Guidelines for the Administration of Medication to Patients with Swallowing Problems and Enteral Feeding Tubes - Version 3

Useful contact numbers
Calderdale and Huddersfield NHS Trust
   Pharmacy Departments
      Calderdale Royal Hospital - 01422-224279
      Huddersfield Royal Infirmary - 01484-347123

Medicines Information Centre
   Calderdale Royal Hospital - 01422-224356
      from Huddersfield Royal Infirmary - 15(4356)

Primary Care Trusts
   • NHS-Calderdale - Medicines Management Team - 01422-281518
   • NHS-Kirklees - Prescribing Support Team - 01484-344352
1. **Introduction**

Administration of medication to patients with enteral feeding tubes or swallowing difficulties presents a number of problems:
- liquid or soluble formulations are not always available.
- may cause the enteral feed to precipitate
- drugs may bind to the enteral feeding tube reducing drug absorption
- nutrients and electrolytes in the enteral feeding solution may affect drug absorption
- positioning of the tube may also lead to changes in bioavailability of preparations e.g. nasogastric versus jejunostomy; this is because the medicine is delivered to a different part of the gastrointestinal tract and absorption may be altered

To minimise potential problems all prescriptions must be reviewed to reduce the number of medications to a minimum.

Always check with the prescriber and pharmacy to seek alternative preparations before crushing tablets or opening capsules as this may alter drug bioavailability resulting in unpredictable serum concentrations or tube occlusion

Alternative routes which may be considered:
- rectal
- parenteral
- transdermal
- sublingual/buccal

Certain solid dosage forms present a significant health risk to staff when crushed or opened. These guidelines should be used in conjunction with Trust COSHH information for wards or departments.

It is good practice for the clinician and nursing staff to discuss with the patient and carer that medication may be administered via the enteral feeding tube.

This guidance is intended to be used by both the Acute and Primary Care Trusts in Calderdale and Kirklees.

2. **Information for Prescribers & Pharmacists**

There are several issues surrounding the practice of crushing tablets or opening capsules:
- The “opening” of a capsule or “crushing” of a tablet will (in the majority of cases) make its use “unlicensed”. Consequently the manufacturer assumes NO LIABILITY for any harm that may occur to the patient or person administering the medication. However, liquid formulations made by Specials Manufacturers are also generally unlicensed (and usually very expensive).
- According to the “Medicines Act 1968” and its amendments, only medical and dental practitioners and Independent Nurse and Pharmacist Prescribers can authorise the use of unlicensed medicines in humans.
Administration of Medication to Patients with Swallowing Problems and Enteral Feeding Tubes

Authorisation for unlicensed medication administration (ie crushing tablets or opening capsules) must therefore ALWAYS be obtained in writing and not accepted verbally. For the purposes of this document we assume that the responsible prescriber is aware of the patients swallowing/feeding status and by signing the prescription is authorising medication to be administered in this way.

Further advice for nursing staff can be obtained from the Nursing and Midwifery Council ‘Standards for Medicines Management’ 2008 at www.nmc-uk.org

When medication is administered via an enteral feeding tube or the patient has swallowing difficulties please follow the stepwise approach:

1. Change to licensed liquid formulation or dispersible tablet where possible eg metoclopramide tablets to syrup, ferrous sulphate tablets 200mg to sodium feredate elixir etc. Liquid medicines must be prescribed in “milligrams” and not “mls” – there may be several strengths available which may lead to potential for error. Refer to the current BNF.
2. Consider switching to a different drug in the same therapeutic class that is available as a licensed formulation suitable to the patient.
3. Consider using a licensed preparation in an unlicensed manner eg crushing tablets/ opening capsules. For information on capsules which may be opened and tablets which can crushed or dispersed in water (though not technically dispersible tablets) please refer to the electronic guidance which is available on the web formulary under guidelines by the Medicines Management Committee. The web formulary can be accessed via the following web-addresses:
   Trust Intranet - http://intranet.cht.nhs.uk/formulary
   On the Internet - www.formulary.cht.nhs.uk

   If there is no information about the medication which you need to administer then contact pharmacy for advice.

4. Some medications are available as liquids from specials manufacturers however they are generally unlicensed and expensive. They are only considered as an option as a last resort after discussion with pharmacy.

5. Pharmacists should endorse the drug chart where medication can be crushed/dissolved prior to administration. Where medication should not be crushed the chart should be endorsed as such and appropriate recommendations should be made in the notes eg isosorbide mononitrate MR to asymmetric dosing of non-MR preparations.

The following should not be crushed:

a) Enteric Coated Tablets
   Enteric coated tablets are designed to prevent drug dissolution in the stomach and promote absorption in the small intestine. Crushing may produce undesirable side effects or decrease drug effectiveness.

b) Film coated tablets are not ideal for crushing, where there is no alternative they may be crushed with care. NB film coating may block feeding tube.

c) Buccal or Sublingual Formulations
   Drugs formulated in these dosage forms are designed to diffuse through the blood vessel wall under the tongue or cheek pouch in order to avoid first pass metabolism effects via the liver. These tablets should not be crushed.

d) Modified Release Dosage Forms
   These dosage forms are formulated to result in slow dissolution and release of the drug. Crushing the tablet may result in higher than expected peak dose initially and sub-therapeutic drug concentrations later in the dosing interval. This is especially important for drugs with a narrow therapeutic range eg theophylline. Generally these tablets should not be crushed – but there may be exceptions eg MR formulations designed to be given more than twice daily.

e) Cytotoxic tablets
   Special precautions are required with these drugs to ensure that staff avoid contact with them. Always contact Pharmacy.

Some patients after assessment by SALT may require thickened fluids. Medication may be thickened by adding thickening agents however this makes them unlicensed.
Patients with swallowing difficulties may find it easier to take medicines with soft food. Adults who are able to give consent to the administration of medicines must do so. Attempting to disguise medication in food (covert administration) is unacceptable. See section 12 Medicines Code: Preparation and administration of medicines.

Medication should be reviewed regularly as the patient may become able to take solid oral dose medication.

A “Patient/Carer” Information card should be completed with advice about medication administration and can be completed by pharmacy or nursing staff. This can be taken home with the patient post-discharge and amended as necessary by healthcare staff. The Information Card can be found on the Trust Web formulary under Guidelines by the Medicines Management Committee which can be accessed in the following ways;

- Trust Intranet - [http://intranet.cht.nhs.uk/formulary](http://intranet.cht.nhs.uk/formulary)
- On the Internet - [www.formulary.cht.nhs.uk](http://www.formulary.cht.nhs.uk)

3. **Advice on Drugs which cause specific problems**

Refer to the Intranet “Administration Advice on Individual Drugs” for more detailed information on specific drugs.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Effect</th>
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</thead>
<tbody>
<tr>
<td>Antacids</td>
<td>The metal ions bind to the protein in the feed and can block the tube. Consider using alternative drugs.</td>
</tr>
<tr>
<td>Antibiotics (ciprofloxacin, tetracycline and rifampicin)</td>
<td>Antibiotic levels can be significantly reduced by feed. Consider alternatives or increase doses.</td>
</tr>
<tr>
<td>Anticonvulsants (carbamazepine, diazepam, phenytoin)</td>
<td>Bind to enteral feeding tubes resulting in reduced bioavailability – this can be reduced by diluting with 30-60ml water and flushing well. Monitor response. In the case of phenytoin – stop enteral feed for two hours before and two hours after giving phenytoin suspension to enhance absorption.</td>
</tr>
<tr>
<td>Bismuth chelate</td>
<td>Binds to dairy products and can result in reduced ulcer healing.</td>
</tr>
<tr>
<td>Digoxin</td>
<td>Binds to fibre in fibre containing feeds Monitor digoxin levels.</td>
</tr>
<tr>
<td>Levodopa</td>
<td>High protein reduces levodopa effects - but there is no need to change the patient to a low protein diet.</td>
</tr>
<tr>
<td>Lithium</td>
<td>Increased sodium can reduce lithium levels</td>
</tr>
<tr>
<td>Penicillins</td>
<td>Absorption may be reduced by the feed and a higher dose may be needed. Stop feed 1 hour before and 2 hours after administration.</td>
</tr>
<tr>
<td>Theophylline</td>
<td>High protein diet increases theophylline excretion. Monitor theophylline levels.</td>
</tr>
<tr>
<td>Warfarin</td>
<td>Care with vitamin K containing feeds as may antagonise anticoagulant effect + binds to enteral feeding tube. Monitor INR closely.</td>
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Approved by Medicines Management Committee ......................................................................................................................... 9th September 2010

Review Date ...................................................................................................................................................................................... September 2012
Reduction of the Harm Caused by Misplaced Nasogastric Feeding Tubes

This applies to infants, children and adults. The position of the nasogastric tube should be checked before giving medication. Refer to full guidance for further information (http://www.nrls.npsa.nhs.uk/resources/?entryid45=59794).

**Methods that should be used:**
- measuring the pH aspirate using pH indicator strips/paper  
- radiography

**Methods that should not be used:**
- Auscultation of air insufflated through the feeding tube (‘whoosh’ test)  
- testing the acidity/alkalinity of aspirate using blue litmus paper  
- interpreting absence of respiratory distress as an indicator of correct positioning  
- monitoring bubbling at the end of the tube  
- observing the appearance of feeding tube aspirate

**Medication which can elevate the pH level of gastric contents:**
- Antacids  
- H₂ antagonists (eg ranitidine)  
- Proton pump inhibitors (eg omeprazole, lansoprazole).

For patients who regularly take these medicines the initial risk assessment needs to identify actions that staff should take in this scenario, and document them in the care plan. The initial pH of the aspirate should also be documented in the case notes.
5. **Guidelines For Administering Medication To Patients Via Enteral Feeding Tubes**

For full guidelines on administering medication to patients via enteral feeding tubes please see the Trust Medicine Code Section Preparation and administration of medicines

**Jejunal tubes** – use sterile water because the acid barrier in the stomach is bypassed. Absorption is unpredictable because the tube may extend beyond the main site of absorption of the drug.

**Size of lumen** - narrow lumen tubes are more likely to block, particularly with thick oral syrups (Dilute these with 30-60ml water before administration) and some tablets which disperse into small granules.

**Number of lumens** - ensure that the correct lumen is used with multi-lumen tubes.

**Administering medication:**

a. Drug charts MUST state the route of administration
b. The position of the nasogastric tube should be checked before giving medication (see sect. 4).
c. Immunocompromised patients and patients with enteral feeding tubes terminating in the jejunum may require the use of sterile equipment to reduce infection risk.
d. Where possible liquid/soluble preparations should be administered.

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**Where tablets can be crushed**

- Use a tablet crusher (contact Hospital Pharmacy department or Local Community Pharmacy for advice about where to obtain). Tablet crushers are for single patient use.
- Each drug should be crushed individually to a fine powder.
- **Do not crush different drugs together**.
- Mix fine powder with water before administering via the tube.
- Tablet crusher must be dried thoroughly after use and before next drug is crushed.

**Stop the infusion of the feed when drug administration starts**

- Flush the tube SLOWLY with at least 30ml water – using a 50ml oral, coloured enteral syringe. Use sterile water in hospital, and cooled boiled water in the community.
  - Oral syringes in hospital are single use - in Community settings single patient use enteral syringes may be reused provided they are clearly labelled (medicine/flush or feed as appropriate plus name if in communal setting) and decontaminated in line with the manufacturers’ instructions between each use (either cleaning or cleaning plus disinfection/sterilisation). Where the patient or carer is assessed by their health care worker as unable to decontaminate to the level appropriate for the patients needs, they should be provided with single use syringes.
  - Use liquid or soluble tablets where available. Where these are unavailable see administration advice for specific drugs – see section 2.2 for advice on how to find this information.
  - Administer each drug separately (by gravity flow) as a sediment-free liquid. Flush before and after with at least 30ml of water.
  - Document the total volume of water given on the fluid balance chart

**Do not crush different drugs together**

- Do not administer bulk-forming laxatives (e.g. ispaghula) because they may block the tubes – contact dietitian to review

**Do NOT add drugs directly to feeds** – this increases the risk of incompatibility, microbial contamination, tube blocking and under/over-dosing if feed rate is altered.
6. **Guidelines for Tube Maintenance**

Effective flushing reduces the incidence of tube occlusion. The use of inappropriate drug formulations increases the risk of tube occlusion.

**Practical Guidelines for Unblocking Nasogastric and Gastrostomy Tubes**

If you are unable to flush the tube or you can see a blockage you could try the following:-

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Ensure all clamps are open and the tube is not kinked.</td>
</tr>
<tr>
<td>2.</td>
<td>Use a 50ml syringe to gently aspirate any excess fluid from the tube.</td>
</tr>
<tr>
<td>3.</td>
<td>Flush with 30ml warm water and leave for 30 minutes. Then flush again.</td>
</tr>
<tr>
<td>4.</td>
<td>Flush with 50ml carbonated water (from catering). Leave for 30 minutes. Then flush again.</td>
</tr>
<tr>
<td>5.</td>
<td>Repeat process with solution of:-</td>
</tr>
<tr>
<td></td>
<td>- The contents of one sodium bicarbonate 500mg capsule</td>
</tr>
<tr>
<td></td>
<td>- The contents of one Creon 10,000 unit capsule mixed with 20ml water and administered immediately</td>
</tr>
</tbody>
</table>

If the tube remains blocked, contact your Ward or Local Doctor.

**General Advice**

- Never use excess force when flushing tubes.
- Never re-introduce the guide-wire into the nasogastric tube.
- To prevent blockages always flush tubes regularly as per feeding protocol.
- Always flush before and after every medication administered.