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## Avoidance of bottles during the establishment of breastfeeds in preterm infants

Anne-Catherine Vanhove, Trudy Bekkering, Filip Cools

Cochrane Belgium, Belgian Centre for Evidence-Based Medicine (Cebam)

[info@cochrane.be](mailto:info@cochrane.be)

### Question

Does using bottles interfere with breastfeeding success in preterm infants whose mothers want to breastfeed?

### Context

Preterm infants usually start milk feedings through gavage tube. Once they are mature enough to co-ordinate sucking and swallowing (often around 32-34 weeks gestation), they can start sucking feeds. Sucking feeds are gradually increased, starting with once a day, with the number of tube feeds decreasing until the sucking feeds alone provide sufficient nutrition for growth and development. During the transition time, mothers may not always be in the hospital to breastfeed and often expressed breast milk or formula is administered by bottle. There is concern that using bottles may interfere with breastfeeding success, possibly due to a difference in sucking action required for the breast compared to an artificial nipple.

This Cochrane review therefore wanted to assess the effects of the avoidance of bottle feeds during the establishment of breastfeeding on breastfeeding success, and to assess the safety of alternatives to bottle feeds.

### Criteria for study selection

The review included studies comparing complete avoidance of bottles with use of bottles for preterm infants (<37 weeks gestation) whose mothers planned to breastfeed. In the group avoiding bottles, alternative feeding strategies could be used for complementing or supplementing breastfeeds including gavage tube, cups, spoon, dropper, finger feeding and others. The primary outcomes of interest were full breastfeeding compared with no or partial breastfeeding, and any breastfeeding (full or partial) compared with no breastfeeding at discharge and at three and six months post discharge.

### Summary of the results

Seven studies with a total of 1152 preterm infants were included in this review. Five studies used cup feeding as a supplementary feeding method, one exclusively used gavage tube feeding as an alternative and one used a novel teat which was specifically designed to closely mimic the sucking action of breastfeeding. Most studies were conducted in high-income countries with only two studies conducted in middle-income countries and none in low-income countries.

Avoiding bottles may increase the number of infants who are fully breastfed compared with those who are partially or not breastfed at discharge (bottle feeds: 44 per 100 vs avoiding bottles: 64 per 100 (95% CI\*: 52-79); NNTB<sup>^</sup>: 5 (95% CI: 3-11); 1074 infants, 6 studies, low-certainty evidence) and probably increases any breastfeeding compared to no breastfeeding at discharge (bottle feeds: 79 per 100 vs. avoiding bottles: 88 per 100 (95% CI: 84-92); NNTB: 11 (95% CI: 8-20); 1138 infants, 6 studies, moderate-certainty evidence).

Avoiding bottles probably increases full breastfeeding three months after discharge (bottle feeds: 36 per 100 vs avoiding bottles: 57 per 100 (95% CI: 50-65); NNTB: 5 (95% CI: 4-7); 986 infants, 4 studies, moderate-certainty evidence), and may increase full breastfeeding six months after discharge (bottle feeds: 31 per 100 vs avoiding bottles: 51 per 100 (95% CI: 35-73); NNTB: 7 (95% CI: 4-14); 887 infants, 3 studies, low-certainty evidence). The avoidance of bottle feeds may increase the occurrence of any breastfeeding

(partial or full) at both three months after discharge (bottle feeds: 60 per 100 vs avoiding bottles: 78 per 100 (95% CI: 60-100); NNTB: 7 (95% CI: 4-25); 1063 infants, 5 studies, low-certainty evidence) and six months after discharge (bottle feeds: 45 per 100 vs avoiding bottles: 56 per 100 (95% CI: 49-63); NNTB: 9 (95% CI: 6-20); 886 infants, 3 studies, low-certainty evidence).

The study with the specifically designed teat showed no difference in breast feeding outcomes. Therefore, of all strategies avoiding bottles, the cup feeding or exclusively tube feeding strategies are the ones that led to greater breastfeeding success. The latter study was of lower methodological quality reducing the certainty around the possible benefits of the exclusively tube feeding strategy. Adherence to cup feeding was poor in one of the studies which could indicate dissatisfaction with this method by staff or parents (or both). However, the remaining four studies did not report dissatisfaction or low adherence.

There were no other benefits or harms associated with avoiding bottles including for length of hospital stay or episodes of infection per infant (both low-certainty evidence).

### Conclusion

Avoiding the use of bottles in preterm infants during the transition to breastfeeding probably increases the extent of any breastfeeding at discharge and may improve breastfeeding success up to six months after discharge.

### Implications for practice

At the moment, most of the evidence for increasing breastfeeding success is provided by studies using cup feeding as an additional feeding strategy. Whether using tube feeding exclusively to supplement breastfeeding enhances breastfeeding success, is still uncertain and will need more research. The use of a novel teat more closely mimicking the sucking action of breastfeeding did not result in increased breastfeeding success.

### REFERENCE:

Allen E, Rumbold AR, Keir A, Collins CT, Gillis J, Sukanuma H. Avoidance of bottles during the establishment of breastfeeds in preterm infants. *Cochrane Database of Systematic Reviews* 2021, Issue 10. Art. No.: CD005252. DOI: 10.1002/14651858.CD005252.pub5.

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\* CI: confidence interval

<sup>^</sup> NNTB: number needed to treat for an additional benefit outcome