Infantile colic

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Key Points

• Infantile colic is defined as excessive crying in an otherwise healthy and thriving baby. The crying typically starts in the first few weeks of life and ends by age 4–5 months. It causes one in six families with children to consult a health professional.

• We did not find sufficient evidence to judge whether replacing cows milk or breast milk with casein hydrolysate milk, low lactose milk, soya based infant feeds, or whey hydrolysate formula is effective in reducing crying time. Breastfeeding mothers should generally be encouraged to continue breast feeding. Soya milk is associated with possible long-term harmful effects on reproductive health.

• The studies examining the effectiveness of reducing stimulation (by not patting, lifting, or jiggling the baby, or by reducing auditory stimulation), crib vibration, infant massage, focused counselling, or spinal manipulation were too small for us to draw reliable conclusions.

• We did not find any good evidence assessing cranial osteopathy or gripe water for treating infantile colic. Despite a lack of evidence from well conducted trials, gripe water is commonly used by parents for their colicky infants.

• Increasing the time spent carrying the infant (by at least 3 hours) does not seem to reduce the time spent crying, and may increase anxiety and stress in the parents.

• We found no studies of sufficient quality to allow us to judge the effects of simethicone in infants with colic.

DEFINITION
Infantile colic is defined as excessive crying in an otherwise healthy and thriving baby. The crying typically starts in the first few weeks of life and ends by age 4–5 months. Excessive crying is defined as crying that lasts at least three hours a day, for three days a week, for at least three weeks. [1] Because of the natural course of infantile colic, it can be difficult to interpret trials that do not include a placebo or have no treatment group for comparison.

INCIDENCE/PREVALENCE
Infantile colic causes one in six families (17%) with children to consult a health professional. One systematic review of 15 community-based studies found a wide variation in prevalence, which depended on study design and method of recording. [2] Two prospective studies identified by the review yielded prevalence rates of 5% and 19%. [3] One prospective study (89 breast and formula-fed infants) found that, at 2 weeks of age, the prevalence of crying more than three hours a day was 43% among formula-fed infants and 16% among breastfed infants. The prevalence at 6 weeks was 12% among formula-fed infants and 31% among breastfed infants. [4] A national survey of 3345
infants found that maternal smoking was potentially associated with colic (OR 1.34, 95% CI 0.88 to 2.04). [4]

**AETIOLOGY/ RISK FACTORS** The cause is unclear and, despite its name, infantile colic may not have an abdominal cause. It may reflect part of the normal distribution of infantile crying. Other possible explanations are painful intestinal contractions, lactose intolerance, gas, or parental misinterpretation of normal crying. [1]

**PROGNOSIS** Infantile colic improves with time. One self-reporting parent questionnaire on crying patterns found that 29% of infants aged 1–3 months cried for more than three hours a day, but by 4–6 months of age the prevalence had fallen to 7–11%. [8]

**AIMS OF INTERVENTION** To reduce infant crying and distress, and the anxiety of the family, with minimal adverse effects of treatment.

**OUTCOMES** Presence and duration of colic, as determined by frequency and duration of crying, measured on dichotomous, ordinal, or continuous scales; parents’ perceptions of severity, recorded in a diary.

**METHODS** BMJ Clinical Evidence search and appraisal January 2007. The following databases were used to identify studies for this systematic review: Medline 1966 to January 2007, Embase 1980 to January 2007, and The Cochrane Library (all databases) Issue 4, 2006. Additional searches were carried out using these websites: NHS Centre for Reviews and Dissemination (CRD) (all databases), Turning Research into Practice (TRIP), and National Institute for Health and Clinical Excellence (NICE). Abstracts of the studies retrieved from the initial search were assessed by an information specialist. Selected studies were then sent to the author for additional assessment, using predetermined criteria to identify relevant studies. Study design criteria for inclusion in this review were: published systematic reviews and RCTs in any language, and containing at least 20 individuals of whom more than 80% were followed up. There was no minimum length of follow up required to include studies. We excluded all studies described as “open”, “open-label”, or not blinded unless blinding was impossible. We searched for all comparisons for included interventions, including comparisons against placebo or between included interventions, and reported any RCTs of sufficient quality that we found. We excluded RCTs in infants with normal crying patterns, infants older than 6 months, in interventions lasting less than three days, trials with no control groups, or trials with low scores on the Jadad scale. [6] In addition, we use a regular surveillance protocol to capture harms alerts from organisations such as the US Food and Drug Administration (FDA) and the UK Medicines and Healthcare products Regulatory Agency (MHRA), which are added to the reviews as required.

**QUESTION** What are the effects of treatments for infantile colic?

**OPTION** ADVICE TO INCREASE CARRYING

One RCT found no significant difference in daily crying time between advice to carry the infant, even when not crying, for at least an additional three hours a day and general advice (to carry, check baby’s nappy, feed, offer pacifier, place baby near mother, or use background stimulation such as music).

**Benefits:** Advice to increase carrying versus general advice:
We found two systematic reviews (search dates 1996 [1] and 1999 [7]), which identified the same single RCT. The RCT (66 infants) included in the reviews compared advising mothers of babies with colic to increase supplemental carrying of their infant (defined as carrying in addition to while feeding or in response to crying) for at least three hours a day versus general advice (to carry, check baby’s nappy, feed, offer pacifier, place baby near mother, or use background stimulation such as music). [8] Women in the “advice to increase carrying” increased supplemental carrying by 4.5 hours daily compared with 2.6 hours daily in the general advice group, with overall mean carrying time of 6.1 hours daily in the “advice to increase carrying” group compared with 3.9 hours daily in the general advice group. The RCT found no significant difference in daily crying time at any time point up to 6 weeks (mean difference in crying time at 6 weeks: +3 minutes, 95% CI ?37 to +32; P value not reported; reported as not significant). [8]

**Harms:** Advice to increase carrying versus general advice:
The RCT gave no information on harms. [6]

**Comment:** Clinical guide:
Although not harmful in itself, carrying babies for over 4 hours a day may increase anxiety and stress in the parents.
**OPTION ADVICE TO REDUCE STIMULATION**

One RCT found limited evidence that advising mothers to reduce stimulation (by not patting, lifting, or jiggling the baby, or by reducing auditory stimulation) reduced crying after seven days in infants aged under 12 weeks compared with an empathetic interview giving no advice. However, we were unable to draw reliable conclusions from this small study.

**Benefits:** Advice to reduce stimulation versus no advice:
We found two systematic reviews (search dates 1996 [1] and 1999 [7]), both of which identified the same single RCT. [9] The RCT (42 infants, median age 10 weeks) included in the reviews compared advising mothers to reduce stimulation (by not patting, lifting, or jiggling the baby, or reducing auditory stimulation) versus empathetic interview giving no advice. [9] For infants under 12 weeks, advice to reduce stimulation significantly improved a change rating scale for more infants compared with no advice (after 7 days: 14/15 [93%] improved with advice v 6/12 [50%] with control; ARI 43%, 95% CI 8% to 49%; RR 1.9, 95% CI 1.2 to 2.0; NNT 2, 95% CI 2 to 13). [9] Improvement in the change rating scale was defined as a score of +2 or better on a scale from −5 to +5 that indicated a perceived change in crying since the start of the trial. It is unclear whether this scale has been validated (see comment below).

Advice to reduce stimulation as part of focused counselling of mothers about behavioural modification techniques:
See benefits of focused counselling, p 4.

**Harms:** Advice to reduce stimulation versus no advice:
The RCT gave no information on adverse effects. [9]

Advice to reduce stimulation as part of focused counselling of mothers about behavioural modification techniques:
See harms of focused counselling, p 5.

**Comment:** Mothers given advice to reduce stimulation were also given permission to leave their infants alone to cry if they felt that they could no longer tolerate the crying. It is unclear whether the improved change score represents a true change in the hours that the baby cried, or altered maternal perception.

**OPTION CASEIN HYDROLYSATE MILK**

One small RCT provided insufficient evidence to assess the effects on infantile colic of replacing cows’ milk formula with casein hydrolysate hypoallergenic formula. Another small RCT found that substituting soya or cows’ milk with casein hydrolysate formula was less effective at reducing the duration and extent of crying than focused counselling.

**Benefits:**
We found two systematic reviews (search dates 1996 [1] and 1999 [7]), which identified the same two RCTs. [10] [11]

Casein hydrolysate milk versus cows’ milk:
The reviews included one RCT, [10] which was too small to meet our inclusion criteria and has been excluded from this BMJ Clinical Evidence review.

Casein hydrolysate milk versus counselling:
See benefits of focused counselling, p 4.

Casein hydrolysate milk or hypoallergenic diet for breast feeding mother versus cows’ milk or control diet for breast feeding mother:
The reviews included one RCT (122 infants, 115 [94%] followed up) comparing active diet (infants bottle fed casein hydrolysate milk or breastfed with mothers on a hypoallergenic diet) versus control diet (infants bottle fed cows’ milk formula or breast fed with mothers on a control diet). In breastfed infants, maternal diet was free of artificial colourings, preservatives, and additives, with a low intake of common allergens (e.g. milk, egg, wheat, and nuts) in the hypoallergenic group compared with a normal intake in the control group. [11] A total of 38 (33%) infants were bottle fed and 77 (67%) were breast fed, but the RCT did not specify what proportions of the 54 infants receiving the active diet were bottle or breast fed. The RCT pooled the results of breast- and bottle-fed babies and found that the active diet significantly reduced infant distress compared with control diet (distress reduction from baseline [measured by parents on a validated chart]: 39% with active diet v 16% with control diet; P = 0.012). [11] However, the number of bottle-fed infants was too
small to establish or exclude important effects in infants bottle fed casein hydrolysate milk compared with cows’ milk.

**Harms:**

- **Casein hydrolysate milk versus cows’ milk:**
  The RCT gave no information about harms. [10]

- **Casein hydrolysate milk versus counselling:**
  See harms of focused counselling, p 4 .

- **Casein hydrolysate milk or hypoallergenic diet for breastfeeding mother versus cows’ milk or control diet for breastfeeding mother:**
  The RCT gave no information about harms. [11]

**Comment:**

The large number of withdrawals in one RCT, and the pooling of the results of bottle and breastfed infants in another makes it difficult to draw definite conclusions about the effects of replacing cows’ milk with casein hydrolysate milk.

**Clinical guide:**

There is insufficient evidence of a difference in effect of different formulas of bottle milk on infantile colic. If a baby is thriving on standard formula milk then the consensus is that there is no need to change milks. An exception to this general rule is that infants with colic in atopic families might benefit from a change to a hypoallergenic formula. Breastfeeding mothers should generally be advised to continue breast feeding.

**OPTION**

**CRANIAL OSTEOPATHY**

We found no systematic review or RCTs on the effects of cranial osteopathy in infants with colic.

**Benefits:**

We found no systematic review and no RCTs on the effects of cranial osteopathy in infants with colic.

**Harms:**

We found no RCTs.

**Comment:**

We found no evidence of benefit from cranial osteopathy in infants with infantile colic.

**OPTION**

**CRIB VIBRATOR DEVICE/CAR RIDE SIMULATION**

One RCT found no significant difference between crib vibrator device (car-ride simulation) plus reassurance; counselling mothers about specific management techniques (responding to crying with gentle soothing motion, avoiding over stimulation, using a pacifier, and prophylactic carrying) plus reassurance; and reassurance alone, in terms of maternal anxiety or hours of infant crying over two weeks.

**Benefits:**

Crib vibrator plus reassurance versus counselling plus reassurance versus reassurance alone:

See benefits of focused counselling, p 4 .

**Harms:**

Crib vibrator plus reassurance versus counselling plus reassurance versus reassurance alone:

See harms of focused counselling, p 5 .

**Comment:**

None.

**OPTION**

**FOCUSED COUNSELLING OF MOTHERS ABOUT BEHAVIOURAL MODIFICATION TECHN IQUES**

One small RCT found no significant difference between counselling mothers about specific management techniques (responding to crying with gentle soothing motion, avoiding over stimulation, using a pacifier, and prophylactic carrying) plus reassurance; crib vibrator device plus reassurance; and reassurance alone, in terms of maternal anxiety or hours of infant crying over two weeks. Another small RCT found limited evidence that counselling decreased the duration of crying compared with substitution of soya or cows’ milk with casein hydrolysate formula.

**Benefits:**

Counselling plus reassurance versus crib vibrator device plus reassurance versus reassurance alone:

We found two systematic reviews (search dates 1996 [1] and 1999, [7] which identified the same single RCT [12] ). The RCT (38 infants) assessed maternal anxiety and the hours of crying each
The RCT compared three interventions: counselling mothers about specific management techniques (responding to crying with gentle soothing motion, avoiding over stimulation, using a pacifier, and prophylactic carrying) plus giving the mother reassurance and support; crib vibrator device plus giving the mother reassurance and support; and giving the mother reassurance and support alone. It found no significant difference among groups in maternal anxiety or hours of infant crying over two weeks (mean hours of crying: results presented graphically; reported as not significant; mean maternal anxiety score: results presented graphically; reported as not significant).

### Harms:

**Counselling plus reassurance versus crib vibrator device plus reassurance versus reassurance alone:**
The RCT gave no information about harms.

**Counselling versus elimination of cows’ milk or soya milk protein by substitution with casein hydrolysate:**
The RCT gave no information about harms.

### Comment:

**Clinical guide:**
Despite a lack of evidence of any effect on the amount of time the baby cried, most clinicians would consider it good practice to offer reassurance and support to mothers of colicky infants.

### OPTION GRIPE WATER

We found no systematic review or RCTs on the effects of gripe water in infants with colic.

**Benefits:**
We found no systematic review or RCTs on the effects of gripe water in infants with colic.

**Harms:**
We found no RCTs.

**Comment:**
Clinical guide:
Despite the lack of evidence from well conducted trials, gripe water is commonly used by parents for infants with colic.

### OPTION INFANT MASSAGE

One small RCT found no significant difference between massage and crib vibrator device for colic-related crying or parental rating of symptoms of infantile colic, but it may have lacked power to detect a clinically important difference.

**Benefits:**
Infant massage versus usual care:
We found no systematic review or RCTs.

**Infant massage versus crib vibrator device:**
We found no systematic review. We found one RCT (58 infants, 47% with colic; see comment below) comparing massage versus a crib vibrator device over a four-week period. Infant massage (performed 3 times/day) included gentle stroking of the skin over different parts of the head, body, and limbs, using olive oil and maintaining eye contact. The crib vibrator device was used for 25-minute periods at least three times daily. Colic symptom ratings were obtained from parental diaries of crying. The RCT found no significant difference between massage and crib vibrator device for colic related crying or parental rating of symptoms (AR for less colicky crying: 64% with massage ν 52% with crib vibrator device; P = 0.24). Only 47% of infants in the RCT had colic, so the results may not apply specifically to infants with colic.

The RCT stated that “use of a crib vibrator device was considered a control intervention based on an earlier study in which a similar device was as effective as parental education or reassurance and support and was chosen instead of nothing to improve parental compliance”. It is unclear whether reduced crying in this RCT reflects the natural course of infantile colic or the specific effect of interventions. The RCT may have lacked power to detect clinically important effects.
Harms: Infant massage versus crib vibrator device:
The RCT gave no information about harms. [14]

Comment: Clinical guide:
We found no evidence of benefit from infant massage. Although parents are possibly inclined to
massage, unsettled behaviour of the colicky infant might be stimulated.

OPTION LOW LACTOSE MILK

One crossover RCT provided insufficient evidence on the effects of low lactose milk in infants with colic.

Benefits: Bottle-fed pooled breast milk versus low lactose breast milk versus cows' milk versus low lactose cows' milk:
We found two systematic reviews (search dates 1996 [1] and 1999, [7], 2 RCTs) and two additional
RCTs. [15] [16] The two RCTs [17] [18] included in the reviews and the first additional RCT [15] were
too small to meet our inclusion criteria (see methods) and have been excluded from this BMJ
Clinical Evidence review. The second additional RCT (crossover, 53 infants) found that low lactose
formula/breast milk reduced crying time after crossover at 25 days compared with untreated formu-
la/breast milk, but the difference was not significant (median: 11.0 hours with lactase v 14.1 hours
with no lactase; median difference in crying time 23%; P = 0.09). [16]

Harms: The RCT gave no information about harms. [16]

Comment: It is difficult to draw firm conclusions from this RCT. [16] The babies were not selected on the basis
of confirmed lactose intolerance. The crossover design of the included RCT limits its validity and
clinical utility; because infantile colic has a naturally variable course. [16]

Clinical guide:
We found no evidence of benefit with low lactose milk in the treatment of infantile colic and, conse-
quently, no reason to use this milk in daily practice.

OPTION SIMETHICONE (ACTIVATED DIMETICONE [DIMETHICONE])

One RCT found no significant difference between simethicone and placebo in colic rated by carers. Another
RCT found no significant difference between simethicone and placebo in improvement as rated by parental
interview, 24-hour diary, or behavioural observation. One poor-quality RCT found limited evidence that
simethicone reduced the number of crying attacks on days 4–7 of treatment compared with placebo.

Benefits: Simethicone versus placebo:
We found two systematic reviews (search dates 1996, [1] 1999, [7] with the same 3 RCTs in each
review, [19] [20] [21] 136 infants) comparing the effect of simethicone versus placebo on the duration
of crying or the presence of colic. The first RCT identified by the reviews (double-blind, crossover,
83 infants aged 2–8 weeks) compared 0.3 mL of simethicone versus placebo (duration of treatment,
average of 1 week) before feeds. [19] It found no significant difference in colic (using the standard
colic definition), when rated by carers, between simethicone and placebo (28% improved with
simethicone v 37% with placebo v 20% with simethicone plus placebo; effect size for simethicone
v placebo −0.10, 95% CI −0.27 to +0.08). [1] [15] The second RCT identified by the reviews (double-
blind, crossover trial, 27 infants aged 2–8 weeks) found no significant difference between simethicone
and placebo (10 drops before meals, duration of treatment 24 hours) in improvement as rated by
parental interview, 24-hour diary, or behavioural observation (effect size +0.06, 95% CI −0.17 to
+0.28; see comment below). [1] [20] The third, poor-quality RCT identified by the reviews (26 infants
aged 1–12 weeks) reported no details on how cases of colic were defined. [21] It found that sime-
thicone significantly reduced the number of crying attacks on days 4–7 of treatment compared with
placebo (effect size 0.54, 95% CI 0.21 to 0.87). [1] [21]

Simethicone versus spinal manipulation:
See benefits of spinal manipulation, p 7.

Harms: Simethicone versus placebo:
The first two RCTs gave no information about adverse effects. [19] [20] The third RCT reported that
no infants treated with simethicone experienced adverse effects. [21]

Simethicone versus spinal manipulation:
See harms of spinal manipulation, p 7.
Comment: The crossover design of two of the RCTs limits their validity, as they did not report results before crossover, and infantile colic has a naturally variable course; therefore the effects of simethicone may have continued even after a washout period.\cite{19} \cite{20} 

Clinical guide: Although we found no good quality trials to show benefit, simethicone is widely used for infantile colic in some countries. Further trials are not considered to be of clinical importance and are unlikely to be undertaken. According to the available evidence, there is no reason to use simethicone in the treatment of infantile colic.

**OPTION SOYA BASED INFANT FEEDS**

We found two systematic reviews, which did not identify any RCTs of sufficient quality.

**Benefits:** Soya based infant feeds versus cows’ milk formula: We found two systematic reviews (search dates 1996\cite{1} and 1999\cite{7}), which between them identified two RCTs comparing soya based infant feeds versus cows’ milk formula. The first RCT identified by the reviews was too small to meet our inclusion criteria (see methods) and has been excluded from this BMJ Clinical Evidence review. The second RCT identified by the reviews provided insufficient evidence, as it considered infants admitted to hospital for colic and used weak methods (Jadad scale 1\cite{6}).\cite{23}

**Harms:** Soya based infant feeds versus cows’ milk formula: The RCTs gave no information about harms.\cite{22} \cite{23} The Chief Medical Officer for the UK reported that soya infant feeds should not be recommended as preferred treatment in healthy babies as they have a high phyto-oestrogen content and may affect long term reproductive health.\cite{24}

**Comment:** Clinical guidance: We found no evidence of sufficient quality to determine the benefit of soya milk in the treatment of infantile colic. Soya milk should be avoided because of its possible long-term harmful effects on reproductive health. There is insufficient evidence for the effect of different formulas of bottle milk on infantile colic to warrant changing milks in a baby who is thriving on a standard formula milk. An exception to this general rule is that infants with colic in atopic families might benefit from a change to a hypoallergenic formula. Breastfeeding mothers should generally be encouraged to continue breast feeding.

**OPTION SPINAL MANIPULATION**

Two RCTs found insufficient evidence about the effects of spinal manipulation in infants with colic.

**Benefits:** We found one systematic review (search date 2005) of reviews.\cite{25} It identified one systematic review (search date not reported).\cite{26}

Spinal manipulation versus simethicone (activated dimeticone [dimethicone]): The review\cite{26} included one RCT.\cite{27} The RCT (41 infants) compared 2 weeks of spinal manipulation versus 2 weeks of daily treatment with simethicone. Parents were not blinded to treatment allocation and recorded length of crying in a colic diary.\cite{27} The RCT found that spinal manipulation significantly reduced crying compared with simethicone (mean reduction in crying for days 4–7: 2.4 hours with spinal manipulation v 1.0 hours with simethicone; P = 0.04).\cite{27}

Spinal manipulation versus holding: The review (search date not reported)\cite{26} included one RCT.\cite{28} The RCT (86 infants) compared spinal palpation by a chiropractor versus holding of the infant by a nurse (in each case 3 times over 8 days).\cite{28} The parents, who were blind to the intervention, rated symptom severity on a 5-point scale and recorded crying in a diary. The RCT found no significant difference between spinal palpation and holding for crying reduction (mean reduction in crying by day 8: 3.1 hours for both groups; P = 0.98).\cite{28}

**Harms:** The RCTs gave no information on adverse effects.\cite{27} \cite{28}

**Comment:** It is unclear whether reduced crying reflected the effects of interventions or spontaneous improvement.
One small RCT found that replacing cows’ milk formula with whey hydrolysate formula reduced crying recorded in a parental diary. Further RCTs are needed to establish the effectiveness of whey hydrolysate formula.

**Benefits:**

Whey hydrolysate milk versus cows’ milk formula: We found two systematic reviews (search dates 1996 [1] and 1999 [7]) and one subsequent RCT. [29] The systematic reviews found no RCTs of adequate quality. The subsequent, double blind RCT (43 infants) found that **whey hydrolysate milk formula** significantly reduced the time that babies cried each day compared with standard cows’ milk formula, measured by a validated parental diary (crying reduced by 63 minutes/day, 95% CI 1 minute/day to 127 minutes/day; *P* = 0.05). [29] Parents’ blinding to the intervention was checked. When asked, six indicated that they were aware of allocation, but two of these falsely identified the formula. When these infants’ results were removed from the analysis, the crying time with whey hydrolysate formula was still significantly reduced compared with standard cows’ milk formula (crying reduced by 58 minutes/day; *P* = 0.03). Further statistical data were not provided for this result. [29]

**Harms:**

Whey hydrolysate milk versus cows’ milk formula: No harms were identified in the subsequent RCT. [29]

**Comment:**

This RCT has wide confidence intervals and blinding may have been unmasked in four parents. [29]

**Clinical guide:**

There is insufficient evidence for the effect of different formulas of bottle milk on infantile colic to warrant changing milk in a baby who is thriving on a standard formula milk. An exception to this general rule is that infants with colic in atopic families might benefit from a change to a hypoallergenic formula. Breastfeeding mothers should generally be encouraged to continue breast feeding.

### Glossary

**Casein hydrolysate milk** is a hypoallergenic milk made of cow’s milk and containing predominantly casein proteins.

**Cranial osteopathy** involves gentle manipulation of the tissues of the head by an osteopath.

**Crib vibrator device** Car ride simulators These attempt to soothe crying infants, and involve attaching a small motor underneath the crib to vibrate it, and a box to the side of the crib to produce white noise. Are a type of crib vibrator device designed to simulate the sound and motion of a car travelling at 55 miles an hour.

**Jadad scale** This measures factors that have an impact on trial quality. Poor description of the factors, rated by low figures, is associated with greater estimates of effect. The scale includes three items: was the study described as randomised? (0–2); was the study described as double blind? (0–2); was there a description of withdrawals? (0–1).

**Reassurance** Informing the parent that infantile colic is a self-limiting condition resolving by 3–4 months of age, and is not caused by disease or any fault in parental care.

**Simethicone (activated dimeticone [dimethicone])** This has defoaming properties, which can aid dispersion of gas in the gastrointestinal tract.

**Soya based infant feeds** Contain proteins from soya beans; the feeds are used as lactose free vegetable milks for those with lactose or cows’ milk protein intolerance.

**Whey hydrolysate milk** is a hypoallergenic milk made from cow’s milk and containing predominantly whey proteins.

### Substantive Changes

**Spinal manipulation** Two systematic reviews added; [25] [26] categorisation unchanged (Unknown effectiveness).

**Advice to increase carrying** Evidence reassessed; recategorised from Unlikely to be beneficial to Unknown effectiveness.

**Whey hydrolysate milk** Evidence reassessed; recategorised from Likely to be beneficial to Unknown effectiveness.

### References

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Competing interests: PL is the first author of one RCT and two systematic reviews referenced in this review.