

# How to Treat

PULL-OUT SECTION

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## The crying baby

### Background

CRY-fuss behaviour in the first 3-4 months of life is a common and complex problem. Parents seek help from doctors, midwives, child health nurses, lactation consultants, psychologists, and other health professionals. The research in this field has been characterised by discipline-specific interpretations of the evidence, so families often receive conflicting advice from different health providers (figure 1). This results in costly duplication of services as parents resort to multiple service providers, including the ED.

Popular discipline-specific interventions, such as behavioural interventions, or the diagnosis and treatment of gastro-oesophageal reflux disease or food allergy, commonly derive from an extrapolation of research on older infants back to the first few weeks and months of life. But in the highly neuroplastic



**Figure 1:** Differing advice can be confusing to a mother.

post-birth period, cry-fuss and sleep problems emerge out of multiple interacting and dynamically co-evolving variables in the complex system of the mother and baby. In complex systems, discipline-specific interventions that manipulate just

one or two variables risk unintended outcomes. Effective and holistic management of the crying baby and his or her family demands a multi-faceted clinical approach, arising from an interdisciplinary synthesis of evidence.<sup>1-5</sup>

The nomenclature concerning cry-fuss and sleep problems is confused.<sup>6</sup> Clinically, parents use “unsettled” as a non-specific term referring to their babies’ crying, fussing and frequent waking from sleep in this age group, and for that reason this article applies the terms unsettled behaviour, cry-fuss behaviour, and excessive crying interchangeably. A baby is most usefully defined as being unsettled or crying excessively if the parents consider that to be the case.<sup>7</sup>

Hospital stays are shortening after birth, and families complain of difficulty accessing timely support in the early weeks and months. Because of their interdisciplinary and integrative clinical skills, GPs are well positioned to offer cost-effective management for the complex and undifferentiated presentation of infant crying.

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## Prevalence and aetiology

EXCESSIVE crying is reported by one in five parents of infants at two months of age.<sup>8</sup> Many more cite unsettled behaviour as the reason for commencing formula or complementary feeds, with crying, fussing and frequent night waking perceived to signal inadequate breastmilk supply.<sup>9-12</sup> Parents are more likely to complain of cry-fuss problems in the first 12 weeks post-birth and sleep problems thereafter. Infants with problem crying and fussing in the first three months of life do not wake more than other babies on average.<sup>13</sup> Clinically however, crying, feeding and sleep problems interact and co-evolve, particularly in the first few months, and have been generically defined as regulatory problems.<sup>4,14,15</sup>

A 2011 meta-analysis concludes that amounts of cry-fuss behaviours vary greatly between babies, with a stable average total daily crying duration of 110-118 minutes from birth to six weeks in healthy infants. This decreases to 72 minutes by 10-12 weeks, then tapers off.<sup>16</sup> Bouts of crying tend to cluster at the end of



**Excessive crying increases the risk of premature breastfeeding cessation, child abuse and postnatal depression.**

the day. The condition previously known as “infantile colic” does not constitute a clinical entity, but an arbitrary upper limit of normal crying, and we do not recommend the use of this term.<sup>16</sup> The average duration of infant crying in a 24-hour period varies according to the infant care practices of different societies even within Western society, although the frequency of cry initiation remains constant across cultures.<sup>16,17</sup> The number of bouts of prolonged and unsoothable crying is proportional to the overall

amount of crying.<sup>18</sup> An increased risk of problem crying has been linked with prenatal stress, family adversity, birth complications, the first child, and planned return to work by four months post-birth.<sup>19-21</sup> These associations are not clinically useful when cry-fuss problems present, however.

Cry-fuss behaviours in the first 3-4 months of life are a spectrum of infant neurobehavioural cues, caused by activation of the amygdala and hypothalamic-pituitary-adrenal (HPA) axis and sympathetic nervous system arousal. When an infant’s amygdala are activated by a perceived need or threat either internally or in the environment, HPA neuronal circuitry upregulates, triggering sympathetic nervous system activity and adrenaline release with associated cardiovascular, vocal, facial and other physiological changes along a gradient of crying. In a positive feedback loop evolved to ensure the infant’s survival in threatening circumstances, sympathetic nervous system arousal causes more release of cortisol from the HPA; adrenaline and cortisol further upregulate

sympathetic nervous system activity. This feedback loop explains bouts of unsoothable crying, so that an initial signal of discomfort or distress becomes a temporarily stable behavioural state. Some infants, whether due to temperament, genetics or environmental factors, become sensitised and quickly bypass pre-cry cues, moving straight into high levels of sympathetic nervous system arousal and unsoothable crying.<sup>22</sup>

Although problem crying usually resolves without long-term sequelae, it is not as benign as previously believed. Excessive crying increases the risk of premature breastfeeding cessation, child abuse and postnatal depression.<sup>22-24</sup> It is also linked with increased risk of behavioural and feeding problems later in childhood, particularly in the 5% of babies who continue to have cry-fuss problems at five months of age, and if the family have psychosocial risk factors.<sup>15,25,26</sup> For all families with an unsettled baby, intervention as early as possible to identify and manage treatable problems is important.<sup>2-4</sup>

## Assessment and diagnosis

A THOROUGH history and examination are required to identify the myriad medical and surgical problems that may present with excessive infant crying.

### History

Inquire into the antenatal, birth and postpartum histories. A detailed feeding and elimination history is essential (see box right). Ask for details of the mother’s medical and surgical history as this may impact directly on her health postnatally. Previous breast surgery, thyroid problems, diabetes and polycystic ovary syndrome are examples of conditions that may affect lactation. Inquire into parental allergy history including food allergies. If any red flags turn up during history-taking (eg, blood in the baby’s stool or vomit; projectile vomiting or fever in the baby; excessive vaginal blood loss, abdominal pain, or fever in the mother) then appropriate investigation and management is the first priority.

Ask about the pattern of infant crying, its timing and duration, precipitating factors and strategies already tried by the parents. Ask what the parents understand about normal infant crying. Is the baby pulling away, back arching, or resisting touch or movement? If these signs occur while feeding, they most commonly indicate a feeding problem, but occasionally point to a sensory processing or vestibular problem. Enquire about where the baby sleeps and use this as a prompt to discuss safe sleep, according to the SIDS and Kids guidelines (see box, right).

It is also important to delve into psychosocial factors. Do the parents have extended family support? Do they have supportive social networks? Is the caregiver engaged in supportive activities outside the



**Figure 2: Baby with tongue-tie.**

### SIDS and Kids Guidelines — How to Sleep your Baby Safely:

1. Sleep baby on the back from birth, not on the tummy or side
2. Sleep baby with head and face uncovered
3. Keep baby smoke-free before birth and after
4. Provide a safe sleeping environment night and day
5. Sleep baby in their own safe sleeping place in the same room as an adult caregiver for the first 6-12 months
6. Breastfeed baby if possible

home (eg, parent groups or mother-baby exercise classes)? Are there siblings and if so, how is the new baby impacting on these children? What were the parents’ experiences with their previous babies? Are both parents working or planning to return to work soon?

Administer the Edinburgh Postnatal Depression Scale, remembering that this scale is only a marker of risk and should not override clinical judgment (see Online resources, page 31). It may also be appropriate

to ask if the parents ever feel at risk of harming the baby or harming themselves.

### Examination

Note general appearance of the infant, including an assessment of hydration, jaundice, and subcutaneous fat stores. Check that the baby is gaining at least an average of 12.5g a week in the first three months of life. Assess vital signs. Perform a thorough physical examination to exclude any systems abnormalities (see Stanford Newborn Nursery website, Online resources, page 31). Check for tongue-tie (figure 2) and other oral abnormalities such as cleft palate. Note if the baby cries in response to movement or touch. Poor eye contact and lack of interest in caregivers may be developmental red flags, and should be carefully monitored. History may lead to a focused examination of the mother. If the baby is breastfeeding, examine the mother’s breasts and nipples.

### Investigations

Abnormal findings in the history and examination guide choice of investigation, management and

### Taking a feeding history

**The following may indicate poor milk transfer in the first weeks of life:**

- Fewer than six wet cloth nappies or fewer than 4-5 heavily wet disposable nappies daily
- Strong-smelling dark urine
- Fewer than 3-4 yellow curdy liquid stools a day if the baby is breastfed

**If the mother is breastfeeding, ask her the following:**

- Do you have any breast or nipple problems? (mastitis is a sign of inadequate duct drainage; nipple pain is a sign of impaired latch and impaired milk transfer)
- Does the baby have trouble latching onto the breast?
- Is there a wedge shape to the nipple after the feed? (sign of impaired latch)
- Does the baby frequently pull off the breast, with or without backarching or fretting? (signs of positional instability or impaired latch)
- Does the baby usually feed fewer than eight, or more than 12 times in 24 hours? (fewer than eight is not enough feeding opportunities in the first weeks and months; more than 12 may indicate impaired milk transfer)
- Does the baby regularly fall asleep or slip off the breast in the first 10 minutes of feeding? (sign of impaired caloric intake in the early post-partum)
- Does the baby regularly take longer than 30-40 minutes of active feeding, not including fussing, interacting, dozing? (sign of poor milk transfer)
- Are there few or no audible swallowing sounds? (sign of poor milk transfer)
- Is there a clicking sound when the baby feeds? (sign of impaired latch and poor milk transfer)
- Is there active swallowing for much of the feed (between pauses) and regular periods when swallowing occurs every one to two sucks?

**Regardless of whether the mother is breastfeeding or formula feeding, ask the following questions:**

- Does the baby have increased breathing effort before or after feeds?
- Does the baby have difficulty sucking or make wet gurgly vocalisations during feeding?
- Does the baby refuse feeds?
- Are there colour changes of the mouth or face during or after a feed?
- Is there dribbling of milk as a result of a poor seal on the bottle or breast?

**If the answer is “yes” to any of these questions, then the baby has a feeding problem and is likely to benefit from assessment by a feeding expert, an International Board Certified Lactation Consultant if breastfeeding (see Online resources, page 31) or a speech pathologist if not breastfeeding.<sup>2,27-30</sup>**

referral pathway for both mother and baby. But in an otherwise healthy afebrile infant with cry-

fuss problems, routine investigation is not warranted.<sup>26</sup>

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## Management

SYNTHESIS of the heterogeneous evidence concerning cry-fuss and sleep problems in the first 3-4 months of life translates into a systematic clinical approach, which we call the “Possums Approach.” In our approach, five domains are considered: baby’s health, mother’s health, feeds, sensation, and sleep (figure 3).<sup>1-5,32</sup> Our framework is applied flexibly to fit the unique needs and values of any individual mother-baby pair, and to accommodate the different time frames that a GP has available.

### Baby’s health

Table 1 lists rare causes of infant crying in the first few months that should not be missed. About 5% of crying babies have an underlying illness, most commonly UTI.<sup>31</sup> However, in the absence of signs suggestive of infection, excessive crying should not in itself prompt routine urinalysis in an afebrile crying infant under 3-4 months of age.<sup>33</sup>

Feeding and nutrition is fundamental to a baby’s health, and many babies who cry excessively in the first few months of life have an underlying feeding problem, dealt with in the third domain of the Possums Approach, that is, feeds.

Gastro-oesophageal reflux disease (GORD) is often diagnosed in crying babies in the first few months of life, and treated with proton-pump inhibitors or other anti-secretory medications. But randomised controlled trials, systematic reviews and two international consensus statements by paediatric gastroenterologists show that acid-peptic or allergic GORD is very rarely a cause of cry-fuss problems in this population, and PPIs are no better than placebo.<sup>34-40</sup> Gastric acid is buffered for two hours after feeds of either breastmilk or formula, and buffered refluxate is not irritative of oesophageal mucosa.<sup>41-44</sup> Treatments such as keeping babies upright after feeds, sleeping babies on wedges, or thickened feeds are not indicated.

Back arching (figure 4) is a neurobehavioural cue of protest, not oesophagitis regardless of feeding method. In breastfed infants, back arching and pulling away from the breast occur when positional instability or latch problems disrupt the infant’s reflex feeding sequence. Back arching may similarly signal feeding difficulties in bottle-fed babies.<sup>30,45</sup> Screaming with a red face, flexed hips and knees, and flailing fists occur with the neurohormonal feedback loops of sympathetic nervous system hyperarousal but do not necessarily — or even usually — signal pain.<sup>46</sup> Frequent vomiting is normal once serious conditions, such as pyloric stenosis and food protein-induced enteropathy syndrome, have been excluded, the latter being very rare in exclusively breastfed babies.<sup>47</sup> Vomiting occurs in 40% of babies, peaks at four months of age, and occurs more frequently with the high levels of sympathetic nervous system arousal associated with excessive crying.<sup>47-50</sup>

PPIs place infants at increased

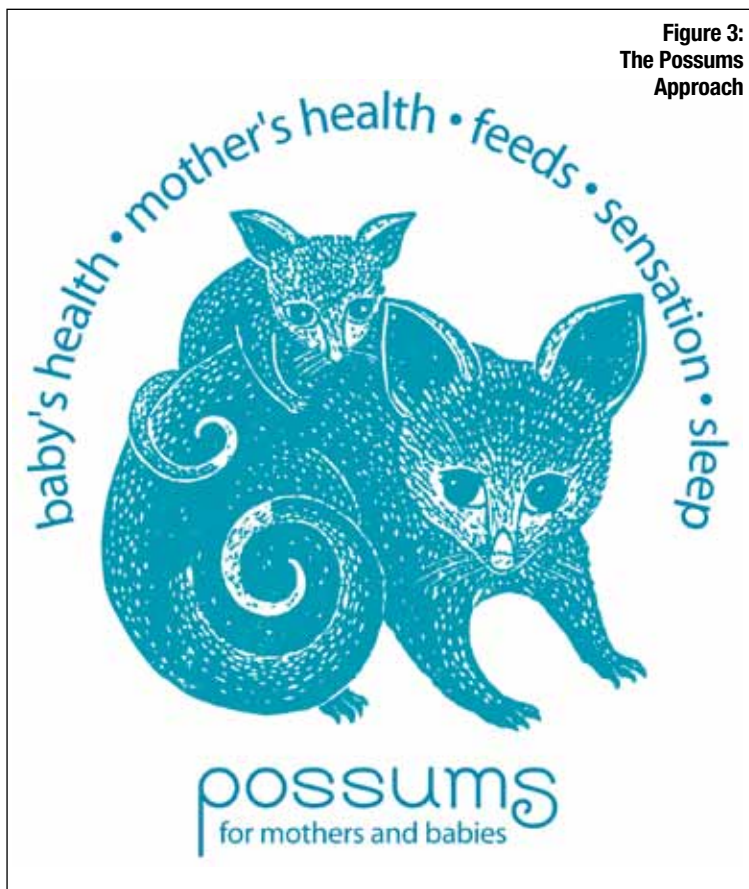


Figure 3: The Possums Approach

**Vomiting occurs in 40% of babies, peaks at four months of age, and occurs more frequently with the high levels of sympathetic nervous system arousal associated with excessive crying.**

risk of infection and later development of a paediatric food allergy.<sup>40,51,52</sup> Since PPIs are no better than placebo for cry-fuss problems, exposing the unsettled infant to even a modest risk of medication side effect is inappropriate.<sup>37,38</sup> When it is presumed an infant has GORD, many cry-fuss behaviours and related problems are attributed to the GORD. As a result, other treatable factors relating to excessive crying in the first few months of life, including feeding problems, can be overlooked.<sup>1,3,53,54</sup>

Cows milk allergy has only weak links with excessive crying in the first months of life.<sup>55,56</sup> Cows milk allergy in infants most commonly presents as skin rashes (urticaria, eczema), and occasionally as blood in the stool (allergic proctocolitis). If cry-fuss behaviour persists after other issues with feeding have been assessed and managed, it is reasonable to ask breastfeeding mothers to trial a dairy-free diet for two weeks. If formula feeding, infant crying



Figure 4: Back-arching infant.

Photo courtesy of Bridget Ingle RN RM IBCLC.

may improve with an extensively hydrolysed formula.<sup>57-59</sup> Maternal diets that eliminate multiple food proteins other than cows milk protein are not indicated.<sup>60</sup> Studies cited to support the efficacy of low-allergenic maternal elimination diets do not control for cows milk allergy, although cows milk allergy alone would explain their findings.<sup>61-63</sup> Complicated maternal elimination diets are burdensome, risk heightening maternal anxiety, and may paradoxically increase the risk of later paediatric food allergy by denying early opportunity to develop immune tolerance.<sup>64-66</sup>

Lactose intolerance is another condition often misdiagnosed in this patient group. Lactose intolerance, if acquired, occurs from about 3-5 years of age in 75% of the world’s populations and congenital lactase deficiency is rare, so neither of these types are likely to be clinically relevant in crying babies.

A transient secondary lactose intolerance may occur follow-

Table 1: Serious underlying causes of crying in infants in the first few months of life

Abdominal	Appendicitis, malrotation/midgut volvulus, intussusception, incarcerated/strangulated hernia, peritonitis, choledocholithiasis, pancreatitis, intestinal obstruction
Cardiac	Myocarditis, congestive heart failure, supraventricular tachycardia
Chest	Hypoxia, hypercarbia, pneumonia, bronchiolitis, acute airway obstruction (croup, foreign body, asthma)
General	Bacteraemia, sepsis, hypovolaemia, hyperbilirubinaemia
Genitourinary	Testicular/ovarian torsion, genital tourniquet, UTI, nephrolithiasis
Head, eyes, ENT	Foreign body
Haematological	Sickle-cell disease, malignancy, neutropenia, thrombocytopenia, anaemia
Skin/musculoskeletal	Septic arthritis, osteomyelitis, digital tourniquet, fracture, dislocation, subluxation, non-accidental trauma, cellulitis
Neurological	Bacterial meningitis, encephalitis, intracranial haemorrhage, hydrocephalus, cerebral oedema, epilepsy, degenerative condition
Toxic-metabolic	Prenatal drug use, toxic ingestion, electrolyte abnormality, inborn error of metabolism, hyperthyroidism

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ing damage to the intestinal villi, although the primary symptom of such lactose intolerance is diarrhoea, not excessive crying in the first few months of life. Secondary lactose intolerance is caused either by gastroenteritis or cows milk allergy. If the baby is formula fed, lactose intolerance secondary to gastroenteritis improves with a lactose-free formula. If the lactose intolerance is secondary to cows milk allergy, cows milk protein in any formula will perpetuate the intolerance. If the baby is breastfed, weaning is not indicated, although elimination of dairy products from the maternal diet should help if the underlying insult is cows milk allergy.

The only lactose-related condition that causes cry-fuss problems is functional lactose overload, a common breastfeeding management problem. Functional lactose overload is diagnosed clinically from the signs of tympanic abdomen, copious flatus, frequent feeding and waking, frothy explosive stools, and crying.<sup>67,68</sup>

The initial part of a breastfeed is high in volume and proportionately low in lipid content. Further into a feed the suckling infant takes smaller volumes of more lipid-rich milk. This lipid-rich fraction triggers the release of cholecystokinin in the infant, signalling satiety, and modulates intestinal contractility by slowing down gut transit.

The transfer of low volume, lipid-rich milk is compromised by a range of breastfeeding problems and also by the inaccurate advice that mothers should limit the duration of feeds (rather than letting the infant decide when a feed is finished) and feed from both sides with every feed in the first weeks.

A consistently inadequate lipid fraction results in rapid intestinal transit of the normal lactose load so that the lactase in the small intestine doesn’t have time to properly digest it. Undigested lactose then reaches the colon and ferments.

Functional lactose overload is often, but not always, associated

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with a high supply of milk. It may be managed by offering the baby the same breast each time they cue to feed over a 2-3-hour period. However, caution must be exercised, as side effects of inappropriate management of functional lactose overload include mastitis and lactation failure. Referral to an International Board Certified Lactation Consultant should be considered.

Once functional lactose overload has been properly managed, a baby cannot be overfed at the breast: high weight gains of more than 35g daily on average and protection against obesity are to be expected in breastfed babies in this age group.<sup>69,70</sup>

Complementary medicines, pharmaceuticals, and colic preparations do not reduce crying in infants.<sup>61,71</sup> Administration of the probiotic *Lactobacillus reuteri* DSM 17938 has been shown to decrease crying in breastfeeding infants.<sup>72-74</sup> However, these studies do not control for underlying feeding problems, including functional lactose overload, which will alter gut microbiota, contractility and permeability. Chronically high levels of sympathetic nervous system arousal also alter gut microbiota, contractility, and permeability. The interactions between the gut and the nervous system are complex.<sup>75-77</sup> Each of the five domains of the Possums Approach should be addressed before treatment with *Lactobacillus reuteri* is considered.

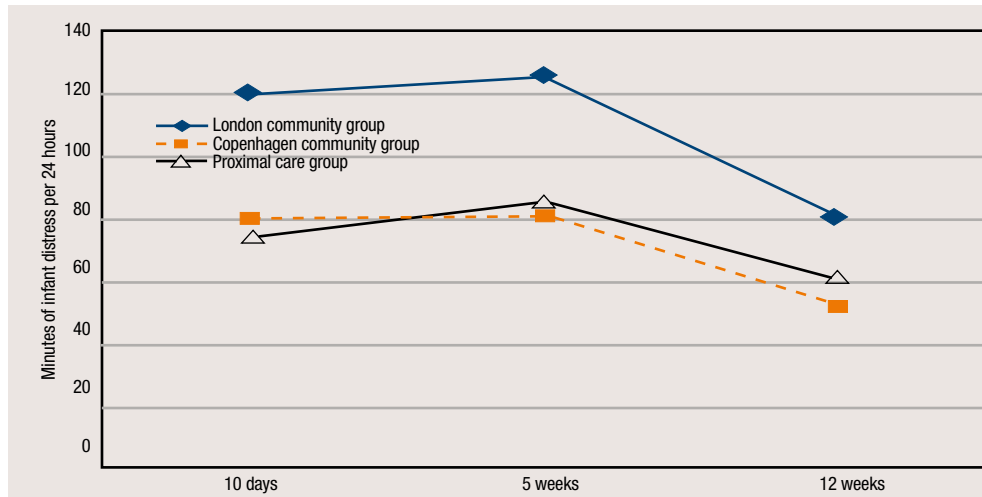
## Maternal health

Mothers and their partners are often better able to manage their baby's cry-fuss problems once they are reassured that the baby is healthy, and that the crying usually resolves by 16 weeks without causing long-term effects. Parents with a crying baby are often stressed and exhausted, and it is important to avoid unnecessary pathologising of normal responses to a stressful life event. However, because mothers with crying babies are at increased risk of postnatal depression, it is essential to identify, monitor and manage the situation appropriately, utilising psychologists and local perinatal mental health services for symptoms of anxiety and depression.<sup>23</sup> Randomised controlled trials show that the risk of child abuse can be reduced by instructing caregivers to place a crying baby in a safe place and to walk away if they feel they are at risk of harming the baby, returning when they feel back in control.<sup>78,79</sup>

## Feeds

The link between cry-fuss problems and feeding difficulties, regardless of feeding method, is strongly established.<sup>2,14,15,67,68,80,81</sup> The neurobehaviours of back arching, feeding refusal and frequent night waking have been widely misinterpreted to signal oesophagitis, but are signs of a feeding problem.<sup>30,45,54</sup> Crying babies are more likely to have oral motor dysfunctions and lower levels of plasma cholecystokinin, the hormone of satiety.<sup>81,82</sup>

Breastfed crying babies are more



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Photo: Bridget Ingle RN RM IBCLC

likely to have functional lactose overload.<sup>67,68</sup> Findings of more irritable behaviours in babies who are breastfed rather than formula fed can be explained by widespread unidentified and unmanaged breastfeeding problems, linked with significant gaps in health professional training.<sup>83,86</sup> Feeding problems in the first days and weeks rapidly entrench disrupted and anxious maternal-infant relations, increasing the risk of premature weaning and persistent behavioural and feeding problems in later childhood.<sup>15,87-90</sup> Very early identification and management of feeding problems is imperative, regardless of feeding method.

An unsettled breastfeeding baby who appears to have a good latch or who is gaining about 125g a week or more may nevertheless cry and fuss, and feed and wake frequently, because of poor milk transfer and subsequent poor satiety. Most infants in the first weeks and months of life need 8-12 breastfeeds a day, with at least one breastfeed between midnight and 6am. Normal cluster feeding occurs commonly in the evening when healthy babies often cue to breastfeed every 30-60 minutes. The best way to ensure breastfeeding homeostasis, satiety, and settled infant behaviour is to encourage cue-based care – that is,

responsiveness to the baby's communications and desire to feed, rather than delaying feeds according to the clock.

Limiting the duration and frequency of breastfeeding may undermine milk supply and fails to address the problems that cause excessive feeding and waking, including poor latch, positional instability, oral motor dysfunctions and anatomic problems such as tongue-tie.<sup>91-94</sup> Breastfeeding mothers should be advised to respond to an unsettled baby's pre-cry cue with an offer of a feed before the baby becomes difficult to soothe. The widespread concern about overfeeding in breastfed



Photo: Mummy and Me Yoga

Figure 5: Effects of different behavioural intervention styles on infant sleep.

babies is unfounded if underlying feeding problems are properly identified and managed.

If the baby is formula fed, parents should still offer feeds according to infant cues in the neurodevelopmentally sensitive first 3-4 months.

In this age group, we recommend paced bottle feeding to avoid overfeeding, by offering age and size-appropriate volumes over 20 minutes, watching for satiety cues (see Paced bottle feeding in Online resources).<sup>95</sup> Cue-based feeding of a formula-fed unsettled baby in the first weeks and months enhances mother-infant bonding, and may be supplemented by pacifier use. If breastfeeding parents wish to use a pacifier, this should occur only after any underlying feeding problems have been identified and managed, and used judiciously to preserve lactation homeostasis.<sup>96</sup>

## Sensation

Sensory integration is the complex neurological process by which the human body organises sensation from both within the body and from the environment, in order to operate effectively within that environment. Babies are highly dependent on their caregivers to facilitate the development of sensory integration. Neuroimaging studies show that babies need rich sensory nourishment in the first months of life to optimise long-term development of brain architecture.<sup>97</sup>

Caregivers can be advised to provide their baby with a diverse range of sensory stimuli by having the infant in proximity as they pursue their own enjoyable daily activities outside the home, either outdoors or in physically or socially active contexts, and they may find a list of baby-friendly social activities in the local area useful.

In a society such as Denmark, where sensible cue-based care is practised from birth, combined with an average 10 hours of physical contact (whether awake, feeding, or sleeping) in a 24-hour period, there is 50% less crying or fussing in the first few months of life.<sup>13,16,98</sup> Reassuringly, the effect of sensible and moderate amounts of physical contact is the same as the effect of more extreme "attachment parenting" approaches.

If a baby has moved to a full-

blown and unsoothable cry, the caregiver can be advised to wait calmly, holding the baby. Stepping outside may help. Skin-to-skin contact (ie, baby in nappy with or without a singlet, lying against the bare adult chest in a warm place) helps soothe the neonate until he or she is quietened enough to feed.<sup>99</sup>

A small minority of infants respond irritably to touch, and may have a sensory processing problem. Referral to a paediatric occupational therapist is warranted.<sup>100</sup> Occasionally vestibular dysfunction causes cry-fuss behaviours in babies who startle and cry as they are picked up and put down, and these babies may benefit from the intervention of a paediatric physiotherapist.<sup>3</sup> A new Cochrane review of osteopathic and chiropractic interventions for cry-fuss problems does not con-

clusively demonstrate decreased crying.<sup>101</sup>

**Sleep**

The evidence linking behavioural regulation of infant sleep with positive effects on maternal and infant health applies only to babies over six months of age.<sup>61,102,103</sup> In the first 3-4 months of life, Londoners, who are more likely to use behavioural interventions to space feeds and entrain the biological characteristics of infant sleep, have twice the amount of infant crying as the Danes (figure 5).<sup>17</sup>

In addition, two randomised controlled trials have demonstrated that introduction of behavioural regulation of infant sleep in the first few months does not decrease crying.<sup>104,105</sup> ‘Sleep algorithms’ are not evidence based, since variability is the most prominent feature of infant sleep. The

amount of sleep needed can vary by up to 10 hours a day among normal infants in the first months of life, and also varies markedly within the same baby from day to day.<sup>106-108</sup> Giving parents lists of ‘tired cues’ undermines their capacity to learn to make sense of their baby’s cues, which occurs through the process of experimentation, familiarity with context, and pattern recognition. Cues commonly attributed to tiredness also signal other needs such as hunger or the need for a change of environment. Instituting ‘feed-play-sleep’ cycles disrupts the powerful biological cue of postprandial somnolence, undermining breastfeeding and the parents’ capacity to read their infants’ cues, and is associated with more unsettled behaviour in the first few months of life.<sup>17,103</sup> These and other behavioural interven-

tions, applied either preventively or as an intervention for unsettled infants, are not indicated in the first six months of life.<sup>61,109</sup>

If the previous four domains have been addressed, problems that commonly contribute to overly frequent waking will have been identified and managed. If the baby is satiated and receiving adequate sensory stimulation during the day, they can be trusted to take the daytime sleep needed without the effort that proves so burdensome to many families. In the first 3-4 months, normal babies wake on average three times a night; only 37% of healthy three-month-old infants regularly sleep eight hours at night without disturbing their parents; and parents can be reassured that unsettled babies do not wake more at nights, on average, than other babies in the first 3-4 months of life.<sup>110</sup>

Author’s case study

MANDY, a 33-year-old computer technician on maternity leave, presents with her first baby, eight-week-old Michael. She is very worried about his ‘reflux’, and thinks he might need medication. Mandy recovered well from an emergency caesarean section at term due to fetal distress; Michael’s Apgar score was 8 then 9. Her past medical and surgical histories are unremarkable, with no allergies. Edinburgh Postnatal Depression Scale score at presentation is 13 (60% or more patients with an EPDS score >12/30 have postnatal depression) and the answer to question 10 (“The thought of harming myself has occurred to me”) is “never”. Mandy’s husband is supportive, but works long hours. She has many friends but no family locally.

Mandy says her milk didn’t come in until day 7. Initially, she had painful cracked nipples that were wedged after feeds. Michael regained his birthweight at day 14 with the help of formula feeds. She says she found if she didn’t use formula, he breastfed all the time and never slept.

In the third week she saw an International Board Certified Lactation Consultant, and the nipple trauma and pain mostly resolved, with only mild nipple discomfort since. She was able to cut back on formula feeds. The consultant told her to watch out for signs of allergy caused by formula use, and advised switching sides a few times each breastfeed to build supply. Mandy could not afford to return to the lactation consultant but continued switch-feeding, worried that Michael might not be getting enough milk because he vomits about six times daily. The vomits usually occurred after a feed and are only sometimes projectile with no visible blood. He also passes a lot of wind at times.

Michael has always cried for about three hours a day in total, worse in the late afternoons and evenings. Mandy tries to put him to bed after the last feed at 6.30pm, although he wakes and cries the minute she puts him in the cot. If he does fall asleep after being fed,



Photo: Dr Yvette Miller

he wakes half an hour later, and this cycle continues until about midnight. The child health nurse advised spacing feeds to every three hours and not to let him fall asleep at the breast. The pharmacy nurse advised her to eliminate dairy, wheat, soy and eggs from her diet. Mandy still uses a bottle of formula most evenings, especially if her husband is working late, and this seems to help Michael sleep, but she doesn’t like doing it because of his apparent allergies. She puts him in a cot next to the parents’ bed. He usually sleeps uninterrupted from midnight until 4.30 or 5am, when he will go back to sleep for a couple of hours after a breastfeed. Mandy begins to cry as she explains that when Michael

**Mandy begins to cry as she explains that when Michael breastfeeds, he often back arches and fusses and refuses the breast, as if in pain, despite being desperate to feed.**

breastfeeds, he often backarches and fusses and refuses the breast, as if in pain, despite being desperate to feed.

Michael has about five heavy wet disposable nappies and three or more mustard-yellow liquid stools daily, which are often quite explosive, and occasionally green, but never contain blood or mucus. He is afebrile, with an unremarkable physical examination. Similarly, a check of Mandy’s breasts is unremarkable. Michael is gaining on average 125g weekly. We tell Mandy she has been doing a wonderful job, despite all she’s had to deal with, and that cry-fuss behaviours usually resolve by 3-4 months. On observing a breast-

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Main practice points

1. Infant crying is not as benign as previously believed and requires early intervention.
2. There is a wide range of differential diagnoses to consider for the crying baby and a thorough history and examination guides investigation and management (see table 1, page 28).
3. A thorough feeding history is vital (see box, page 26).
4. In healthy afebrile infants with cry-fuss problems, routine investigation is not warranted.
5. After excluding serious medical and surgical conditions, consider functional lactose overload, satiety problems, and cows milk allergy.
6. The mother’s psychological well being needs to be assessed and supported. Screen using the Edinburgh Postnatal Depression Scale.
7. Feeding problems need prompt intervention, with referral to an International Board Certified Lactation Consultant for breastfeeding babies, and a speech pathologist for formula-fed babies.
8. If the caregiver develops healthy biopsychosocial rhythms with the infant in proximity, in physically or socially active contexts, and outdoors when possible, the infant’s need for rich and diverse sensation will be better met.

Online resources

- Safe Sleeping Guidelines**  
[www.sidsandkids.org/safe-sleeping/health-professionals](http://www.sidsandkids.org/safe-sleeping/health-professionals)
- Edinburgh Postnatal Depression Scale**  
[www.blackdoginstitute.org.au/docs/cliniciansdownloadableedinburgh.pdf](http://www.blackdoginstitute.org.au/docs/cliniciansdownloadableedinburgh.pdf)
- International Board Certified Lactation Consultants**  
[www.lcanz.org/find-a-consultant.htm](http://www.lcanz.org/find-a-consultant.htm)
- The Stanford Newborn Nursery**  
[newborns.stanford.edu](http://newborns.stanford.edu)
- Paced bottle feeding**  
[www.youtube.com/watch?v=UH4T70OSzGs](http://www.youtube.com/watch?v=UH4T70OSzGs)
- Zero to Three: National Center for Infants, Toddlers, and Families**  
[www.zerotothree.org](http://www.zerotothree.org)
- Mothers Matter**  
[www.mothersmatter.co.nz](http://www.mothersmatter.co.nz)
- Breastfeeding Inc**  
[www.breastfeedinginc.ca/content.php?pagename=videos](http://www.breastfeedinginc.ca/content.php?pagename=videos)

# How To Treat – The crying baby

## from previous page

feed, Mandy and Michael have positional instability problems resulting in backarching and breast refusal.

We help Mandy correct the positional problems, which have compromised the baby's ability to latch, and therefore the milk transfer. If we did not feel confident to do this, we would refer her to a trusted International Board Certified Lactation Consultant.

We explain to Mandy that Michael is a healthy normal baby, and that there is no reason to think he has gastro-oesophageal reflux disease or food allergy. Various feeding difficulties are likely to have contributed to Michael's unsettled behaviour, beginning when her milk was slow to come in after the caesarean section, and the subsequent latch problems.

We reassure Mandy that

Michael's vomiting is not concerning, and advise Mandy to stop her elimination diet, stop spacing feeds, and resume cue-based care. Mandy says she worries that if she resumes cue-based care, Michael will want to breastfeed all the time.

She doesn't want to overfeed him because of the risk of obesity. We explain that an average weight gain of over 250g a week is normal and healthy in breastfed babies, and that breastfeeding protects against obesity. We also explain that satiety improves once underlying breastfeeding problems are sorted out, and he shouldn't feed as frequently.

Michael has a fluctuating functional lactose overload, which causes explosive frothy stools, excess flatus, and frequent crying and waking. We recommend feeding from one side each time he cues to feed over a 2-3-hour period to

start with, but to remain flexible and feed from the other side too if that breast becomes uncomfortably full or if she thinks Michael needs the high volume, lower-fat fraction.

We direct Mandy to some useful websites: Zero to Three, Mothers Matter and Breastfeeding Inc (see Online resources, page 31).

By the end of the consultation Michael is asleep, having fed calmly after positional adjustments with multiple periods of rhythmic swallowing after each suck. We followed up in a week, when Mandy's Edinburgh Postnatal Depression Scale score has dropped to 9 and Michael is crying much less and feeding more calmly, although still waking two or three times before midnight.

We observe another feed, remarking on how quickly the two of them are working things out

together. We discuss normal infant sleep and suggest putting the baby to bed somewhat later at night, as long as they get up at around the same time each morning.

We recommend Mandy gets out and about with her friends during the day, telling her about a local exercise class for mothers, and advise her not to worry about how much sleep Michael has during the day as he will self-regulate in the context of good satiety and plenty of sensory stimulation. When Mandy comes back for the four-month vaccinations, she is breastfeeding with occasional formula complementary feeding only, and enjoying maternity leave.

Though Michael still has bouts of unsoothable crying sometimes, and she describes him as a "high-needs baby", both Michael and Mandy are, on the whole, much more content.

## References:

Available on request from  
howtotreat@cirrusmedia.com.au

## Acknowledgements

The authors gratefully acknowledge funding by the RACGP Foundation and the Queensland Centre for Mothers and Babies.

**CORRECTION:** In How to Treat Erectile Dysfunction Part 2 (17 May), question 3 in the quiz should have asked "Which TWO statements are correct?" (ie, not THREE). We apologise for these error.



## How to Treat Quiz

The crying baby — 24 May 2013

### INSTRUCTIONS

Complete this quiz online and fill in the GP evaluation form to earn 2 CPD or PDP points. We no longer accept quizzes by post or fax.

The mark required to obtain points is 80%. Please note that some questions have more than one correct answer.

### GO ONLINE TO COMPLETE THE QUIZ

[www.australiandoctor.com.au/education/how-to-treat](http://www.australiandoctor.com.au/education/how-to-treat)

#### 1. Which TWO statements are correct regarding the definition, epidemiology and aetiology of cry-fuss behaviour?

- a) Cry-fuss behaviour is defined as excessive crying or being unsettled in an infant under 12 months for over one hour every day for at least three consecutive weeks
- b) Excessive crying occurs in 20% of infants at two months of age
- c) Cry-fuss behaviour is generally due to reflux oesophagitis as a result of the poor contractility of an immature lower oesophageal sphincter in an infant under three months
- d) Cry-fuss behaviour is often referred to by parents as being "unsettled", which encompasses crying, fussing and frequent waking from sleep

#### 2. Which TWO statements are correct regarding the clinical manifestation and diagnosis of cry-fuss behaviour?

- a) Back arching is always a pathological infant behaviour that requires close monitoring and investigations
- b) Infants with cry-fuss problems in the first three months of life often wake more than other babies on average, which affects their feeding and leads to failure to thrive
- c) Cry-fuss behaviour averages about two hours daily in the first six weeks of life, decreasing to about one hour by 10-12 weeks, then tapers off
- d) Screaming with a red face, flexed hips and knees, and flailing fists may be related to protest behaviour and are not necessarily, or even usually, related to pain

#### 3. Which THREE statements are correct regarding the management and long-term prognosis of cry-fuss behaviour?

- a) Parents should be advised that problem

crying usually resolves by 16 weeks without long-term effects

- b) Despite a benign outlook, problematic cry-fuss behaviour that is not managed properly may lead to complications
- c) The management of cry-fuss behaviour includes discussing SIDS guidelines
- d) Excessive breastfeeding after correction of cry-fuss behaviour can lead to problematic weight gain and close monitoring is required for the ensuing six months

#### 4. Mimi is a 30-year-old woman who presented four weeks postnatally with her infant daughter Amy who had been exhibiting problematic cry-fuss behaviour. She had been breastfeeding Amy since birth. Which TWO statements are correct?

- a) An important part of the history to clarify is whether Amy has any blood in her stool or vomit and whether she had projectile vomiting or fever
- b) Cry-fuss behaviour is normal and does not require further review unless the behaviour continues past six weeks of age
- c) Mimi is most likely producing inadequate breastmilk for Amy and should be advised to return after a six-week trial of alternate breast feeds
- d) This presentation may reflect Mimi's psychosocial distress and where clinically indicated, appropriate evaluation tools such as the EPDS may be used

#### 5. Mimi reports that Amy had been back arching and going red in the face. Amy had vomited a few times in the past during these episodes. Which TWO statements are correct?

- a) When a baby has a bout of unsoothable crying, he or she is caught in a neurohormonal feedback loop so that the

- crying may become a stable state for a time
- b) Back arching is a sign that Amy is not suited to breastfeeding and needs to change to bottle-feeding
- c) Amy's back arching, pulling away or resisting touch/movement may occasionally indicate a sensory processing or vestibular problem
- d) Vomiting is normal in most infants and Mimi should be advised to return at the four-month immunisation review to further assess the vomiting

#### 6. You proceed to take a targeted feeding history from Mimi. Which THREE questions are important to ask?

- a) Does Amy usually feed more than 12 times in 24 hours?
- b) Does Amy have trouble latching onto the breast?
- c) Is there a clicking sound when Amy feeds?
- d) Does Amy backarch and protest before unsoothable crying with a feed?

#### 7. You proceed to examine Amy. Which THREE statements are correct?

- a) Amy should be gaining an average of 125g a day in the first three months of life
- b) Part of the examination involves excluding tongue-tie and other oral abnormalities such as cleft palate
- c) It is important to assess the baby's eye contact and interest in the caregiver
- d) An examination of Amy should include an examination of Mimi's breasts and nipples because she is breastfeeding

#### 8. While Amy's history and examination strongly suggest feeding issues, you consider the differential diagnoses. Which TWO are potential differential diagnoses for a crying infant?

- a) Intussusception

- b) Lactose intolerance
- c) Infantile colic
- d) Non-accidental injury

#### 9. Amy's physical examination was unremarkable. You proceed with investigation and management for Amy. Which TWO statements are correct?

- a) A trial of a proton-pump inhibitor is a good way to exclude food allergy because unlike a trial withdrawal of cows milk, PPIs do not cause any harm in this age group
- b) Some tried and true strategies to manage cry-fuss behaviour include: keeping babies upright after feeds, sleeping babies on wedges, or thickening feeds
- c) While UTIs may cause cry-fuss behaviour and should be excluded, urinalysis in the absence of fever is not routinely indicated
- d) Maternal elimination diets, other than cows milk elimination, are not recommended as management of cry-fuss behaviour. A cows milk elimination diet may be trialled once all other potential factors have been considered

#### 10. Which TWO statements are correct regarding the aspects of management other than baby health?

- a) Functional lactose overload is managed by limiting the duration of feeds and alternating feeding between the two breasts
- b) Sensible cue-based care and moderate levels of physical contact can be combined with other strategies to soothe cry-fuss behaviour
- c) Behavioural interventions to space feeds and train infant sleep are important adjuncts to controlling cry-fuss behaviour
- d) Referrals to psychologists and local perinatal mental health services may have a role in managing Amy's cry-fuss behaviour

### CPD QUIZ UPDATE

The RACGP requires that a brief GP evaluation form be completed with every quiz to obtain category 2 CPD or PDP points for the 2011-13 triennium. You can complete this online along with the quiz at [www.australiandoctor.com.au](http://www.australiandoctor.com.au). Because this is a requirement, we are no longer able to accept the quiz by post or fax. However, we have included the quiz questions here for those who like to prepare the answers before completing the quiz online.

**NEXT WEEK** Many people in Australia return to their country of origin to visit friends and relatives. This presents health risks that GPs should be able to manage proactively. The next HTT covers the key areas of managing these travellers. The authors are **Dr Sarah McGuinness**, infectious disease registrar, Victorian Infectious Disease Service, Royal Melbourne Hospital Parkville; and **Associate Professor Karin Leder**, infectious disease physician and head of travel medicine, Victorian Infectious Disease Service, Royal Melbourne Hospital, Parkville, and head, infectious disease epidemiology unit, department of epidemiology and preventive medicine, Monash University, Melbourne, Victoria.

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