

## **Cochrane Review summary: Preoperative fasting for preventing perioperative complications in children.**

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### **Clinical context**

During general anaesthetic, in adults and children alike, the protective reflexes that prevent lung aspiration of stomach contents are inhibited. Preoperative fasting is thought to reduce the risk of regurgitation and gastric aspiration during surgery. Several professional body guidelines have recommended a more relaxed fasting period than the traditional 'nil by mouth from the midnight before surgery' policy. However, practices vary widely due to a lack of confidence in the evidence. The aim of this Cochrane Review was to determine the effects of different fasting regimens (duration, type and volume of permitted intake) and the impact on perioperative complications and patient well being (aspiration, regurgitation, related morbidity, thirst, hunger, pain, comfort, behaviour, nausea and vomiting) in children. The search for this review was updated in 2009.

### **Inclusion criteria**

#### **Studies**

Randomised and quasi randomised controlled trials (RCTs) comparing preoperative fasting regimens that differ in duration or type/volume of intake.

#### **Participants**

Age 18 years or less undergoing general anaesthesia. Included children considered to be at normal risk of regurgitation/aspiration (healthy and having elective surgery), and those at high risk of regurgitation/aspiration.

#### **Intervention**

Duration of fast (short (120, 150, 180 or 240 minutes) versus standard, short solid and fluid versus standard, short solid and fluid versus short fluid, short (120 or 150 minutes) versus shortened [150, 180 or 240 minutes]), type of intake (solids, clear and/or other fluids), volume of fluid intake. Standard fast defined as for 4 hours for infants 1 to 12 months, 6 hours for children 12 months to 5 years and 8 hours for children over the age of 5 years.

#### **Outcomes**

##### **Primary outcomes**

Aspiration, regurgitation, aspiration pneumonia, death, volume of gastric contents, pH of gastric contents, quality of the aspirate i.e. nature of any particles observed, and concentration of marker dye (for example phenol red) as an indicator of gastric emptying.

##### **Secondary outcomes**

Thirst, hunger, pain, behaviour, comfort, nausea and vomiting.

## Results

Twenty five RCTs with 2543 children at normal risk of regurgitation or aspiration during anaesthesia were included in the review. There were no identified trials that specifically recruited children at high risk (i.e. obese, emergency cases or children with gastric diseases or disorders).

Risk of bias: Only six trials used adequate allocation concealment with 15 unable to be determined.

Only one incidence of aspiration and regurgitation was reported, which was possibly related to airway management. If children were allowed fluids up to 120 minutes preoperatively, their gastric volumes were no higher than children subjected to a standard fast (MD 0.01ml/kg 95% CI -0.12 to 0.14). The amount of fluid children had at this time made no difference to their gastric volume or pH during surgery. Their gastric pH values were also no lower than those who fasted using the traditional regime (MD 0.35 95% CI -0.08 to 0.78).

Self-reports of comfort levels (thirst and hunger) of children who were allowed to drink fluids up to 2 hours prior to surgery were higher than for longer fast times. Parents who could compare their children's behaviour from their previous surgical preparation experience reported that their behaviour was better and they were less irritable. Clear fluids preoperatively did not result in a clinically important difference in children's gastric volume (MD -0.02 ml/kg 95% CI -0.09 to 0.05; NSD) or pH (MD 0.09 95% CI -0.03 to 0.21; NSD). The authors found insufficient evidence on which to base recommendations regarding the intake of milk prior to surgery.

## Authors' conclusions

### Implications for practice

For healthy children at normal risk of aspiration or regurgitation during anaesthesia there are no deleterious effects on intraoperative gastric volume and pH when permitted an unlimited fluid intake up to two hours prior to a general anaesthetic, compared with children who are fasted for more than six hours. Thirst, hunger, pain and general comfort measures are also improved when children have access to fluids up to two hours prior to surgery.

Health professionals caring for surgical patients need to be aware that children are not at clinically significant risk of increased gastric volume and pH when they have access to unlimited clear fluids up to 2 hours prior to a general anaesthetic. The risks of aspiration and regurgitation are very low in normal children. Staff should inform children and their parents of these findings.

These recommendations apply to healthy children at normal risk only as there is no evidence on which to base recommendations for the timing of fasting in children who are considered high risk for aspiration/regurgitation during anaesthesia.

### **Implications for research**

There is a need for high quality research to answer the questions regarding the effect of solids prior to surgery in children. Fasting regimens allowing children to have breast milk and formula up to two hours prior to surgery warrant further investigation. Trials that specifically target and recruit children at 'high-risk' of regurgitation and aspiration (e.g. the growing population of obese children or those with gastrointestinal disorders) are needed. The documentation and reporting of episodes of aspiration/regurgitation by clinicians remains important.

Summarised from: Brady MC, Kinn S, Ness V, O'Rourke K, Randhawa N, Stuart P. Preoperative fasting for preventing perioperative complications in children. *Cochrane Database of Systematic Reviews* 2009, Issue 4. Art. No.: CD005285. DOI:10.1002/14651858.CD005285.pub2.

Publication status and date: Edited (no change to conclusions), published in Issue 5, 2010. Review content assessed as up-to-date: 3 August 2009. Link to full text on Cochrane Library:

### **Summary prepared by:**

**Trudi Mannix** RN RM NICC BN (Ed), MN (Child Health), EdD.  
Flinders University School of Nursing and Midwifery, Flinders University,  
Bedford Park, SA. Email: [trudi.mannix@flinders.edu.au](mailto:trudi.mannix@flinders.edu.au)

**Carmel Collins** RN RM NICC BSSc GDPH PhD  
Child Nutrition Research Centre Women's and Children's Health Research  
Institute, Flinders Medical Centre and Children, Youth and Women's Health  
Service Adelaide SA Email [carmel.collins@health.sa.gov.au](mailto:carmel.collins@health.sa.gov.au)

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