Doncaster and Bassetlaw Teaching Hospitals
NHS Foundation Trust

# Guidance on the Administration of Medicines to Patients who have Swallowing Difficulties or who are using Enteral Feeding Tubes[1]

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| Reviewer: (this version) | Pharmacy Clinical Governance group |
| Date revised: | 19/05/2016 |
| Approved by: | Drugs & Therapeutics Committee |
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| Next review date: | 14 August 2019 |
| Target audience: | Trustwide Clinical Staff |

[1] Enteral Feeding tubes include Nasogastric (NG), Percutaneous Gastrostomy (PEG), and Percutaneous Jejunal PEJ) tubes.

## Amendment Form

Please record brief details of the changes made alongside the next version number. If the procedural document has been reviewed **without change**, this information will still need to be recorded although the version number will remain the same.

| Version | Date Issued | Brief Summary of Changes | Author |
|---|---|---|---|
| **Version 4** | Aug 2016 | ▪ Section 1 – scope broadened to manipulating solid oral dose forms and/or administration via an unlicensed route, Specials included in unlicensed activities, emphasis placed on assessing risks and benefits in the context of the individual patient.<br>▪ Section 6 moved to section 3 to afford priority to alternative strategies.<br>▪ Section 3.1 – signposted to NHS Scotland Polypharmacy Guidance.<br>▪ Section 3.2 – advised to ensure formulation suitable for individual patient.<br>▪ Section 3.3 – obsolete products removed, orodispersible tablets removed.<br>▪ Section 4.2 - Perlonget removed: Prolonged Release added.<br>▪ Section 4.3 - new section relating to capsule contents.<br>▪ Section 4.5 – new section: chewable tablets.<br>▪ Section 4.6 – examples of hormone preparations added.<br>▪ Section 4.7 – new section for information relating to taste, metronidazole removed as liquid available.<br>▪ Section 5 – information relating to sucralfate and administration on empty stomach removed, syrups cited as example of acidic liquid.<br>▪ Section 6.2 – signposted to MHRA advice on switching between different manufacturers' products, amended administration in line with Handbook of Drug Administration via Enteral Feeding Tubes monograph.<br>▪ Section 6.5 – updated in line with Handbook of Drug Administration via Enteral Feeding Tubes monograph.<br>▪ Section 6.6 – etidronate changed to alendronic acid.<br>▪ Section 9 – advice given to consider smaller volumes in paediatric patients and indicated that sterile water should be used for all flushing when it takes place in hospital and in all instances where the tube bypasses the stomach when patient is at home.<br>▪ Section 11 – updated to reflect commissioning arrangements for ancillaries. | Pharmacy Clinical Governance Group |

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| **Version 3** | Jan10 | ▪ Minor change to the section order<br>▪ Additional guidance that many tablets will disperse without the need for crushing<br>▪ Explicit guidance that the minimum syringe size for administration should be 30ml to reduce the risk of tube damage | Medicines Risk Management Sub group |
| **Version 2** | Jan 08 | ▪ Minor change to Introduction that reinforces the need for a full medication review | Medicines Risk Management Sub group |

# Contents

# 1. INTRODUCTION

This guidance is required because manipulating solid oral dose forms (e.g. crushing/dispersing tablets, opening capsules) and/or administering a medicine via an unlicensed route (e.g. oral liquid via percutaneous endoscopic gastrostomy (PEG)) may be at least unnecessary and at worst dangerous to the patient. In addition, interactions may occur between medication and feeds that may render the medication ineffective, or may block the tube.

Administration of a licensed medicine other than in accordance with its Summary of Product Characteristic (e.g. crushing tablets) and administration of Specials are unlicensed activities, which in the event of an untoward incident may expose the Trust to an unnecessary financial risk.

In advance of manipulating tablets/capsules or ordering liquid preparations, it is imperative that a full medication review is performed, in partnership with the patient/carer whenever possible. The risk: benefit of each medication needs to be re-evaluated to ensure essential drug treatment is continued in a safe, effective manner and, where appropriate, medication is either suspended until swallowing improves or discontinued.

# 2. PURPOSE

This guidance is written to help those persons administering medicines make informed decisions when patients are having difficulties in swallowing tablets/capsules or are using enteral feeding tubes.

# 3. ALTERNATIVE STRATEGIES

Whenever you think it may be necessary to administer a medicine by a method for which it was not intended, you must consider it carefully and ensure it is safe to do so.
If you are in doubt you **must** ask advice from a pharmacist.
Below are listed alternative strategies you should consider.

## 3.1 Consider the Need

The first step is to separate drugs that are essential from those that could potentially be stopped. NHS Scotland Polypharmacy Guidance contains a list of essential medicines i.e. have a replacement function or may cause rapid symptomatic decline or loss of disease control if stopped.
If the oral route is temporarily unavailable, consider whether the medicine can be stopped for a short time without significantly harming the patient.
If medication cannot be stopped, consider alternative formulations or routes.

## 3.2 Formulations

Before manipulating solid dose forms (e.g. crushing/dispersing tablets, opening capsules), you must always check whether an alternative, licensed formulation is available.
Many medicines are available as solutions or soluble tablets that **may** be suitable: do not assume that liquid formulation will be suitable.

You **must** check the formulation is appropriate for the individual patient e.g. consider sodium content of effervescent/dispersible tablets, alcohol-free solutions for children, aspiration risk.

Not all liquid preparations are suitable for undiluted administration via a feeding tube. High osmolarity may cause diarrhoea. A viscous solution or suspension may block the tube and drugs such as diazepam may be adsorbed onto the plastic tubing. This can be reduced by diluting the medicines further with water before administration.

When modified release preparations are replaced by liquids, more frequent administration of a lower dose will be necessary.

Where no suitable commercial product is listed in the BNF you should consult the pharmacist who will check whether unlicensed administration of a licensed product (e.g. crushing/dispersing tablets, opening capsules) is appropriate and where necessary, advise on an unlicensed product.

Whenever formulation is changed, medication may require a dosage adjustment **and/or** subsequent monitoring: this is due to the differing bioavailability of the products.

Examples:

Phenytoin base: 90mg/15mls suspension is approximately equivalent to
100mg phenytoin sodium tablets/capsules.[2]

Digoxin tablets have a lower bioavailability than digoxin elixir, so in theory a dose reduction is indicated when switching from tablets to elixir but in practice the difference is unlikely to be clinically important.

## 3.3 Routes

Alternative routes may include:

- Transdermal – for glyceryl trinitrate (GTN)
- Buccal - for prochlorperazine
- Sublingual - for GTN
- Rectal – for diclofenac, paracetamol, domperidone, carbamazepine[2]
- Nebulisation
- Parenteral

[2] See MHRA advice on switching between manufacturers' products.

# 4. SOLID DOSE FORMS YOU MUST NOT CRUSH

## 4.1 Gastro-Resistant tablets

Gastro-resistant tablets (also called enteric coated and abbreviated to EC or EN) are formulated to pass through the stomach intact before they begin to dissolve.

The gastro-resistant coating may be being used to protect the stomach against local toxicity e.g. aspirin EC, or it may be used to ensure the medicine is released at the correct site for absorption or action e.g. bisacodyl.
Therefore crushing gastro-resistant tablets may increase toxicity or reduce effectiveness.

In addition, the gastro-resistant coating is very hard to crush successfully and this may increase the risk of blockage if administered down a tube.

## 4.2 Modified-release tablets

Modified-release (m/r) tablets are designed to release their contents over an extended period, typically 12 to 24 hours. If the tablets are crushed the medicines will be absorbed in a much shorter period, perhaps 1-2 hours. This may lead to increased toxicity as a full day's dose is absorbed in that 1-2 hours and then there may subsequently be a sub-therapeutic trough as the medicine is excreted.

Modified-release tablets are also described as:

- Slow Release or SR
- Extended Release or XL
- Long Acting or LA
- Retard
- Slow or Slo
- Prolonged Release or PR

## 4.3 Capsule contents

Capsules may enclose enteric-coated granules (e.g. lansoprazole, omeprazole) or an enteric-coated tablet (e.g. omeprazole) or contain prolonged release microgranules (e.g. Adizem-SR), which should not normally be crushed.

## 4.4 Buccal or sublingual tablets

Buccal and sublingual tablets are designed to avoid the gastro-intestinal (GI) tract and first pass metabolism. Consequently, crushing buccal/sublingual tablets and administering through the GI tract may be counterproductive as the drug may not be absorbed or may be removed through first pass metabolism.

Conversely the buccal and sublingual routes may provide an alternative where the oral route is not available.

## 4.5 Chewable tablets

Some of these tablets are formulated so that they are partially absorbed in the mouth: if the tablet is crushed decreased drug absorption will occur.

### 4.6 Tablets that may be toxic to you when crushed

When crushing tablets, powder will always be generated. A number of drugs will be potentially toxic to the person crushing the tablets, by inhalation of the powder. In addition, there is always the risk of sensitisation or anaphylaxis in susceptible individuals. Furthermore, if the device used for crushing is not properly cleaned, the potential to contaminate other preparations exists.

The following must **never** be crushed:

- **Cytotoxic** drugs such as melphalan, busulfan, methotrexate.
- **Antibiotics** such as penicillins, erythromycins.
- **Prostaglandin analogues** such as misoprostol (which is part of Arthrotec).
- **Hormone preparations** such as finasteride, hormone replacement therapy, tamoxifen, aromatase inhibitors (e.g. anastrozole, letrozole, exemestane)

The medicines listed are common examples and do not constitute an exhaustive list. You should consult the relevant section of the current BNF. If you are in any doubt consult a pharmacist before attempting to crush the tablets.

### 4.7 Taste

Some medicines have a bitter taste: they may or may not be coated. Where the crushed tablets are administered down a tube this is not a problem, however for patients without tubes, crushing the tablets may produce a very unpleasant product for them to take. For example, amiodarone is very bitter tasting.

## 5. INTERACTIONS WITH THE FEED

Some medicines can interact and bind with enteral feeds (phenytoin, ciprofloxacin and warfarin) significantly reducing bioavailability and efficacy and giving unpredictable absorption rates. It is recommended that feeds be stopped up to 2 hours before administration and 2 hours after. This may not be feasible and if so please contact a pharmacist for further advice. See below for specific advice for each medicine.

Acid liquid medicines (e.g. syrups) may cause clumping of the enteral feed.

## 6. KNOWN PROBLEMS

### 6.1 Jejunal tubes

Because the tip of the tube bypasses the stomach, absorption may be impaired. Therefore when medicines are intended to be administered via a jejunal tube, the absorption characteristics must be verified.

### 6.2 Phenytoin

The narrow therapeutic index of phenytoin makes the patient particularly vulnerable to variations in dosage.
When phenytoin sodium capsules/tablets are substituted with phenytoin base liquid, doses should be adjusted and serum level monitoring is advised: refer to section 3.2 and MHRA advice on switching between manufacturers' products.

Phenytoin is known to interact with enteral feed, therefore the following method of administration is recommended:

1. Consider giving phenytoin as a single daily dose. **Note:** twice daily dose indicated in children.
2. Stop enteral feed:
    a. Two hours before administration of phenytoin and recommence two hours after dosing.

    **Or**

    b. If single daily dosing is possible, suspend feed between 10pm and 6am (that is, during sleeping hours) and give phenytoin as a single daily dose at midnight (this allows for six hours drug absorption). **Note:** twice daily dose indicated in children.
3. Flush the enteral feeding tube with the recommended volume of water (see section 9).
4. Shake the medication bottle thoroughly to ensure adequate mixing.
5. Measure the required volume of suspension and mix with an equal volume of water (this may be a large volume) in a suitable container.
6. Draw the medication into an appropriate size and type of syringe (may need to dose in aliquots owing to the large volume).
7. Add 10ml water to the container and rinse any remaining suspension from the container.
8. Draw this into the syringe and flush this via the feeding tube (ensuring the total dose is administered).
9. Flush the enteral feeding tube with the recommended volume of water (see section 9).

The dosage form, strength and volume of liquid should always be documented on the patient's prescription chart to avoid confusion.

## 6.3 Ciprofloxacin

Ciprofloxacin forms insoluble chelates with divalent ions in the enteral feed. This significantly reduces the absorption of the ciprofloxacin. In severe infection consideration should be given to the IV route.

Stop enteral feed for one hour before and two hours after dose or administer higher doses or use IV treatment in severe infections. Liquid should not be diluted further with water. Use sterile water if dissolving tablets.

## 6.4 Warfarin

The Vitamin K content of the feed may antagonise the effects of warfarin therefore careful monitoring of the INR is required. This is particularly the case when feeds start, stop, or change.

### 6.5 Sucralfate

Sucralfate may form bezoars that can block feeding tubes, or even the stomach or oesophagus. Enteral feed should be stopped at least one hour before dose and not restarted for at least one hour post-dose. Consider ranitidine as an alternative.

### 6.6 Medicines needing to be administered on an empty stomach

Where medicines are advised to be administered on an empty stomach, this still applies. In these cases the feed should be stopped one hour before and two hours after administration.

Medicines such as penicillin antibiotics, proton pump inhibitors, and alendronic acid fall into this category.

## 7. DISPERSING TABLETS

Many tablets will disperse sufficiently in water to allow administration via an enteral tube without the need for crushing.

1. Select a 30ml oral syringe.
2. Remove the plunger and place the tablet in the barrel of the syringe.
3. Replace the plunger.
4. Draw up 10ml of water (more may be required for bulkier tablets).
5. Allow the tablet to disperse. Agitation may be required.
6. Inspect the syringe to ensure there are no large particles which may block the tube.
7. Administer to the patient as described in Section 9.

## 8. CRUSHING TABLETS (FOR ORAL ADMINISTRATION)

If it is still necessary to crush tablets before administration the following method should be used:

1. Crush the tablets, preferably in a proprietary tablet crusher. This will minimise the dust created and produce the finest powder. Otherwise use a mortar and pestle, or two large metal spoons.
2. Mix the powder with a small amount of water (10-20ml) to produce a sediment free suspension.
3. Administer to the patient.
4. Rinse the crusher/mortar and pestle/spoons and give these rinses to the patient. The patient may require a drink of water afterwards.
5. Wash the tablet crusher thoroughly with hot soapy water. Ensure it is thoroughly dry before the next use.

## 9. ADMINISTRATION VIA ENTERAL FEEDING TUBES

In all cases the feed must be stopped before administration and tube flushed with 30ml of water before and after the administration. Note: consider a smaller amount in children and in patients that are fluid restricted.
If several medicines are administered at one time, 10ml of water should be used as a flush between medicines. More or less volume may be required depending on the bore of the tube and whether the patient is fluid restricted or not.
Where administration is via a tube other than a nasogastric (NG) tube and it takes place in hospital, please use sterile water. Sterile water should always be used in patients with feeding tubes that bypass the stomach.

Measurement and administration of liquid medicines via enteral routes [3]
Only use labelled oral/enteral syringes that cannot be connected to intravenous catheters or ports to measure and administer oral liquid medicines.
Only one unlabelled syringe should be handled at any one time.

1. A large volume syringe of at least 30ml should be used to administer flushes or medication.[4]
2. Using a pulsatile action, flush the tube with 30ml of water before drug administration.
3. Prepare the solid oral dose form:

   a) Dispersible tablets – disperse in 10ml water.

   b) Dispersing conventional tablets – see section 7.

   c) Crushing tablets – see section 8, step 1 and 2.

   d) Capsules – open and disperse the contents in 10-20ml water (5-10ml for children).

   Remember to rinse washings down the tube.
4. Shake liquid formulations in the bottle. Viscous liquid may require dilution with an equal volume of water before administration.
5. Draw up medication into a 30ml needleless oral syringe.
6. Administer each drug separately, flushing the tube with 10ml of water in between each medication. Note: More or less volume may be required depending on the bore of the tube and whether the patient is fluid restricted or not. Flush the syringe in between medications.
7. Using a pulsatile action flush tube with 30ml of water after administration is complete.
8. All fluid given to the patient must be recorded on the fluid balance chart.

## 10. ADMINISTRATION TO PATIENTS ON MODIFIED DIET AND FLUIDS[5]

[3] For further information, please refer to NPSA/2007/19
[4] Small volume syringes can create high intraluminal pressures and may damage the tube

Medication administration in people with dysphagia is complex and poses pharmaceutical and legal challenges. Pharmacist advice should be sought for all people requiring diet modification to ensure that speech and language therapy recommendations regarding safety can be translated into safe medication prescriptions. Pharmacists should be consulted and patient care plans should be individualised to provide safe and effective pharmaceutical support.

## 11. ARRANGEMENTS AT DISCHARGE

Where a pharmacist knows that medicines are crushed, dispersed or dissolved to aid administration, they should annotate the discharge letter with sufficient information to enable continued safe administration.

Where a patient is discharged whilst receiving medicines via an enteral feeding tube the discharging nurse must ensure that the patient is supplied with sufficient compatible 30ml oral syringes (or larger) to enable continued administration before alternative supplies are in place. Note - large volume oral syringes cannot be prescribed on FP10: Nutricia supply ancillaries when delivering feed to the patient's home.

## 12. MONITORING COMPLIANCE WITH THE PROCEDURAL DOCUMENT

| What is being Monitored | Who will carry out the Monitoring | How often | How Reviewed/ Where Reported to |
|---|---|---|---|
| **Datix incidents reporting problems with this sort of administration** | Pharmacy Clinical Governance Committee | Monthly | Reviewed at meetings and if advice or training is required, it will be communicated to the relevant staff through the Pharmacy Clinical Teams and/or the Pharmacy Matters Newsletter |

[5] For further information, please refer to https://www.sps.nhs.uk/articles/supporting-patients-with-swallowing-difficulties-medicines-and-dysphagia/

## 13. DEFINITIONS

**Bezoar** - a solid mass of indigestible material that accumulates in your digestive tract, sometimes causing a blockage

**Chelates** –a chemical bond between 2 molecules

**Enteral feeding** - Tube feeding is when a special liquid food mixture containing protein, carbohydrates (sugar), fats, vitamins and minerals, is given through a tube into the stomach or small bowel.

**Specials** - a category of unlicensed medicines that are manufactured or procured specifically to meet the special clinical needs of an individual patient.

## 14. EQUALITY IMPACT ASSESSMENT

An Equality Impact Assessment (EIA) has been conducted on this procedural document in line with the principles of the Equality Analysis Policy (CORP/EMP 27) and the Fair Treatment For All Policy (CORP/EMP 4).

The purpose of the EIA is to minimise and if possible remove any disproportionate impact on employees on the grounds of race, sex, disability, age, sexual orientation or religious belief. No detriment was identified.

## 15. REFERENCES

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# APPENDIX 1 - EQUALITY IMPACT ASSESSMENT PART 1 INITIAL SCREENING

| Service/Function/Policy/Project/ Strategy | CSU/Executive Directorate and Department | Assessor (s) | New or Existing Service or Policy? | Date of Assessment |
|---|---|---|---|---|
| | | | | |

**1) Who is responsible for this policy?** Pharmacy

**2) Describe the purpose of the service / function / policy / project/ strategy?** Who is it intended to benefit? – Patients and Clinical staff administering mediicnes. What are the intended outcomes? – Safer administration of medicines via enteral feeding tubes

**3) Are there any associated objectives?** No

**4) What factors contribute or detract from achieving intended outcomes?** – Lack of information/training

**5) Does the policy have an impact in terms of age, race, disability, gender, gender reassignment, sexual orientation, marriage/civil partnership, maternity/pregnancy and religion/belief?** Details: No

- **If yes, please describe current or planned activities to address the impact** [e.g. Monitoring, consultation] –

**6) Is there any scope for new measures which would promote equality?** [any actions to be taken]

**7) Are any of the following groups adversely affected by the policy?**

| Protected Characteristics | Affected? | Impact |
|---|---|---|
| a) Age | No | |
| b) Disability | No | |
| c) Gender | No | |
| d) Gender Reassignment | No | |
| e) Marriage/Civil Partnership | No | |
| f) Maternity/Pregnancy | No | |
| g) Race | No | |
| h) Religion/Belief | No | |
| i) Sexual Orientation | No | |

**8) Provide the Equality Rating of the service / function /policy / project / strategy – tick (✓) outcome box**

| Outcome 1 | Outcome 2 | Outcome 3 | Outcome 4 |
|---|---|---|---|

**If you have rated the policy as having an outcome of 2, 3 or 4, it is necessary to carry out a detailed assessment and complete a* **Detailed Equality Analysis form in Appendix 4**

| | |
|---|---|
| **Date for next review: Jun 2019** | |
| **Checked by:** | **Date:** |