

# Infant Colic: Is a Solution at Hand?

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March 19, 2014

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## What Treatments Have Been Tried for Infant Colic?

Infant colic, also referred to as excessive crying syndrome, is one of the most common causes of visits to a healthcare provider during the first year of an infant's life. It has a significant effect on the quality of life of infants and their family. Despite the prevalence and costs in both dollars and stress of this condition, its etiology is still elusive. No clearly effective and safe treatment or management option is currently available.

Traditionally, different drug therapies have been used for reduction of crying and fussing, especially in "colicky infants." Simethicone has been commonly proposed as a potential treatment option, but it has been shown to be no more effective than placebo.<sup>[1]</sup> Other drug-based treatments, including dicyclomine hydrochloride and cimetropium bromide, have been considered more efficacious. However, their use is limited, especially in infants younger than 6 months of age, due to undesirable side effects such as gassiness, abdominal distention, drowsiness, and -- in some extreme cases -- life-threatening events that may include respiratory distress and apnea.<sup>[2-4]</sup>

Other more "natural" treatments have been proposed for crying relief. These include herbal remedies including plant extracts (ie, *Matricaria chamomilla* [chamomile], *Foeniculum vulgare* [fennel], *Melissa officinalis* [lemon balm], and *Mentha piperita* [peppermint oil]). These, too, have been shown to be of limited efficacy and are also associated with several secondary effects, including sleepiness, constipation, and loss of appetite.<sup>[5-7]</sup> Similarly, although it has been reported that sucrose solutions may ameliorate crying syndrome,<sup>[8]</sup> there are important concerns regarding the poor quality of the scientific evidence and sucrose's nutritional effects.

Based on the theory that infantile colic can result from food allergies or digestion problems, several nutritional interventions have been proposed. Infant formulas designed to overcome food allergies (eg, partially hydrolyzed whey proteins) have been reported to reduce crying episodes.<sup>[9]</sup> However, these formulas may benefit only those infants whose excessive crying is ascribed to known food allergies. Lactase therapy adds a galactosidase (lactase) to an infant's formula to reduce the level of lactose in the milk. While some improvement in symptoms has been noted, results are conflicting.<sup>[2,10]</sup> High-fiber or fiber-enriched formulas have also been proposed as a possible treatment, but no significant differences in symptoms have been found when compared with standard formula.<sup>[11]</sup>

Complementary therapies such as massage or chiropractic treatment have also been advocated as treatment options for relieving crying symptoms. Evaluation of these options is challenging due to the absence of good quality clinical trials.<sup>[5]</sup>

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## Current Research

It is not surprising that researchers are focusing their efforts on finding new management options for treating infant colic. A recent study of microbial DNA in 12 infants with colic found that colicky infants displayed a less diverse and altered intestinal microbiota compared with healthy control infants,<sup>[12]</sup> confirming some earlier research. Therefore, probiotics have been proposed as a promising alternative for modulating gut microbiota, conferring health benefits and, thus, improving crying outcomes.

A 2013 randomized, placebo-controlled trial<sup>[13]</sup> of 80 breast-fed, full-term infants found that probiotics may be effective as a treatment strategy for crying, though the researchers noted that more rigorously designed studies are necessary to draw more definitive conclusions. The most recent [systematic review](#) <sup>[14]</sup> examining the

effectiveness of probiotics in the management of infant colic also stresses the necessity of further research, particularly in formula-fed infants. More importantly, these publications emphasize the variable methodologic criteria used for clinical trials and the need to establish a consensus in research methodology in order to ascertain the role of probiotics in the management of infant colic.

One of the most relevant issues is the lack of agreement on the diagnostic criteria for colic in infants. Although many definitions of colic or excessive crying have been proposed, it remains to be decided which one should be used. Studies define normal and prolonged crying very differently.<sup>[15]</sup> The most commonly used criteria are based on crying duration, notably the "rule of 3" proposed in 1954<sup>[16]</sup>:

- Crying during at least 3 hours per day
- On at least 3 days
- For at least 3 weeks.

However, while this definition might be useful for research purposes, it is not very realistic because a significant proportion of parents will be unable or unwilling to permit this threshold of crying time before seeking medical intervention.<sup>[17]</sup> Thus, other definitions are based on criteria that usually do not rely on crying time. Instead, these definitions are based on parental distress. For instance, infantile colic has also been defined as unexplained crying that is problematic for the family unit, in which parents are unable to console, or feel they can no longer cope, and for which they need to seek medical care.<sup>[18]</sup> As seems obvious, this kind of definition can be highly subjective.

Recent attempts have been made to provide more up-to-date diagnostic criteria. A 2012 study evaluated the potential for descriptive factors of infant characteristics or behavior in making a diagnosis of infant colic.<sup>[17]</sup> The authors concluded that parental descriptions of their infant such as "fighting the air," "appearance of pain or discomfort," or "awaking with intense crying" were highly associated with infant colic, thus being useful characteristics that may provide a basis for further research.

### **So What Is the Clinician To Do?**

Because the definition of colic is still fraught with uncertainty, there is no gold standard for the diagnosis of excessive crying syndrome. This lack of consensus may well explain recent inconsistencies in studies of different management strategies, as relatively small differences between definitions seem to cause large changes in diagnosis and prevalence rates.<sup>[19]</sup>

In conclusion, an agreement on a more realistic definition of colic, most likely combining time criteria, parental perception, and infant characteristics, is necessary to provide more insight into the role of different therapies for crying relief. This would help further research in determining the extent to which probiotics, generally recognized as safe, are also effective in the management of infant colic.

Considering the adverse effects of drug-based treatments and the lack of clinical evidence regarding the efficacy of other more "natural" management options, it is necessary to look for alternative probiotics. Probiotics are safe, and some clinical studies have demonstrated positive effects. They may well be considered as a promising treatment option to be taken into consideration by clinicians. However, meta-analyses highlight the need to design specific probiotics for treating colic. Thus, probiotics cannot be considered a universal management option at this time.

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Cite this article: Jordi Cuñé, Jonathan Santas. Infant Colic: Is a Solution at Hand? *Medscape*. Mar 19, 2014.