

Medicines & Enteral Feeding Tubes



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Introduction



- **Types of Tubes**
- **Choosing a formulation**
- **Crushing tablets/opening capsules**
- **Administration of medication**
- **Drug Interactions**

Types of tubes



- **Gastric tubes** – end of the tube is in the stomach
 - Nasogastric (**NG**) tubes – pass through the nose
 - Percutaneous endoscopic gastrostomy (**PEG**) –passed through the abdominal wall
- **Jejunal tubes** - end of the tube is in the jejunum (part of the small intestine)
 - Nasojejunal (**NJ**) tube–passed through the nose
 - Percutaneous Endoscopic Jejunostomy (**PEJ**) –passed through the abdominal wall

Choosing a formulation



- **Preferred formulations**
 - Suspensions
 - Solutions
 - Soluble tablets
- **Some suspensions or solutions might be too thick**
 - Require dilution with water before putting down the tube
- **Sometimes oral mixture is not available**
 - Need to crush tablets and disperse in water
 - Need to open capsules and disperse in water
 - Need to use injection solution

Crushing Tablets



- Tablets can be crushed using a tablet crusher/pulveriser or a pestle and mortar
- Produces a fine powder and so a better dispersion although some drug may be lost
- There is no ideal way to crush tablets
- There are a number of preparations that should **never be crushed**

Formulations not to be crushed ‡



Common Abbreviation	Meaning	Example
EC, EN	Enteric Coat	Losec ® granules
SR	Sustained Release	Nuelin SR ®
PR	Prolonged Release	Pentasa®
ER	Extended Release	Felo ER®
CR	Controlled Release	Tegretol CR ®
CD	Controlled Delivery	Cardizem CD ®
Oros	Osmotic Release Oral System	Adalat Oros®
SL	Sublingual	Zofran Zydis®
Cyto	Cytotoxic / Chemotherapy	Methoblastine ®

‡ With special handling, there may be exceptions

Administration



- Medication should not be added directly to the feed – incompatibility risk
- Only administer one medication at a time –Do not mix
- Use **sterile water** when dispersing tablets and flushing a **jejunal tube**

Administration



- **If drug to be taken on an empty stomach**
 - For gastric tubes
 - Stop feed 30 minutes before dose and resume 30-60minutes after (increase both times if gastric emptying poor)
 - NB this should be in consultation with a dietitian
 - These measures are not required for jejunal tubes

Administration



Stop the feed. Flush the tube with appropriate amount of water. Ensure the tube is clean.

Administer one medication at a time. Prepare all medicines and dilutions just before administration.

Draw up liquid formulations using a syringe for accurate dosing. Crush tablets or open capsules and disperse in a set amount of water according to pharmacist's instructions and measure out the dose using a syringe.

Attach the syringe to the tube and apply gentle pressure

Flush well with water between medications. Flush well after all the medications are administered. Ensure the tube is clean.

Administration requirements



- **Syringes**
 - Allow for accurate volume measurements
 - Not to be confused for IV use
 - ✦ In hospital syringes used for the purpose of administering oral medication are orange in colour – have adapters for connection
- **Water**
 - Tap water ok for gastric tubes
 - Sterile water
 - ✦ Jejunal tubes
 - ✦ Children < 6mths
 - ✦ ? Clinical state

Administration requirements



- **All doses should be prepared and used immediately**
 - Decreases error
 - No information available on stability of
 - ✦ Dispersed tablets/capsules
 - ✦ Diluted mixtures
 - Always use water as no information on mixing with other liquids
 - Some medications may be affected by light or air

Flushing



- **Before and after AND between** medication administration
- Prevents/minimises blockages of tubes
- Causes of blockages
 - Interaction b/w feeds and medication
 - Viscosity of liquid medication
 - Binding of medication to the tube
 - Residue of tablet that has been crushed
- Minimum volume to flush is 2ml
- Maximum volume depends.....

Drug formulations and tubes



- **Osmolality & sorbitol content of some mixtures**
 - Osmotic diarrhoea
 - Need to dilute with as much water as possible
- **Conversion tablets to mixtures etc**
 - May need dose &/or frequency adjustment

Drug formulations and tubes



- **High viscosity preparations**
 - Tube blockage or caking
 - ✦ Medications may not completely disperse
 - Dilute with as much water as possible
- **Difference in pH**
 - Clumping of feeds
- **Binding to tubing can occur**
 - Dilute with as much water as possible

Location of the tube



- **Jejunal tubes –bypassing the stomach**
 - Absorption may be a problem for some medicines
 - Medications specifically affected by this e.g. digoxin and phenytoin
- **Sterility issues with jejunal tubes**
 - With jejunal tubes the acidic stomach is by-passed
 - Sterile water should always be used when dissolving tablets and flushing the tubes to prevent unnecessary contamination

Medication interactions with feeds &/or tubes



- A number of specific medication interactions can occur when medications are administered via enteral tubes
- The most clinically important are with medications with narrow therapeutic ranges
- Clinical response should be monitored and appropriate precautionary measures taken

The Interaction Table



Interaction	Medication	Preventative action
Binding of medication to tube	Carbamazepine, Diazepam, Phenytoin	Dilute with water, flush well, monitor clinical response
Medication-feed interaction (coagulation in tube)	Acidic solution e.g promethazine	Alternative? Dilute and flush
Medication-feed incompatibility (affects medication absorption)	Phenytoin, carbamazepine, ciprofloxacin, warfarin	Stop feeds 1-2 hrs pre and post administering medication. Dilute and flush. Consult with dietitian

The Interaction Table



Interaction	Medication	Preventative action
Medications requiring an empty stomach	Penicillins, ketoconazole	Balance risk of reduced absorption against practicality of stopping feeds (if jejunal tube no probs as bypasses stomach)
Medication-feed indirect interaction	Warfarin and vitamin K in feeds	Frequent INR monitoring
Medication – medication direct interaction	Iron, zinc and ciprofloxacin	Alter medication administration times by 1-2 hrs b/w meds

Summary



- **Make sure the tube is patent and working well before medication administration**
- **Prepare equipment and medicines when ready to administer medications**
- **Avoid mixing medicines together before administering**
- **FLUSH, FLUSH, FLUSH**
- **Be consistent with your technique**
- **Seek help if you are unsure**
- **Don't be afraid to ask questions**

Acknowledgements



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References



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