Title of Guideline (must include the word “Guideline” (not protocol, policy, procedure etc) | Guidelines for eating and drinking before general anaesthesia or sedation for surgery, interventional radiology or endoscopy.

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Directorate & Speciality | Specialist Support, Anaesthetics

Date of submission | 2015

Date on which guideline must be reviewed (this should be one to three years) | 2015

Explicit definition of patient group to which it applies (e.g. inclusion and exclusion criteria, diagnosis) | Adult and child patients undergoing surgery, interventional radiology or endoscopy at NUH.

Abstract | This guideline describes a consensus approach to eating and drinking before the above interventions. Prevention of aspiration of gastric contents is balanced with avoidance of unnecessary dehydration and ketosis.

Key Words | Fasting, pre-operative, eating, drinking, fluids, oral, nil-by-mouth, carbohydrate.

Statement of the evidence base of the guideline – has the guideline been peer reviewed by colleagues? | Variable levels of evidence base: references attached. Peer-reviewed by NUH consultant body.

Evidence base: (1-5)

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<tr>
<td>1a</td>
<td>meta analysis of randomised controlled trials</td>
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<td>1b</td>
<td>at least one randomised controlled trial</td>
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<td>2a</td>
<td>at least one well-designed controlled study without randomisation</td>
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<td>2b</td>
<td>at least one other type of well-designed quasi-experimental study</td>
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<td>well–designed non-experimental descriptive studies (ie comparative / correlation and case studies)</td>
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<td>expert committee reports or opinions and / or clinical experiences of respected authorities</td>
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<td>recommended best practise based on the clinical experience of the guideline developer</td>
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Consultation Process | NUH doctors, nurses and allied professionals NUH.

Target audience | Doctors, nurses, healthcare assistants and administrative staff engaged in either direct patient care or scheduling. Information to be imparted to patients in the form of advance written information, and verbal advice while awaiting operations/procedures on wards and in admissions lounges.

This guideline has been registered with the trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt contact a senior colleague or expert. Caution is advised when using guidelines after the review date.
Guidelines for eating and drinking before general anaesthesia or sedation for surgery, interventional radiology or endoscopy.

‘Nil-by-mouth from midnight’ is obsolete and should not be applied to any patient.

Elective cases

Fluids: should be encouraged up to 2 hrs pre-op.
- Allowed: water; diluted fruit squash; tea/coffee with skimmed/semi-skimmed milk (up to about one-fifth of total volume); calorific drinks prescribed as part of Enhanced Recovery programmes.
- Disallowed: Milky coffee variants (e.g. cappuccinos, lattes). Fizzy (carbonated) drinks; fresh (pulped) fruit juices.

Babies 6 months and under who are purely milk-fed generally won’t accept water.
- Breast milk: allowed up to 3 hrs pre-op; formula milk: up to 4 hrs pre-op.

Babies and children over 6 months
- Water or fluids (as above) up to 2 hrs; breast milk up to 4 hrs; formula milk: up to 6 hrs pre-op.

Food (all ages): (including cows’ milk and chocolate) allowed up to 6 hrs pre-op.

Chewing gum/sweets (all ages): should be strongly discouraged (principally on account of the risk of choking on gum that’s not spat out), but should not incur postponement.
- Glucose gel for hypoglycaemia is acceptable.

Emergency cases: Patients with life/limb-threatening trauma should stay nil-by-mouth. Other patients on ‘rolling’ emergency lists can be offered oral fluids at the discretion of the anaesthetist covering that list.
- Oral fluids (other than sips of water) should be withheld for patients receiving morphine or codeine – as gastric emptying can be delayed.
  - Tramadol appears to preserve gastric motility.

Patients waiting in admission lounges: Ask the anaesthetist to estimate the earliest possible time that an individual patient might be called to theatre. Fluids should be offered up to 2 hrs before this point.

Regular medication should be given with up to 50 ml water (1ml kg⁻¹ in children), which can be repeated as necessary.
- Principal exception: oral hypoglycaemic drugs (diabetic tablets) should be omitted.
- Instruction for other drugs (e.g. ACE inhibitors) will be detailed in a companion guide. If in any doubt – ask the anaesthetist.

Patients scheduled for admission on the day of surgery should be supplied with written details of latest times for eating and drinking.
- Morning lists: work backwards from the start time: QMC lists start no earlier than 07:30; City lists no earlier than 08:30.
- QMC afternoon lists starting at 14:00: tea and toast finished by 07:30.
- City Campus afternoon lists starting at 12:30: light breakfast finished by 06:00.
- Operations late in the day (e.g. third sessions): Timings for drinks should be discussed and agreed amongst individual surgery/anaesthesia teams.
  - These patients are at most risk of dehydration. Likely timings of individual patients’ operations should be reviewed during the day.
**Rationale**
The rationale for this guideline is to
[1] minimise the risk of pulmonary aspiration of gastric contents when laryngeal reflexes are obtunded by sedation or anaesthesia;
[2] avoid unnecessary dehydration and ketosis. It is now widely accepted that protracted fasting is unnecessary and potentially deleterious to patients’ well-being.
Recent Trust-wide initiatives have sought to emphasise the importance of optimising nutrition (e.g. nutrition and hydration awareness week).
The figure below (courtesy Dr James Eldridge, Portsmouth Hospitals NHS Trust), illustrates that fasting guidelines impact upon only the intragastric volume at the time of induction of anaesthesia/sedation. Many other, more significant factors influence the risk of gastric contents entering the tracheobronchial tree.

The evolution of fasting practices since Mendelson published his landmark case series of labouring women and animal study has been reviewed recently (Levy, 2006).

**Evidence for fasting intervals**
The core elements of the guideline are derived from a European Society of Anaesthesiology taskforce (Smith et al, 2011). There is little divergence from the 2005 Royal College of Nursing clinical practice guideline and algorithm (see web link – RCN guideline).
Recently published peer-reviewed studies have informed decision-making for specific issues – e.g. the influence of chewing gum (Poulton, 2012).
Magnetic resonance imaging studies have sought to define the influence of sugary clear fluid on gastric emptying in children (Schmitz A, 2011, 2012).
Bedside imaging of individual patients’ gastric volumes will eventually supersede application of universal intervals (Cubillos J et al, 2012).
A number of studies have demonstrated that morphine and its derivatives delay gastric emptying. Tramadol appears to have less effect on gastric motility (Murphy et al, 1997).
Pre-operative carbohydrate
Much of the research into the adverse biochemical sequelae (insulin resistance etc.) of prolonged fasting has been conducted locally by Professor Dileep Lobo’s group (Awad, 2011). British consensus guidelines on fluid therapy (GIFTASUP) for adult surgical patients recommend that:
‘In patients without disorders of gastric emptying undergoing elective surgery clear particulate oral fluids should not be withheld for more than two hours prior to the induction of anaesthesia’ Evidence Level 1a (BAPEN, 2011 – see web link)
The rationale for carbohydrate (CHO) administration is preservation of normal endogenous release of insulin (an anabolic hormone) and prevention of the catabolic response to fasting. GIFTASUP recommends that ‘In the absence of disorders of gastric emptying or diabetes, pre-operative administration of carbohydrate rich beverages 2-3 hours before induction of anaesthesia may improve patient well being and facilitate recovery from surgery. It should be considered in the routine preparation for elective surgery’ – Evidence Level 2a.
Enhanced Recovery programmes (Enhanced Recovery Partnership 2012) have embraced pre-operative CHO drinks such as Nutricia preOp®. (NUH web page: http://www.nuh.nhs.uk/our-services/all-services/hepato-pancreatrico-biliary-service-(hpb)/enhanced-recovery-programme/)
Regular review of patients on ‘rolling’ emergency lists is necessary to identify those patients whose operations will not be undertaken within 2 hours and to whom CHO drinks might be offered (Sproat R et al, 2012).
Implementation
In NUH, the Essential Nutrition Group and Nutrition & Hydration Steering Committee are committed to support implementation.

Links to other relevant Trust documents
- Diabetes mellitus: http://www.nottinghamdiabetes.nhs.uk/gppages.html

Specific Medication issues:
- Drugs to continue/omit: Pre-operative drug administration in patients undergoing elective surgery. A guide for nursing and medical staff. Under revision.

Three key instructions are:
1. Beta blockers should not be stopped.
2. Angiotensin-converting enzyme inhibitors should be omitted in the 24 hours before spinal or epidural anaesthesia:
   a. Examples: Captopril; Cilazapril; Enalapril; Fosinopril; Imidapril; Lisonopril; Moexipril; Perindopril; Quinapril; Ramipril; Trandolapril.
3. Angiotensin-II receptor antagonists should be omitted in the 24 hours before spinal or epidural anaesthesia:
   a. Examples: Candesartan; Eprosartan; Irbesartan; Losartan; Olmesartan; Telmisartan; Valsartan.
References


Levy DM. Pre-operative fasting—60 years on from Mendelson. Continuing Education in Anaesthesia Critical Care and Pain 2006; 6: 215-8


Poulton TJ. Gum chewing during pre-anesthetic fasting. Pediatric Anesthesia 2012; 22: 288–296


