlighted by paediatrician Dr Cicely Williams ([Baker: 2004](#)) in her 'Milk and Murder' speech to the Singapore Rotary Club in 1939:

"If you are legal purists, you may wish me to change the title of this address to 'Milk and Manslaughter', but if your lives were embittered as mine is, by seeing day after day the massacre of the innocents by unsuitable feeding, then I believe you would feel as I do that misguided propaganda on infant feeding should be punished as the most criminal form of sedition, and that those deaths should be regarded as murder."

Eventually, concern about how the promotional activities of the infant formula companies were undermining breastfeeding led in 1981 to ratification by the World Health Assembly (WHA) of the [International Code of Breastmilk Substitutes](#). Its aim is to protect all babies, however they are fed: "to contribute to the provision of safe and adequate nutrition for infants, by the protection and promotion of breastfeeding, and by ensuring the proper use of breastmilk substitutes, when these are necessary, on the basis of adequate information and through appropriate marketing and distribution." This means no advertising, or other promotion, to the public of breastmilk substitutes and associated equipment (bottles and teats). Because infants are vulnerable and they are fed solely on milk, decisions about feeding a baby are so important that they must be made on the basis of objective information and be free from commercial influences.



[International Code of Marketing of Breast-Milk Substitutes 1981](#)

The Code itself is a set of guidelines, intended as the minimum requirement, and needs to be incorporated into national laws for sanctions to be applied to anyone breaking it. Seventy countries have incorporated the Code into legislation wholly or in part, but effectiveness depends on implementation, and there is still little or no protection for infants in many countries. Subsequent resolutions passed by the WHA to try to close loopholes have the same status as the 1981 Code. The 2016 resolution recognised 'the need to promote optimal complementary feeding practices for children from ages 6-36 months...' ([WHO:2016](#)). In Europe and the UK there is incomplete incorporation of the Code as the regulations are narrower - only infant milks to 6 months are covered and equipment (bottles and teats) is not included.



While violations have tended to become more subtle over the years, they are still widespread. Every three or four years, the non-governmental organisations (NGOs) comprising the International Baby Food Action Network (IBFAN) publish a report called *Breaking the Rules, Stretching the Rules*, which documents violations that have been found, through monitoring by volunteers, naming and shaming the companies responsible. The 2014 edition (brief version: (www.babymilkaction.org)) showed how the companies use social media for advertising and were heavily promoting growing up milks (GUMs); these are not explicitly covered by the Code yet the purpose of the Code clearly applies to them.

The Executive Summary of the 2017 edition highlights common themes that include hijacking public health campaigns and making unfounded health claims ([IBFAN: 2017](#)).

The report www.ibfan-icdc.org identified a marketing trend in which the companies not only encouraged conflicts of interest by continuing to sponsor medical conferences and the ongoing education of professionals but portrayed themselves as experts in breastfeeding and infant nutrition, for example by setting up 'Nutrition Institutes'.

The multinational food giants and leading infant formula manufacturers Nestlé and Danone have the largest numbers of pages for their violations. The boycott of Nestlé, running since 1988, is the longest running boycott in the world. While Nestlé does still break the Code, no-one can know how many babies have been protected as a result of the boycott.

In 2003, Pakistani Nestlé salesman Syed Amar Raza became aware of the potentially lethal effect of his work promoting infant formula when a hospital doctor explained to him why some formula fed babies were dying. Horrified by his impact, Amar resigned from his job and became a whistleblower, later having to emigrate with his family. The film *Tigers*, based on his true story, was premiered in 2014 and is now available on DVD (www.babymilkaction.org).

As recently as 2013, Danone's Dumex infant milk powder operation was reported by the official China Central Television as having bribed doctors and nurses to recommend its infant [formula to mothers](#).

When there is a natural or manmade disaster, such as flooding, a major fire or terrorist attack, the public is generous with donations. However, donated infant formula is a risk. It is essential that formula is only supplied to those families who need it otherwise breastfeeding can be undermined. Then, to use powdered formula, families need access to clean water, a means of sterilising and a suitable environment for preparing and storing feeds, requirements which are often not available in a crisis. The Food Standards Agency has guidance on preparing infant formula when there is flooding. It is far better to donate money to aid agencies so that appropriate infant formula can be purchased and targeted to those families which require it. In emergencies, breastfeeding is an easier and much safer way to feed a baby but mothers who are breastfeeding may well need access to skilled help, as challenges can still arise.

Operational Guidance on [Infant and Young Child Feeding in Emergencies](#) was first produced by the international Emergency Nutrition Network (ENN) and is regularly updated.

If you are interested in the global picture of breastfeeding and where the power lies, you may be inspired by Gabrielle Palmer's book, *The Politics of Breastfeeding* ([Palmer: 2009](#)) or the shorter version *Why the Politics of Breastfeeding Matter* ([Palmer: 2016](#)).

2. Ethical implications for medical professionals

The baby feeding industry comprises commercial companies which market infant formula or associated products, like bottles and teats, so the International Code is applicable to them. A company which breaks the Code, for example by advertising infant formula, may influence mothers' infant feeding choices away from breastfeeding. It is therefore not appropriate for health professionals to work with such companies.

However, even if a company were to abide by the International Code, a health professional who cares for mothers and babies would still have a conflict of interest if there is involvement with that company because the company gains from breastfeeding failure. Involvement may take the form of sponsorship, which

can be sponsorship of an individual, an educational event like a conference, research or a professional organisation. It also includes receiving goods in kind, such as gifts or hospitality.

In addition to the conflict of interest generated, sponsorship can damage the reputation of the individual or organisation. Commercial relationships like sponsorship and gifts are intended to improve the image of a company and thus influence recipients to regard the company more favourably; they may even recommend its products. The recipient thus has divided loyalties - to the company and to patients. Companies only do this because it works!

Because parents need to make informed but unbiased decisions about infant feeding, the Code does not allow contact between company personnel and pregnant women or mothers. This is flouted when such manufacturers have stands at events open to the public and have carelines.

As has been shown earlier, breastfeeding is very important for public health yet can be a fragile choice, easily damaged not only by direct promotion of infant formula but by health professionals being influenced by company actions. Suggesting a mother gives a bottle of infant formula may seem an innocuous act but it introduces non-human proteins to the baby, alters the baby's gut microbiome, has the potential to undermine the mother's confidence and reduce her milk supply, and may lead to the baby being reluctant to breastfeed.

For an example of guidance, see the 2014 [Position Statement](#) 4 by ISSOP (International Society for Social Pediatrics and Child Health).

3. Baby Friendly Hospital Initiative

The WHO and UNICEF launched BFHI, the [Baby Friendly Hospital Initiative](#), in 1991. It set out guidelines, summarised in the Ten Steps to Successful Breastfeeding, for maternity care facilities all over the globe to adopt to help them protect, promote and support breastfeeding.

TEN STEPS TO SUCCESSFUL BREASTFEEDING

Every facility providing maternity services and care for newborn infant should:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within half-hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breastmilk unless medically indicated.
7. Practise rooming-in – allow mothers and infants to remain together – 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

(WHO/UNICEF: 2009)

In the UK, the programme is run by Unicef UK and called the [Baby Friendly Initiative](#) as there are standards for supporting breastfeeding in the community (primarily health visitors and Children's Centres) as well as in maternity units. Following extensive consultation in 2012, the standards were revised to include more emphasis on supporting close and loving relationships between parents and baby.

It takes three steps and several years for a service to achieve the status of being accredited as Baby Friendly:

Step 1, *Building a Firm Foundation*, requires having a suitable infant feeding policy in place and a plan for training staff.

Step 2, *An Educated workforce*, focusses on training of staff and audit to ensure policies and training are implemented.

Stage 3, *Parents' Experiences*, involves the BFI staff interviewing local mothers to check that standards are being implemented.

So that standards are maintained, re-accreditation is required every couple of years.

As it is important that all staff who work with mothers and babies provide consistent information, Unicef BFI has produced a short [e-learning package](#) for GPs and a similar one for paediatricians (also see Resources section).

ONE OF THE RESOURCES FOR PARENTS IS THE LEAFLET BUILDING A HAPPY BABY:



Image courtesy of Unicef UK Baby Friendly Initiative/ www.unicef.org.uk

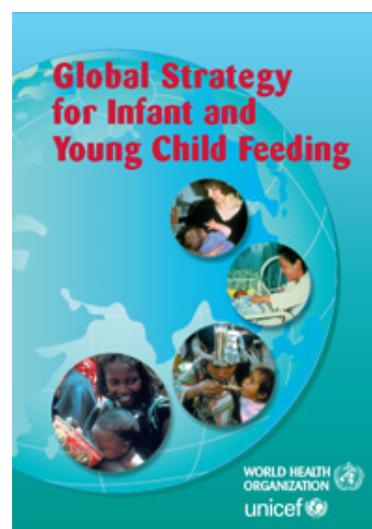
When WHO and Unicef launched BFHI in 1991, it was hoped that every maternity unit in the world would achieve Baby Friendly status in ten years, so by 2001. Countries vary hugely in the extent to which they have achieved this.

4. Global Strategy

In 2002, the World Health Organisation published its Global Strategy for Infant and Young Child Feeding, with an unequivocal statement:

Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants; it is also an integral part of the reproductive process with important implications for the health of mothers. As a global public health recommendation, infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health.

Based on the best scientific and epidemiological studies, it called for an urgent revitalisation of the existing global commitment to optimal feeding of infants and young children, particularly breastfeeding and the introduction of suitable complementary foods. Its aim is to improve nutritional status, growth and development, health and thus survival of infants and young children. Mothers should have access to appropriate information and skilled support. Babies who are not breastfed need special attention from the health and social care system as they are at greater risk. ([WHO: 2002](#))



[Global strategy for infant and young child feeding](#)

5. Environmental impact of infant formula

Infant formula has a significant environmental impact. Land is needed for cattle to graze to produce the milk, which in turn has to be transported to factories for processing. The cattle produce methane which contributes to global warming. Resources are needed for the tins and other packaging and these are transported to where they are sold and, once used, are waste. In contrast, breastmilk is the most locally produced food it is possible to have and its production is sustainable. The US Surgeon-General pointed this out in her 2011 *Call to Action to Support Breastfeeding* ([Benjamin: 2011](#)) and the 2014 document *Formula for Disaster* compares the impacts of formula feeding and breastfeeding on the environment.

“ I would challenge this august body to calculate the energy costs of the production of breastmilk substitutes - the amount of water used, the chemicals, the trees and the other resources used for packaging and promotion and finally the energy for sterilizing water for breastmilk substitute preparation. ”

Dr. Caleb Otto, Ambassador and Permanent Representative of the Republic of Palau, speaking at the United Nations

www.gifa.org

Key points:

Breastfeeding is of global importance to public health and WHO/UNICEF have introduced initiatives like the Baby Friendly Initiative and Global Strategy to protect, promote and support it.

Breastmilk is the most locally produced and sustainable food.

15

How doctors can provide effective support for mothers

1. During 1:1 care:

1. Listening to the mother to hear how she sees the situation and what her goal is.
2. Helping her find relevant information if needed.
3. Accepting her decisions.
4. During pregnancy asking if she has any questions/ concerns and not asking directly how she plans to feed her baby as she may then feel she cannot change her mind.
5. Encouraging her and her partner to attend antenatal classes.
6. During pregnancy, if she is worried about a previous, unsuccessful experience of breastfeeding, to encourage her to discuss what happened with a breastfeeding specialist (infant feeding coordinator, lactation consultant, voluntary sector breastfeeding counsellor).
7. Conveying the value of skin-to-skin contact directly after the birth, however the baby was born and however the mother plans to feed.
8. Obtaining information gently about feeding the baby by asking an open question, such as "How is the feeding going?" and then asking specific questions, if needed, to clarify details.
9. Encouraging the mother to contact a breastfeeding specialist, e.g. at a local drop-in or a voluntary sector breastfeeding counsellor or a breastfeeding helpline, if she has any concerns about her baby's feeding.
10. If mother or baby has a medical situation, endeavouring to protect the breastfeeding alongside addressing the medical situation.
11. If a mother starts breastfeeding in the same room as you, behaving as though she is cuddling the baby so that you convey that you regard this as normal.
12. Being encouraging, however long the mother breastfeeds.

2. In the workplace (surgery, hospital....):

1. Having a written breastfeeding policy that is displayed.
2. All staff to accept that breastfeeding in the waiting area is a normal activity.
3. Providing privacy for a mother who requires it (the mother may feel uncomfortable feeding in public and in some cultures it is not acceptable to breastfeed in front of an unrelated man).
4. Displaying current information about local and national sources of support with breastfeeding.
5. Not accepting or displaying resources (informational or otherwise) from a formula or bottle/teat manufacturer.

3. Ideas for student activities:

1. Arranging to shadow a lactation specialist – infant feeding coordinator, IBCLC or breastfeeding counsellor.
2. Holding a group discussion about appropriate language to use when talking about infant feeding.
3. Identifying ways to encourage breastfeeding in the local NHS trust.
4. Attending meetings of a local breastfeeding working group.

The Academy of Breastfeeding Medicine (ABM) has produced a clinical protocol (No.14) on achieving a [Breastfeeding-Friendly Physician's Office: Optimising Care for Infants and Children](#) (Grawey et al: 2013).

Personal experiences of breastfeeding, whether actual or vicarious, can readily influence how a health professional responds to a mother who is breastfeeding. In particular, negative experiences can lead to the professional lacking confidence in the process of breastfeeding, which may in turn undermine the mother's confidence. It is therefore crucial that any doctor who may have contact with such mothers reflects on his /her personal experiences so that they do not intrude and risk damaging the quality of care given.

Resources

1. Sample breastfeeding policy:

1. The venue welcomes mothers who are breastfeeding.
2. All staff receive training on implementing the policy
3. Babies can be breastfed in any public area in the venue.
4. Any mothers who need privacy will be accommodated.
5. If a patient complains about a mother breastfeeding, he/she will be informed that the service supports breastfeeding, because that helps health.

It needs to be clear which staff member has responsibility for the policy.

2. Employment matters

Maternity Action provides information and advice on maternity rights and benefits for employees and employers: maternityaction.org.uk

For female doctors returning to work the Medical Women's Federation offers advice and support: medicalwomensfederation.org.uk

For doctors in private practice who employ staff who may be female: Maternity Action's 'Accommodating breastfeeding on return to work' www.maternityaction.org.uk

3. Breastfeeding support organisations:

The Association of Breastfeeding Mothers (charity): abm.me.uk
Helpline: 0300 330 5453, plus its counsellors also work on the National Breastfeeding Helpline.
Some local support groups.
Leaflets for sale.

The Breastfeeding Network (charity): www.breastfeedingnetwork.org.uk

Runs the National Breastfeeding Helpline, 0300 100 0212.

[Drugs in Breastmilk service.](#)

Provides extensive information, including Drugs factsheets, and expressing and storing breastmilk information, on its website and as leaflets.

La Leche League GB (part of LLL International) (charity): www.laleche.org.uk

Helpline: 0845 120 2918; some local support groups.

Extensive range of books and sheets for sale.

NCT, formerly known as the National Childbirth Trust (charity):

The UK's largest charity for parents, incorporating skilled breastfeeding support in a range of services, such as antenatal courses and introduction to solids workshops. www.nct.org.uk

Helpline: 0300 330 0770; provides support in all areas of pregnancy, birth and early parenthood, including feeding.

Extensive information on website.

Baby Cafe is part of the NCT group: www.thebabycafe.org (Accessed 16/9/15)

Lactation Consultants of Great Britain (LCGB): the professional organisation for UK IBCLCs (International Board-Certified Lactation Consultants). www.lcgb.org

Search facility for IBCLCs on the website.

Association of Tongue-tie Practitioners (ATP) www.tongue-tie.org.uk

Search facility for tongue-tie practitioners on the website.

4. Mental Health

Dr. L. Santhanam (2017): Maternal Mental Health on GPIFN (GP Infant Feeding Network) website gpifn.org.uk

RCGP Perinatal Mental Health Toolkit: www.rcgp.org.uk

5. Drugs in lactation

Specialist Pharmacy Service (SPS) website for checking on specific drugs: www.sps.nhs.uk

Book: Jones W (2013) Breastfeeding and Medication London: Routledge.

Breastfeeding Network web pages Drugs in Breastmilk – Is it safe?

www.breastfeedingnetwork.org.uk

Wendy Jones also runs the Breastfeeding Network information source Drugs In Breastmilk – email druginformation@breastfeedingnetwork.org.uk

LactMed database (US) contains information on drugs and chemicals to which breastfeeding mothers may be exposed: toxnet.nlm.nih.gov

Hale T (current) Medications and Mother's Milk; users need to subscribe to access the website information: www.halesmeds.com

Other useful websites

GP Infant Feeding Network: gpifn.org.uk

Hospital Infant Feeding Network: www.hifn.org

Unicef UK Baby Friendly Initiative: www.unicef.org.uk

Includes information for health professionals, training sources and resources.

Information about e-learning package for GPs: www.unicef.org.uk

Information about e-learning package for paediatricians: www.unicef.org.uk

First Steps Nutrition Trust: Independent public health nutrition charity providing information and resources to support eating well from pre-conception to 5 years. www.firststepsnutrition.org

In particular, there is evidence-based information on infant milks.

Kellymom: an informative American site for parents and professionals: kellymom.com

Other books

Brown A (2016) Breastfeeding Uncovered: Who really decides how we feed our babies London: Pinter & Martin

Brown A (2018) The Positive Breastfeeding Book: Everything you need to feed London: Pinter & Martin

Evans K (2008) The Food of Love: Your Formula for Successful Breastfeeding Brighton: Myriad Although aimed at mothers, Kate's book contains researchbased

information presented in an amusing way, illustrated with cartoons.

Pickett E (2016) You've Got it in you: A Positive Guide to Breastfeeding Leics: Matador

17. NOW TEST YOURSELF

1. Name 3 diseases for which cost savings have been estimated for an increase in breastfeeding rates, 2 for babies and 1 for mothers:

1.

2.

3.

2. List 3 influences on mothers' feeding decisions:

1.

2.

3.

3. Describe 2 baby behaviours that might surprise new parents:

1.

2.

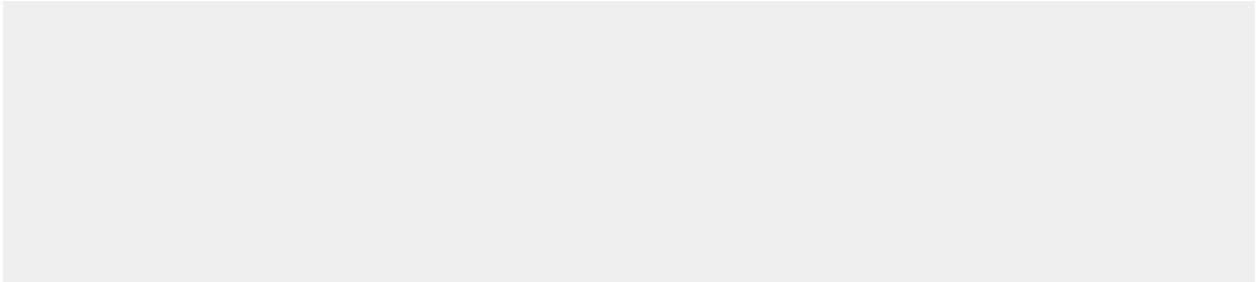
4. Physiology – briefly describe the 2 processes by which the human body controls milk production:

1.

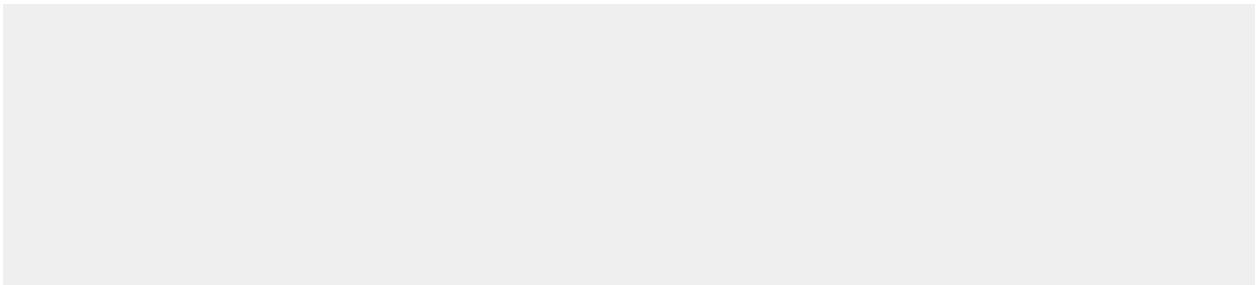
2.

5. What is the most likely reason for breastfeeding not going well, e.g. the mother has painful nipples?

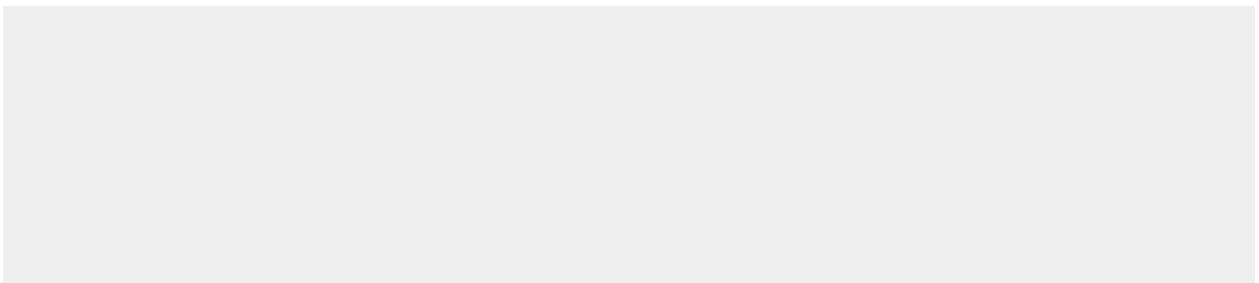
6. Describe a structural anomaly in the baby that might interfere with breastfeeding.



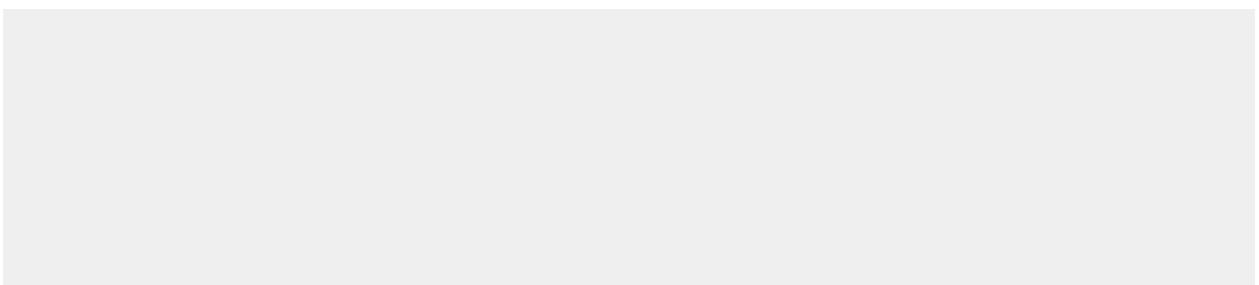
7. Can artificial breastmilk be synthesised? Explain your answer.



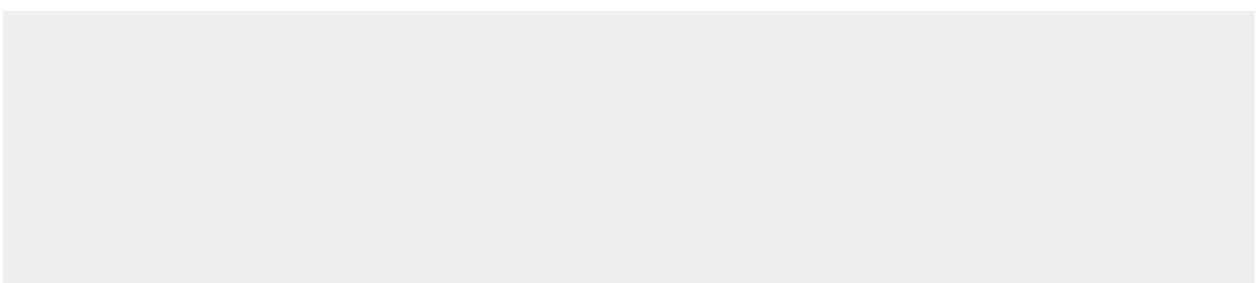
8. Why is skin-to-skin contact between mother and baby immediately after birth so important?



9. Does a mother need a special diet when breastfeeding? Explain your answer



10. What is the advantage of a mother with flu continuing to breastfeed her baby?



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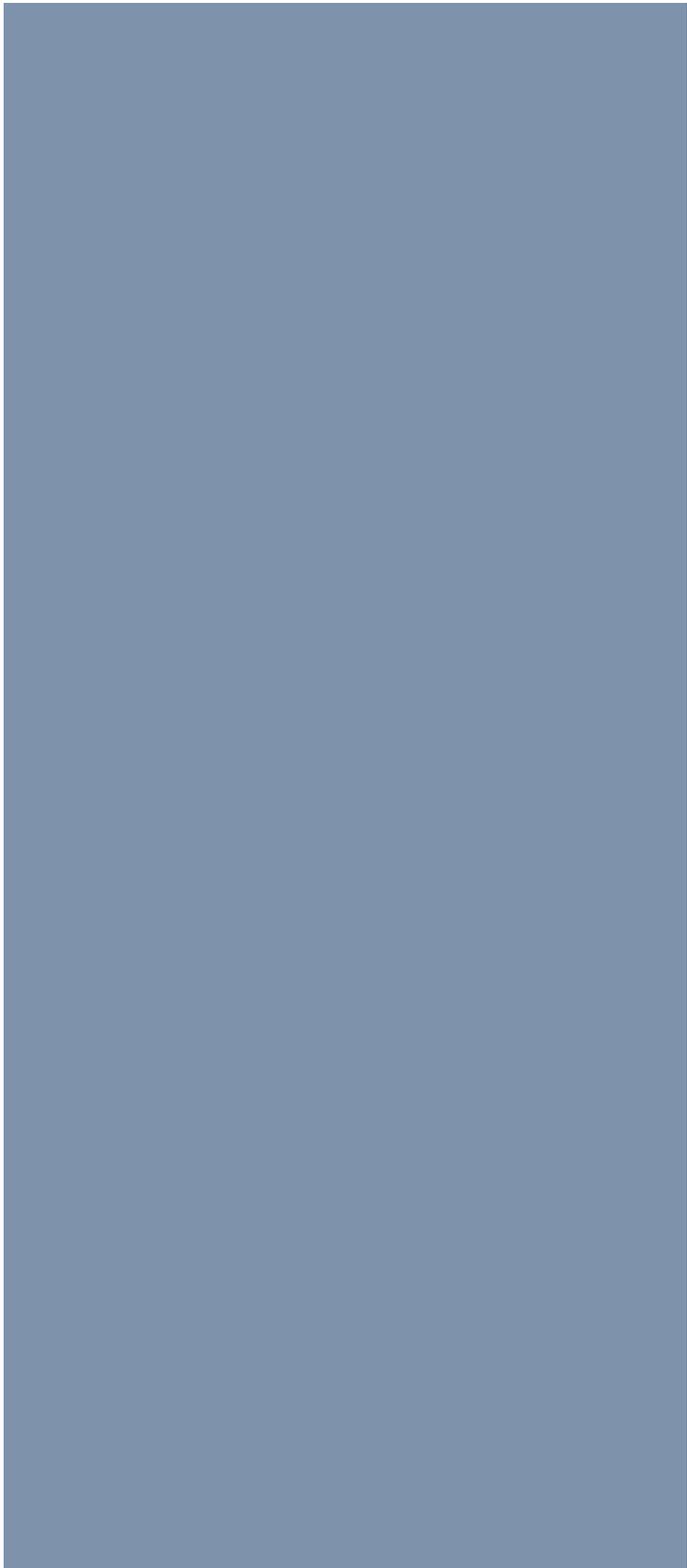
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