# Paediatric Perioperative Fasting Policy

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|---|---|
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| **Ratification group (eg Clinical network):** | PIER |
| **Date of ratification:** | "[Format dd-mmm-yyyy]" |
| **Signature of ratifying group chair:** | |
| **Author(s) and title:** | Dr L Flewin, Dr D Willdridge, Dr H Artis<br>Paediatric Perioperative Fasting Policy |
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| **Signature of final approval group chair:** | |
| **Date of approval:** | "[Format dd-mmm-yyyy]" |
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| **Relevant national or international guidance e.g. NICE, SIGN, BTS, BSPED** | APA Consensus Statement on updated fluid fasting 30 April 2018 |
| **Consultation document completed: see Appendix A** | Yes |
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| **Is this document to be published in any other format?** | |

**Does this document replace or revise an existing document?**
If so please state existing document(s)
No

**Contents**

## Executive Summary

The aim of this policy is to standardise the Perioperative care of children in every Trust in the network, with regard to preoperative fasting and drug administration and the postoperative resumption of oral intake.

The policy reflects the latest evidence that prolonged fluid fasting is bad for patients and that the emphasis should be on good preoperative hydration. Furthermore recent evidence suggests that, for the majority of paediatric patients, one hour of fluid fasting is sufficient and that flavoured fluids may be preferable to water.

The recommendations apply to all paediatric patient groups undergoing elective or emergency operations under general anaesthesia and sedation.

## Paediatric Perioperative Fasting Guidelines Summary

### Preoperative fasting in low-risk children[1] undergoing elective surgery – the '1- 4- 6 rule'

**'1' –** Intake of clear fluids (see definition) up to **one hou**r before induction of anaesthesia

**'4'** – **Breast** milk up to **four hours** before

**'6'** – Formula milk, cows' milk or solids up to **six hours** before

## Postoperative resumption of oral intake in healthy children

Oral fluids can be offered to healthy children when they are fully awake following anaesthesia unless prohibited by specific post-operative instructions from the surgeon or anaesthetist. There is no requirement to drink as part of the discharge criteria.

Patients who have received topical anaesthesia to the airway must wait **two hours** from the time of administration until resumption of oral fluids or solids.

## 1 Introduction

**1.1** The aim of this policy is to standardise perioperative care of children in every Trust in the network,
with regard to preoperative fasting and drug administration and the postoperative resumption of oral intake.

**1.2** Children will benefit from a clear policy that is followed, monitored and reviewed to ensure they

- Are only subject to fasting (for example before an operation or procedure) for the minimum possible period, and the service will ensure they have adequate hydration as soon as possible afterwards.
- Can be confident that consideration is given to the duration of fasting for each child prior to the scheduling of operations or procedures.
- Are given nutrition as soon as possible after procedures requiring fasting are cancelled.

The policy has been updated to reflect recent evidence and a statement issued by the APAGBI 30 April 2018[2]

### Scope

The policy applies to all children undergoing elective and emergency operations under general anaesthesia throughout the PIER network. Patients undergoing procedures that require conscious sedation should also be fasted according to this policy unless the responsible consultant anaesthetist has specifically indicated and recorded in the patient notes that fasting is not necessary.

For postoperative fasting, patients undergoing surgery involving the gastrointestinal tract or major abdominal surgery are **not** covered by this policy. These patients should have specific post operative instructions that should be followed.

Recommendations for patients with impaired swallowing are not covered by this policy.

## 2 Roles and Responsibilities

### Clinical Staff

It is the shared responsibility of healthcare professionals to ensure safe and effective fasting procedures and reduce unnecessary discomfort to patients. Following procedures and guidance for good practice has been shown to decrease the risk of patients being exposed to errors, and is an important component of risk management.

All staff must be aware of their roles and responsibilities under the current legislation and adhere to the safe practices outlined in this policy. Staff should also make themselves familiar with local policies and procedures for their specific area of work.

### Non-clinical staff

All administrative staff who talk with families prior to procedures, such as admissions managers or medical secretaries, are to be familiarised with this policy on commencement of employment at local induction.

## 3 Definitions

Clear fluid – as defined by 'allowed' in the table

| Allowed | Not allowed |
|---|---|
| Water | Milk |
| Flavoured water (Still only, NOT 'fizzy') | Fruit juices with particulates e.g. orange juice, cloudy apple juice |
| Fruit squash diluted as per manufacturer's instructions (regardless of sugar content) | All carbonated ('fizzy') drinks (including carbonated water) |
| Apple/ cranberry juice (neat or diluted) | Smoothies |
| Pre-mixed squash drinks e.g. Ribena™, Fruit Shoot™, Oasis™ | Hot chocolate (regardless whether made with milk or water) |
| Non-Fizzy 'Sports' drinks e.g. Lucozade Sport™, Poweraid™ | |

**The preoperative period** – the six hours prior to the planned induction of anaesthesia time
**The postoperative period** - the first few hours after surgery is finished.
**The perioperative period** – the time period describing the duration of a patient's surgical procedure; this commonly includes ward admission, anaesthesia, surgery, and recovery

## 4 Background for new starvation times

Excessive fasting can cause a great deal of stress for children and their carers. The Association of Anaesthetists Great Britain and Ireland (AAGBI) states that recommended fasting times are six hours for food, four hours for breast milk and two hours for clear fluids[1]. The APAGBI issued a Consensus Statement 30 April 2018[2] stating that unless there is a clear contra-indication, it is safe and recommended for all children able to take clear fluids, to be allowed and encouraged to have them up to one hour before elective general anaesthesia[2].

Data from an audit conducted in 2016 at University Hospital Southampton showed that children attending for elective surgery are frequently starved excessively. Although only two hours of fluid fasting was required at the time of the audit, 66% of children in the audit had gone over four hours without a drink, with almost 15% being deprived of fluid for over 12 hours and one child being fasted for 20 hours.

Excessive fasting leads to irritability and agitation whilst waiting for surgery. Furthermore children are more prone than adults to entering a catabolic state leading to ketone body production and hypoglycaemia. Once in the anaesthetic room, in dehydrated children, intravenous access is more challenging and haemodynamic instability more likely[3].

In addition it is a mistake to think that the stomach is empty just because the patient has been fasted. The upper gastrointestinal tract is constantly excreting saliva, gastric juices etc, therefore the stomach will always contain some of these juices.

### 4.1 Evidence

The recent literature challenges the traditional fasting times. In a recent study of 10,000 children, over a 6 year period, drinking free fluids up until the time of surgery does not increase their risk of aspiration[4]. This is supported by Schmitz et al who showed there was no change in gastric pH or volume after 1 or 2 hours fasting[5]. There is also ample evidence from radio-nucleotide studies that the time taken for more than 80 % of clear fluid to exit the stomach is less than one hour[6]. Furthermore, if glucose is included in children's clear fluid then gastric emptying is significantly quicker[7]. In addition children with diabetes do not show the delayed gastric emptying extrapolated from adult diabetics, and may indeed have increased gastric emptying[8].

### 4.2 Exclusions

There are children who need longer for gastric emptying to occur. In order to reduce their risk of aspiration they should follow either the 2-4-6 rule or their own individualised preoperative instructions.

Therefore children with the following should be excluded from free fluids one hour prior to theatre as stated in this policy:

- Gastro-oesophageal reflux disease – either on treatment (ranitidine, domperidone or omeprazole), or under investigation
- Renal failure
- Enteropathies – problems with digestion or absorption
- Oesophageal strictures or those booked for oesophageal dilatation
- Achalasia
- Any children sustaining significant injury requiring opiates within the preceding 24 hours

Those with unsafe swallow should be excluded

Children with conditions impacted by fasting should follow the preoperative instructions specified for that child in their medical records.

This includes but is not limited to children with some Endocrine, Metabolic and Cardiac conditions such as congenital hyperinsulinaemia and panhypopituitism. If preoperative instructions for the child are not available, fasting times must be discussed with the Anaesthetist for the list.

## 5 Elective Surgery

### 5.1 Pre-operative intake of solids

Solid food, including sweets and all feeds given via nasogastric, gastrostomy or jejunal routes must be avoided for 6 hours prior to elective surgery.

For patients admitted for morning lists, this means no food from 0230 hrs on the day of surgery.
For patients admitted for afternoon lists, a light breakfast before 0730 hrs can be consumed.

Breast fed children can receive breast milk up to 4 hours before elective surgery, i.e. all feeds must be finished by 0430 hrs (morning lists), and 0930 hrs (afternoon lists)
.

### 5.2 Pre-operative intake of oral fluids

Intake of clear fluids up to one hour before induction of anaesthesia for elective surgery is safe in healthy children and improves wellbeing. All children should be encouraged to drink clear fluids up until their fasting time i.e. 0730 for morning lists and 1230 for afternoon lists.

The volume of administered fluids does not appear to have an impact on patients' residual gastric volume and gastric pH, when compared to a standard fasting regimen. Therefore, patients may have unlimited amounts of clear fluid up to one hour before induction of anaesthesia.

Consideration should be given to children with special needs and/or learning difficulties. Individualised fasting times may be appropriate to improve their comfort and reduce their anxiety and stress.

### 5.3 Drink on arrival

On arrival to the ward of admission, or preoperative assessment area, children not excluded in paragraph 4.2 should be offered a drink as follows:

5.3.1 Morning operating lists
These commence at 0830hrs. All patients arriving at or before 0730hrs, except those excluded in paragraph 4.2 should be offered a drink of clear fluid immediately. The volume of this drink is **unrestricted**; therefore the child does not need to be weighed prior to being encouraged to drink.

5.3.2 Staggered admission all day operating lists
For all day lists with staggered admission, all children who arrive at or before their scheduled time, except those excluded in paragraph 4.2, should be offered a drink on arrival. Before offering a drink to any late arrivals, confirmation should be sought from the anaesthetist.

5.3.3 Afternoon operating lists
These commence at 1330hrs. All patients arriving at or before 1230 hrs, except those excluded in paragraph 4.2, should be offered a drink of clear fluid immediately. The volume of this drink is **unrestricted**; therefore the child does not need to be weighed prior to being encouraged to drink. Starvation requirements for each child will be discussed at each theatre WHO (World Health Organisation) meeting and relayed to the ward.

### 5.4 Chewing gum and sweets during preoperative fasting

Sweets (including lollipops) are solid food. Patients must refrain from eating sweets within six hours of anaesthesia[7].
Chewing gum does not cause an increase in gastric volumes or acidity[9]. Chewing gum within the six hour starvation period will not result in surgery being delayed.

### 5.5 Oral medication

Regular medication taken orally should be continued preoperatively unless there is advice to the contrary. Refer to **Appendix 1.**

A small volume of water may be given orally to help patients take their medication throughout the whole fasting period.

### 5.6 Premedication

Premeds prescribed by the anaesthetist can and should be given even within the last hour of fasting.

### 5.7 Delayed elective operations

Where an operating list is known to be over-running, or where a child has been fasted for > 3 hours, the anaesthetist should be contacted to obtain a revised fasting time.

If free fluids are no longer allowed, a 'limited fluid intake' may be allowed hourly, at the discretion of the anaesthetist.

5.7.1 Limited fluid intake

If the weight of the child is known then the volume of that drink should be 3 ml $kg^{-1}$. Sugar containing fluids (e.g. apple juice) are preferred as these may promote gastric emptying. If the weight of the child is not known immediately, in order for there to be no delay in offering a drink, the following recommendations should be followed.

Age 1-5yrs – 60 mls
Age 6 – 11 yrs – 140 mls
Age 12 – 16 yrs – 250mls

Keeping list order alterations to a minimum will reduce unnecessary thirst and dehydration. If an elective operation is delayed, the responsible nurse and anaesthetist will review the fasting period. If the anaesthetist and/or surgeon confirm that the delay is likely to be for longer than one hour, water or other clear fluid should be given to prevent excessive thirst and dehydration.

### 5.8 Postoperative resumption of oral intake

When ready to drink, patients should be encouraged to do so, providing there are no medical, surgical or nursing contraindications.

## 6 Emergency surgery

Many children awaiting emergency surgery will be made 'nil by mouth' and have intravenous fluids prescribed. Please contact the surgeon or anaesthetist for clarification if any child made 'nil by mouth' has been fasted longer than four hours without intravenous fluids being commenced.

Children booked onto the CEPOD who are admitted from home (e.g. repair of facial lacerations or MUA of fractures) should be offered a drink on arrival in accordance with paragraph 5.3. Thereafter they should be offered hourly 'limited fluid intake' (paragraph 5.7.1) unless instructed otherwise by an anaesthetist.

## 7 Patient information, signage and recording

**7.1** Information on the fasting regimen will be given by a healthcare professional who has received suitable training.

**7.2** Clear signage will be visible at the patient's bed space indicating the fasting regimen that is being followed.

**7.3** The fasting regimen will be recorded in the patient's notes.

## 8 Implementation

**8.1** This policy represents the normal standard of care for Perioperative Fasting in children. If there is a clinical need or evidence to deviate from the policy, it will be the anaesthetist's responsibility to inform the nurse in charge of the patients care of any deviations from the above policy and to document the change in the patient's medical notes.

8**.2** The policy will be supported by ward-based teaching. The role of Consultant Surgeons, Anaesthetists, Ward Sisters and Charge Nurses is pivotal to the implementation of this policy.

**8.3** The policy will be included in the Induction Programme for all junior doctors and nurses joining the Trust.

**8.4** All staff are expected to comply with this policy and the attached guidelines.

## 9 Monitoring and Review

**9.1** There will be an audit of preoperative fasting times within six months of the introduction of the Policy undertaken on a minimum of 10 patients in each care group undertaking surgery.

**9.2** Regular analysis of complaints and incident data relating to this issue will also be reviewed by care groups through routine governance processes and lessons learnt form this will be used to improve policy and practice.

There will be regular contact with the anaesthetic teams and review of AERs to ascertain if there have been any cases of aspiration. If aspiration appears to be significantly higher than the recent national survey by Kelly and Walker[10] then this policy should be updated at the earliest opportunity.

**9.3** The policy will be reviewed every three years or earlier if there are changes in national guidelines.

## 10 References


[1] AAGBI safety Guideline: Preoperative Assessment and Patient Preparation – The role of the Anaesthetist (2010). The Association of Anaesthetists of Great Britain and Ireland. https://www.aagbi.org/sites/default/files/preop2010.pdf

[2]APA Consensus Statement on updated fluid fasting 30 April 2018
http://www.apagbi.org.uk

[3]Dennhardt N, Beck C, Huber D et al Optimized preoperative fasting times decrease ketone body concentration and stabilize mean arterial blood pressure during induction of anaesthesia in children younger than 36 months: a prospective observational cohort study. *Pediatric Anesthesia* **2016**; 26 (8) 838-43

[4]Andersson H, Zaren B, Frykholm P. Low incidence of pulmonary aspiration in children allowed intake of clear fluids until called to the operating suite. *Pediatric Anesthesia* **2015**; 25 (8) 770-777.

[5]Schmitz A, Buehler P, Seglios L et al. Gastric pH and residual volume after 1 and 2 hr fasting time for clear fluids in children. *British Journal of Anaesthesia* **2015**; 114 (3): 477-82

[6]Malmud LS, Fisher RS, Knight LC et al. Scintigraphic evaluation of gastric emptying. *Semin Nucl Med.* **1982**; 12: 116-125

[7]Schmitz A, Kellenberger C, Lochbuehier N et al. Effect of different quantities of a sugared clear fluid on gastric emptying and residual volume in children: a crossover study using magnetic resonance imaging. *British Journal of Anaesthesia* **2012**; 108 644-7

[8]Shiree J. Perano Chris K. Rayner Stamatiki Kritas Michael Horowitz Kim DonaghueChristine Mpundu-Kaambwa Lynne Giles Jenny J. Couper. Gastric Emptying Is More Rapid in Adolescents With Type 1 Diabetes and Impacts on Postprandial Glycemia. *The Journal of Clinical Endocrinology & Metabolism* **2015**; 100 (6) 2248–2253

[9]Bouvet L, Loubradou E, Desgranges FP, Chassard D. Effect of chewing gum on gastric volume and emptying: a prospective randomized crossover study. *British Journal of Anaesthesia* **2017**; 119 (5) 928-933.

[10]Kelly C, Walker R. Perioperative pulmonary aspiration is infrequent and low risk in pediatric anesthetic practice. *Paediatric Anaesthesia* **2015** (Jan)25(1):36-43.

**Appendix A**

**Documentation of regional consultation:**

| Trust | Name of person consulted* (print) | Designation | Signature |
|---|---|---|---|
| Chichester<br>Worthing | Dr Phil McDonald<br>Dr Susan Calderbank | Paediatric Anaesthetic leads | See sheet |
| Dorchester | Dr Andy Ball | Paediatric Anaesthetic lead | See email |
| Hampshire Hospitals Foundation Trust | Dr Arun Venkataran<br><br>Dr Sam Wilson | Paediatric Anaesthetic leads | See sheet |
| Poole | Dr A McCormick | Paediatric Anaesthetic lead | See sheet |
| Portsmouth | Dr R Burdern | Paediatric Anaesthetic lead | See sheet |
| Salisbury | Dr Juliette Lee | Paediatric Anaesthetic lead | See sheet |
| Southampton | Dr Lisa Flewin | Paediatric Anaesthetic lead | See sheet |
| Isle Of Wight | Dr Mariam Rice | Consultant | See sheet |
| Frimley Park | Dr P B | Consultant | See sheet |

*this person agrees they have read the guidelines, consulted with relevant colleagues and members of MDT, managers and patients, young people & their families as appropriate. Any queries raised during consultation and review process should be documented with responses and any changes made to the guideline.

**Appendix B: Drugs on the day of surgery – to give or not to give?**

Either pharmacists or anaesthetists should complete a clinical audit of this practice once a year. This will be added to the audit plan for all care groups where surgery is performed under general anaesthetic. It is recommended that this appendix is laminated and attached to ward drug trolleys for quick reference.

When a patient is admitted for surgery all their normal medication should be written up on their electronic drug chart. On the day of surgery certain drugs should be omitted as detailed below. This medication should have the administration boxes for the day of surgery marked 6 (=clinical reason) and initialled by the nurse or doctor making that decision. Surgical nurses trained in the use of this guide can make that decision. If you are unsure as to the class of a medication, you should look in the current edition of the BNF.

**Most** 'significant' drugs should be given on the day of surgery. A few exceptions are listed below. Drugs may be taken with a small amount of water at any time during the perioperative fasting period.

**PLEASE GIVE:**

- All "cardiac" or blood pressure drugs - except ACE inhibitors, angiotensin-II receptor antagonists and diuretics (see below)
- All antibiotics (including oral)
- All epilepsy drugs
- All asthma drugs or inhalers
- All tablets which reduce gastric acid (e.g. omeprazole, lansoprazole, ranitidine)
- All thyroid drugs
- All hypnotics, anxiolytics, barbiturates, antipsychotic and antidepressant medications taken regularly at home.
- All steroids taken regularly, including inhalers
- All immunosuppressants and cancer drugs
- **All analgesics** can be given before surgery - EXCEPT NSAID'S (see below)

**OMIT (do not give):**

- **ACE inhibitors and angiotensin-II receptor antagonists** - these drugs may drop the blood pressure during an anaesthetic. Some anaesthetists may request that these drugs are given before surgery but this will be requested on an individual basis.
- All **diuretics** - the anaesthetist may request that these are given – this will be on an individual basis.
- **Diabetic treatment** - The patient must be written up for alternative diabetic treatment by the surgical or diabetic team.
- **Aspirin, clopidogrel, dipyridamole, warfarin**. You must seek advice from your surgical and cardiology teams where appropriate.
- Drugs which are **not essential** in the short term e.g. vitamins, iron, laxatives, liquid antacid medicines (eg gaviscon), antihistamines, herbal remedies or homeopathic medicines.
- **Non-steroidal anti-inflammatory drugs** (eg. diclofenac (voltarol), ibuprofen, indometacin, naproxen), ***unless*** prescribed by an anaesthetist as a pre-med.

**But what about an empty stomach before anaesthesia?**

It is a mistake to think that the stomach is empty just because the patient has starved. Gastric secretions are always present. We aim to keep the volume of gastric secretions low, but small amounts of water and a few tablets will not make a significant difference. Meanwhile the patient may have adverse effects from missing important medication.

**Appendix A**

**Documentation of regional consultation:** 12 Oct 2018

| Trust | Name of person consulted* (print) | Designation | Signature |
|---|---|---|---|
| Chichester, Worthing | Phil McDonald<br>Dr Swinn Sabaratnam | paeds lead<br>paeds anaesthetic lead | |
| Dorchester | | | |
| Hampshire Hospitals Foundation Trust | A VENKATRAMAN<br>S.WINN | PAED ANAES LEAD (RHCH)<br>Paeds Anaes Lead (BNNH) | |
| Poole | A McCORMICK. | PAED ANAES LEAD | |
| Portsmouth | DUNCAN | PAEDS CO-LEAD | |
| Salisbury | Juliette Lee | Paeds Anaes Lead | Juliette Lee |
| Southampton | K FLEWIN | CONSULTANT | |
| Isle Of Wight | M RICE | consultant | |

*this person agrees they have read the guidelines, consulted with relevant colleagues and members of MDT, managers and patients, young people & their families as appropriate. Any queries raised during consultation and review process should be documented with responses and any changes made to the guideline.

FRIMLEY PARK — P BARRATT — Consultant

# PIER Guideline Pre-website Upload Checklist

| | |
|---|---|
| **Document:** | Paediatric Perioperative Fasting Policy |
| **Author:** | *Dr Heidi Artis* |
| **Date:** | *19/11/2018* |

| Criteria to be met | Comments |
|---|---|
| Confirm version number. Check against latest version available on PIER | *1* |
| Confirm approval group including, chair of group and date of approval | *Southampton CRSG* |
| Confirm consultation taken place, including pharmacy | *See Appendix A*<br>*Child Health, Children's Surgical Forum* |
| Ensure a flowchart or quick reference guide is included within the document | *Flowchart enclosed* |
| Ensure review arrangements appropriate? | *3 years from approval by Dr L Flewin* |
| Ensure all other relevant sections included within document:<br>• Flowchart<br>• Patient information leafleted (if applicable)<br>• Scope and purpose<br>• Definitions<br>• Related documents<br>• References | *Confirm each area is included.*<br><br>*All included* |
| Ensure the style and format as per the document template? | *Confirm style and format is as per template on PIER website - Yes* |
| Ensure content is clear and concise. Could the document be picked up by someone that does not deal with this in their every day role and be understood easily? | *Confirm document is clear and easy to read*<br>*Yes* |

**For completion by PIER administrator:**

| Criteria to be met | Comments |
|---|---|
| Confirm all above to be completed | |
| Ensure entered onto database including author and date | |

Please ensure this checklist is submitted at the same time as the document for ratification. The absence of this document may cause a delay in the ratification process.