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Oral stimulation for promoting oral feeding in preterm infants.  
*Cochrane Database of Systematic Reviews* 2016, Issue 9. Art. No.: CD009720.  
DOI: [10.1002/14651858.CD009720.pub2](https://doi.org/10.1002/14651858.CD009720.pub2).

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[Intervention Review]

# Oral stimulation for promoting oral feeding in preterm infants

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**Editorial group:** Cochrane Neonatal Group.

**Publication status and date:** Edited (no change to conclusions), published in Issue 2, 2017.

**Citation:** Greene Z, O'Donnell CPF, Walshe M. Oral stimulation for promoting oral feeding in preterm infants. *Cochrane Database of Systematic Reviews* 2016, Issue 9. Art. No.: CD009720. DOI: [10.1002/14651858.CD009720.pub2](https://doi.org/10.1002/14651858.CD009720.pub2).

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## ABSTRACT

### Background

Preterm infants (< 37 weeks' postmenstrual age) are often delayed in attaining oral feeding. Normal oral feeding is suggested as an important outcome for the timing of discharge from the hospital and can be an early indicator of neuromotor integrity and developmental outcomes. A range of oral stimulation interventions may help infants to develop sucking and oromotor co-ordination, promoting earlier oral feeding and earlier hospital discharge.

### Objectives

To determine the effectiveness of oral stimulation interventions for attainment of oral feeding in preterm infants born before 37 weeks' postmenstrual age (PMA).

To conduct subgroup analyses for the following prespecified subgroups.

- Extremely preterm infants born at < 28 weeks' PMA.
- Very preterm infants born from 28 to < 32 weeks' PMA.
- Infants breast-fed exclusively.
- Infants bottle-fed exclusively.
- Infants who were both breast-fed and bottle-fed.

### Search methods

We used the standard search strategy of the Cochrane Neonatal Review Group to search the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE via PubMed (1966 to 25 February 2016), Embase (1980 to 25 February 2016) and the Cumulative Index to Nursing and Allied Health Literature (CINAHL; 1982 to 25 February 2016). We searched clinical trials databases, conference proceedings and the reference lists of retrieved articles.

### Selection criteria

Randomised and quasi-randomised controlled trials comparing a defined oral stimulation intervention with no intervention, standard care, sham treatment or non-oral intervention in preterm infants and reporting at least one of the specified outcomes.

## Data collection and analysis

One review author searched the databases and identified studies for screening. Two review authors screened the abstracts of these studies and full-text copies when needed to identify trials for inclusion in the review. All review authors independently extracted the data and analysed each study for risk of bias across the five domains of bias. All review authors discussed and analysed the data and used the GRADE system to rate the quality of the evidence. Review authors divided studies into two groups for comparison: intervention versus standard care and intervention versus other non-oral or sham intervention. We performed meta-analysis using a fixed-effect model.

## Main results

This review included 19 randomised trials with a total of 823 participants. Almost all included trials had several methodological weaknesses. Meta-analysis showed that oral stimulation reduced the time to transition to oral feeding compared with standard care (mean difference (MD) -4.81, 95% confidence interval (CI) -5.56 to -4.06 days) and compared with another non-oral intervention (MD -9.01, 95% CI -10.30 to -7.71 days), as well as the duration of initial hospitalisation compared with standard care (MD -5.26, 95% CI -7.34 to -3.19 days) and compared with another non-oral intervention (MD -9.01, 95% CI -10.30 to -7.71 days).

Investigators reported shorter duration of parenteral nutrition for infants compared with standard care (MD -5.30, 95% CI -9.73 to -0.87 days) and compared with another non-oral intervention (MD -8.70, 95% CI -15.46 to -1.94 days). They could identify no effect on breast-feeding outcomes nor on weight gain.

## Authors' conclusions

Although the included studies suggest that oral stimulation shortens hospital stay, days to exclusive oral feeding and duration of parenteral nutrition, one must interpret results of these studies with caution, as risk of bias and poor methodological quality are high overall. Well-designed trials of oral stimulation interventions for preterm infants are warranted. Such trials should use reliable methods of randomisation while concealing treatment allocation, blinding caregivers to treatment when possible and paying particular attention to blinding of outcome assessors.

## PLAIN LANGUAGE SUMMARY

### Effects of oral stimulation for oral feeding in preterm infants

#### Review questions

Do oral stimulation interventions that involve finger stimulation protocols in preterm infants born before 37 weeks' gestation:

- reduce time taken to achieve exclusive oral feeding and time spent in hospital?
- result in exclusive oral feeding, exclusive breast feeding or any direct breast feeding?
- increase sucking strength?
- increase rate of growth and improve development?

#### Background

Many preterm infants have delayed establishment of oral (suck) feeding and are fed at first with feeding tubes or with intravenous (parenteral) nutrition. Development of oral feeding skills needs careful co-ordination of sucking, swallowing and breathing. In preterm infants, the development of oral feeding can be challenging because of long hospitalisations, breathing difficulties and other medical conditions associated with preterm birth. Unpleasant procedures such as ventilation or frequent suctioning of secretions from the mouth or nose can negatively impact feeding skills. International guidelines for the transition from tube feeding to oral feeding vary widely. Healthcare providers use a range of interventions to improve sucking and feeding skills in preterm infants, and studies report faster transition time from tube feeds to oral feeds, reduced length of stay in hospital and improvement in infants' sucking skills. No Cochrane review has assessed the intervention involving finger stimulation of the mouth before and during feeds.

#### Study characteristics

This review included randomised controlled trials (RCTs) that explored oral stimulation by finger stimulation only in preterm infants. Review authors identified studies to be included by searching electronic databases, clinical trials registers, peer-reviewed journals and published conference proceedings.

#### Key results

We included 19 studies of poor quality with small numbers of participants. Study findings suggest that oral stimulation interventions can shorten the transition to oral feeding, reduce length of hospital stay and decrease time spent on parenteral nutrition. No studies looked

at longer-term outcomes of the interventions (i.e. beyond six months). Studies have reported no effect on breast feeding outcomes nor on weight gain.

### **Quality of evidence**

These studies were small and most were of low or very low methodological quality. Review authors identified no high-quality studies that could support the efficacy, effectiveness and safety of oral stimulation interventions. Larger, well-designed RCTs are needed to help inform parents and caregivers about the possible benefits and harms of this intervention.