**The administration of drugs via enteral feeding tubes**

The practice of administering drugs via enteral feeding tubes has become complex. The range of enteral feeding tubes and medicines has increased dramatically in recent years and this has led to a gap between clinical practice and best practice (Naysmith and Nicholson, 1998; Seifert et al, 1995).

**Facts about enteral feeding tubes** Enteral feeding tubes are designed to provide access to the lumen of the stomach or jejunum. They are designed to bypass dysfunction and obstruction, reduce discomfort or remove the need for patients to actively eat.

The lumen of a narrow enteral tube has the potential to occlude and once occluded can be difficult to unblock (Box 1).

If enteral tubes not designed for long-term feeding are used for this purpose, they can develop problems associated with the integrity of the materials used to manufacture the tube, or the tube design (Box 2). It is therefore important when caring for a patient with an enteral feeding tube to know the type of material the tube is made of.

**Administration of medicines via an enteral feeding tube** The type of tube and the abbreviation used should be standardised for the hospital or unit, for example ‘nasogastric tube’ (NG). It is important to know where the tip of the enteral feeding tube lies and therefore the site for drug administration. The position of the tip may affect the type of feed that can be used and the absorption of some drugs.

**Know your drug** The route stated on the patient’s prescription chart should match the type of enteral tube and the placement of the tip of the enteral tube in the gastrointestinal tract, for example, nasogastric (NG), percutaneous endoscopic gastrostomy (PEG) or nasojugal (NJ).

Never assume that a drug can be given via a feeding tube – always ask a pharmacist for advice.

In order for the drug to have bioavailability (be able to be absorbed and used), it must be delivered to the correct part of the gastrointestinal tract. If a drug designed for absorption in the stomach is placed directly into the jejunum, this may compromise its overall effect.

For example, digoxin is primarily absorbed in the stomach, therefore administering digoxin via a jejunal tube may significantly reduce the rate of absorption.

Drug doses may alter if the formulation of a drug is changed. For example, if a prescription of a drug is changed from a slow-release formulation to a liquid, the drug dose and the frequency may need to be recalculated.

Not all liquid drug preparations are suitable for enteral tube administration. The osmolality of some drugs may be high (causing fluid to be drawn into the gastrointestinal tract) and some preparations contain sorbitol. Both of these may cause diarrhoea and hence failure of drug absorption.

If the drugs do not appear to be working or the patient experiences diarrhoea, the pharmacist and dietitian should review the patient’s medicines and feeding regime.

Enteral feeds may bind with some drugs and stop their absorption. For example, it is important to stop the enteral feed for two hours before phenytoin is administered via an enteral feeding tube and for two hours afterwards.

Before and after administration the tube should be flushed with water to prevent the drug binding to the feed and dramatically reducing serum levels.

Adding drugs directly to a feed container can lead to contamination. It can also destabilise the feed or the drug and lead to chemical interactions.

**Procedure for drug administration via an enteral feeding tube (Fig 1)** Before administering a drug via an enteral feeding tube, it is important to:

- Wash hands and wear gloves;
- Resecure and refix any tape holding the enteral feeding tube in position if loose;
- Close any ports on the enteral tube to ensure there is an airtight seal. Check if a connector to join the syringe to the tube is required, such as a PEG tube connector;
- Check the position of the tube. To confirm the gastric placement of the nasogastric tube, follow local policy. The position of a PEG or surgical/radiological jejunostomy can be assessed by checking that the length of tube outside the body remains constant and the suture remains intact. Confirm that the patient is not experiencing undue pain or discomfort.
- Check that the enteral feeding tube is patent by flushing with 30–50ml of water using a 50ml oral, enteral or catheter-tipped syringe. Do not use syringes designed for intravenous use. Oral, enteral and catheter-tipped syringes are not compatible with intravenous devices and their use reduces the risk of the drug being accidentally administered via the intravenous route.
- If the tube is blocked, attempt to unblock it without using excessive force (Box 1). If unsuccessful seek specialist advice.
FIG 1. ADMINISTERING DRUGS VIA ENTERAL FEEDING TUBES – A PRACTICAL GUIDE (ABRIDGED)

STEP-BY-STEP GUIDE
- Can the patient still take their medication orally?
- Do not add medication directly to the feed
- Seek further advice for fluid-restricted or paediatric patients as flushing volumes may need to be reduced
- Review all medication. Is it all really necessary?
- Can an alternative route be used?

STOP THE FEED
Flush the tube with at least 30ml of water

Do you need to allow a break before administering the medicines?

ASSEMBLE MEDICATION AND EQUIPMENT NEEDED, FOR EXAMPLE SYRINGES, PESTLE AND MORTAR
Prepare each drug separately
Never mix drugs unless instructed by a pharmacist

SOLUBLE TABLETS
Dissolve in 10–15ml of water.
Administer down tube

LIQUIDS
Shake well. Viscous (thick) liquids – dilute with an equal amount of water immediately before administration
Administer down tube

TABLETS*
Crush uncoated and sugar-coated tablets using a pestle and mortar or suitable device

CAPSULES*
Open capsules and tip powder into medicine pot

Do not crush:
Enteric-coated (EC) medicines
Modified release (MR, SR, LA, XL) medicines
Hormone preparations
Cytotics
Always seek advice

Mix with 10–15ml of water
Administer down the tube

If more than one medicine is to be administered – flush between drugs with at least 10ml of water to ensure that the drug is cleared from the tube.

Flush tube with at least 30ml of water following administration of last drug

Do you need to allow a break before restarting the feed?

RE-START THE FEED

*Crushing tablets or opening capsules should be considered as a last resort
For further advice contact your local hospital’s medicines information department

REFERENCES
UNBLOCKING NASOENTERIC FEEDING TUBE

BOX 1. SUGGESTED METHOD FOR UNBLOCKING NASOENTERIC FEEDING TUBE

- Remove tube from behind the ear, remove tape securing it to the face
- Examine tube for kinks
- Ensure all entry ports are closed
- Using 30ml of water in a 50ml oral, enteral or catheter-tipped syringe, attempt to flush/withdraw fluid from the tube. A smaller syringe will exert a higher pressure and possibly split the enteral tube.
- Use pulsatile flushing to move the blockage
- Tube clearing brushes are available from specialist manufacturers. They should be used, following the manufacturer’s instructions, by a specialist nurse as mucosal perforation can occur
- Manufactured enzyme compounds may be used to digest the blockage providing that there is enough dead space in the tube to allow the enzyme solution to reach the blockage. These compounds should be used following the manufacturer’s instructions
- Do not use carbonated soft drinks because the pH is too low, which can cause the feed to clot
- In the event that a blockage cannot be cleared, seek specialist advice. Do not use excessive force and if a drug dose is omitted as a result of the tube blocking, inform the medical team.

KEY CONSIDERATIONS

- **Liability** – Crushing tablets, opening capsules and administering drugs through enteral feeding tubes usually fall outside of the drugs’ product licence. The practitioner is then liable for any adverse effects that occur.
- **Route** – Can the drugs be taken orally or by another lactose), and after drug administration to prevent interactions between the drugs, tube or feed. In some cases, for example in children or in patients with renal and cardiac disease, these volumes may need to be revised to meet the patient’s prescribed fluid restriction.
- **Check the patient’s identity.** Attach the syringe to a port on the enteral feeding tube. Ensure there is an airtight connection between the syringe and enteral tube, and administer the flush and drugs.
- **Flush immediately with an appropriate amount of water and leave the connector clean and dry.**

Conclusion  Variations in practice do exist and the British Association for Parenteral and Enteral Nutrition (BAPEN) guidelines attempt to provide a safe method of drug prescription and delivery that will maximise effectiveness of the drug therapy.

Altering drugs – for example by crushing – for administration in enteral feeding tubes may not be covered by the drug manufacturer’s licence. It is important to remember that the person administering the drug takes responsibility for complications that arise from his or her actions.

FURTHER INFORMATION

A large wall poster, Administering Drugs Via Enteral Feeding Tubes: A Practical Guide, provides clear, easily accessible information for use in areas such as hospital drug preparation rooms, nursing homes and GP surgeries. This is complemented by the leaflet Tube Feeding and Your Medicines – A guide for Patients and Carers. This records tube details, hospital contact points and medication information with an advice column for soluble tablets and dilution. This record will be completed by the multidisciplinary team in acute hospitals as part of the patients’ discharge back into the community. The leaflet Drug Administration Via Enteral feeding Tubes – A Guide for General Practitioners and Community Pharmacists explains the need for guidance, preferred formulations, legal implications, drug interactions, tube blockage, and other information.

For copies of leaflets and posters from the British Association for Parenteral and Enteral Nutrition, contact the BAPEN office on tel: 01527 457850 or visit: www.bapen.org.uk

NT 18 November 2003 Vol 99 No 46 www.nursingtimes.net