

Alternatives to using an Unlicensed "Special"



Version 2

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If you have any comments on the content of this database please email jill.theobald@nhs.net

Before considering other formulations/preparations, first ensure that the drug is still needed and the patient is compliant.

Drug	First Choice: Use a licensed medicine in a suitable formulation (Incl change to different drug in same therapeutic class)	Second Choice: Use a licensed medicine in an unlicensed manner ¹	LAST RESORT: Use an unlicensed special (this is an expensive option, avoid where possible)
Acetazolamide	No licensed liquid	Crush standard tablets and mix with water or disperse in water (takes 1-5 mins). Give immediately. ² The MR capsules are generally not considered suitable for use, although some centres have opened them and flushed the contents down enteral feeding tubes ² - this should only be done on specialist advice.	250mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³
Acetylcysteine	GREY if being used as mucolytic (use carbocisteine) RED for renal protection - refer back to specialist LICENSED 600mg effervescent tablets available (prescribe as NACSYS) Note that 600mg capsules are also available and in drug tariff, but are not licensed. LICENSED 200mg oral powder sachets available, but <u>very</u> expensive.	Effervescent tablets are preferred choice for enteral feeding tubes. Stop the feed prior to administration and restart afterwards. ²	Unlikely to need: licensed alternative available
Alendronic acid	Consider if still needed. LICENSED effervescent tablets and liquid available.	Do not crush tablets - risk of oesophageal damage. No info on using effervescent tablets or liquid for enteral feeding tubes. ²	Unlikely to need: licensed alternative available
Allopurinol	No licensed liquid	Crush tablets well and mix with water or disperse in water. Drug is very insoluble, so mix well and give immediately. Note that 100mg tablets disperse quicker than 300mg tablets. ² For enteral feeding tubes, administer after feed. ²	100mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 150ml ³ OR 300mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³
Amiloride HCl	LICENSED 5mg/5ml oral <u>solution</u> available		Unlikely to need: licensed alternative available
Amiodarone	No licensed liquid	Tablets can be crushed and mixed with water. Bitter taste; if taking orally mix with fruit juice. ²	50mg/5ml and 100mg/5ml oral suspension included in Part VIII B of Drug Tariff. Minimum quantity 100ml ³ Costs >£100 for 100ml
Amisulpride	LICENSED oral <u>solution</u> available (100mg/ml - 2 months expiry once opened)		Unlikely to need: licensed alternative available
Amitriptyline	LICENSED oral <u>solution</u> available (25mg/5ml and 50mg/5ml - some manufacturers only give 1 month expiry once opened) 10mg/5ml also available, but <u>very</u> expensive (DT Dec18)	Absorption may be decreased by high-fibre feeds. If administered directly into the jejunum (i.e. through an NJ, PEJ, or PEGJ tube), monitor for increased systemic effects. ²	Unlikely to need: licensed alternative available
Amlodipine	LICENSED oral <u>solution</u> available, but <u>very</u> expensive. (5mg/5ml and 10mg/5ml, sugar free - 1 month expiry once opened, store in fridge) No other calcium channel blocker has a licensed liquid or dispersible tablet option.	If necessary, most tablet brands disperse in water easily. ² Administration via NG/PEG tube – Flush the feeding tube after the dose with 20mL of water. ²	Unlikely to need: licensed alternative available
Apixaban	No licensed liquid available The SPC for Eliquis tablets states that the tablets may be crushed and suspended in water, 5% dextrose in water, or apple juice or mixed with apple puree and immediately administered orally. Alternatively, Eliquis tablets may be crushed and suspended in 60 mL of water and immediately delivered through a nasogastric tube. Crushed Eliquis tablets are stable in water, 5% dextrose in water, apple juice, and apple puree for up to 4 hours.	Licensed for administration through nasogastric tubes – administration through other types of enteral feeding tube would be outside the product license. Take care to ensure the whole dose is administered, and flush well after each dose. ²	Unlikely to need: licensed alternative available
Aripiprazole	LICENSED orodispersible tablets available, but expensive. Licensed liquid also available but is even more expensive.		Unlikely to need: licensed alternative available
Atorvastatin	LICENSED chewable tablets available		Unlikely to need: licensed alternative available
Azathioprine	No licensed liquid	Cytotoxic drug DO NOT CRUSH. Tablets have a film coating that prevents exposure to the cytotoxic medicine inside. ²	50mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Note that 20mg/5ml, 25mg/5ml & 100mg/5ml also in tariff, but are more expensive than the 50mg/5ml. NB: Cytotoxic - Carers handling the suspension should wear gloves in case of contact with the medication
Bendroflumethazide	No licensed liquid	Disperse in water (disperses readily in 1-5mins). Give immediately. ²	2.5mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 150ml ³
Betahistine	No licensed liquid	Crush tablets and mix with water (the drug is very soluble). Give immediately. ²	8mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 200ml ³ (costs >£100 for 200ml)

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Bisacodyl	LICENSED suppositories available (5mg and 10mg) or consider senna liquid	The tablet is enteric coated and is designed to release the drug in the colon. Do not crush as it has an irritant effect on the stomach ²	Unlikely to need: licensed alternative available
Bisoprolol	No licensed liquid Consider switching to alternative betablocker as appropriate for indication eg: atenolol (available as LICENSED liquid)	Crush tablets and mix with water. The lower strength tablets will disperse in 1 to 5 mins without crushing. Give immediately ²	2.5mg/5ml oral <u>solution</u> included in Part VIII B of Drug Tariff Minimum quantity 150ml ³ Note that other strengths also in tariff, but 2.5mg/5ml oral <u>solution</u> is by far the most cost effective option (DT Dec18).
Bumetanide	LICENSED oral solution (1mg/5ml) but extremely expensive (approx £200 for 150ml - Dec18 DT).	If necessary, the tablets can be crushed and mixed with water. Give immediately. ²	Unlikely to need: licensed alternative available
Buprenorphine	Licensed sublingual tablets (if the patient has a sufficiently moist mouth) and transdermal patches available	The sublingual tablets are not suitable to be administered via enteral feeding tube as the drug undergoes extensive first pass metabolism. ²	Unlikely to need: licensed alternative available
Candesartan	No licensed oral liquid available	The tablets can be crushed and dispersed in water. ² No information on use with feeding tubes.	No liquid in Drug Tariff
Captopril	LICENSED oral solution available, but expensive (5mg/5ml and 25mg/5ml - Expires 21 days after opening, 100ml pack size)	If necessary, the tablets will disperse in water in 1 to 5 minutes. ² Concomitant food or milk can decrease captopril absorption. If clinical effect is insufficient, consider withholding enteral feed for half an hour before and one hour after each dose. Flush well after each dose ²	Unlikely to need: licensed alternative available
Carbimazole	No licensed oral liquid available	Crush tablets and mix with water. Give immediately ²	10mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 150ml ³ (costs >£100 for 150ml)
Carvedilol	No licensed oral liquid available	Crush tablets and mix with water. Give immediately ^{2&3} If administered directly into the jejunum (i.e. through an NJ, PEJ, or PEGJ tube), monitor for increased systemic effects. ²	5mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³
Chloral hydrate	LICENSED oral solution available, but is very expensive (143.3mg/5ml oral solution BP, 150ml = £244 DT Dec18)	For enteral feeds: Use the elixir. It is light sensitive, so give immediately. ²	Use only if licensed strength is not suitable: 500mg/5ml oral solution included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ (costs £21.64 for 100ml, DT Dec18) Note that 1mg/5ml oral solution also in tariff, but 500mg/5ml oral solution is most cost effective option.
Chlorothiazide	No licensed oral liquid available	Crush or disperse tablets in water. They disperse in less than a minute. ²	250mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 50ml ³ Note that 25mg/5ml and 150mg/5ml oral suspension also in tariff, but 250mg/5ml oral suspension is most cost effective option.
Chlorpromazine	LICENSED oral syrup available (25mg/5ml and 100mg/5ml - 6 month expiry once opened. Note that Pinewood Healthcare also make a 25mg/5ml oral solution, but it only has a 1 month expiry once opened.)	Chlorpromazine has been reported as being incompatible with some enteral feeds, so ensure enteral feeding tubes are flushed well before and after each dose. ²	Unlikely to need: licensed alternative available
Citalopram	LICENSED oral drops (40mg/ml) available. Note that 8 drops (16mg) is equivalent to 20mg tablet dose and 16 (32mg) drops is equivalent to 40mg tablet dose.		Unlikely to need: licensed alternative available
Clindamycin	No licensed oral liquid. Where clinically appropriate, change to an alternative antibiotic available as a liquid or dispersible tablet.	Open the capsules and disperse in water immediately prior to administration. Avoid inhalation of capsule contents. ^{2&3} The capsule contents taste extremely unpleasant and may be unpalatable for oral administration in patients with swallowing difficulties. The capsule contents can be mixed with grape juice or maple syrup. ²	75mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Costs >£100 for 100ml
Clobazam	LICENSED oral suspension available (10mg/5ml - Expires 28 days after opening) Note that the 5mg/5ml strength is non formulary in Nottinghamshire - rationalised to one strength for safety reasons (APC Sept14)		Unlikely to need: licensed alternative available
Clomipramine HCl	No licensed oral liquid Consider switching to alternative: amitriptyline, lofepramine, trazodone (available as LICENSED liquids)	Capsules can be opened and the contents mixed with water immediately prior to administration. ² However, the capsules are very small and this may not be practical; consideration should therefore be given to changing to alternative therapy. DO NOT Crush the MR tablets ² (note that MR tablets are non formulary). If administered directly into the jejunum (i.e. through an NJ, PEJ, or PEGJ tube), monitor for increased systemic effects. ²	50mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Costs >£300 for 100ml
Clonazepam	LICENSED oral solution available (500micrograms/5ml and 2mg/5ml - expires 1 month after opening) Licensed liquid contains ethanol - not suitable for children . If unlicensed liquid required for a child state "ethanol free" on prescription to ensure correct product supplied	For administration via NG / PEG tubes use the oral solution which is licensed for administration via enteral feeding tubes (non-PVC tubes only). The tube should be flushed well with three separate flushes of at least 5mL water each, as the solution is oily and can adsorb to the inside of the feeding tube. ² For NJ or PEJ feeding contact practice pharmacist (see NEWT guidelines).	No liquid in Drug Tariff (other than 2.5ml/ml drops which are not listed as alcohol free)

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Clonidine	LICENSED oral solution available (but is RED on the Nottinghamshire Formulary) (50micrograms/5ml, expires 1 month after opening) Note that transdermal patches are not licensed in the UK	The tablets have been crushed by some centres, but there is little information on this. ²	Unlikely to need: licensed alternative available
Clopidogrel	No licensed oral liquid available	The tablets can be crushed and dispersed in water. Most brands disperse in one to five minutes without crushing, however some take longer. ² No information about using the solution or the suspension via enteral feeding tubes has been located ²	75mg/5ml oral solution included in Part VIII B of Drug Tariff Minimum quantity 150ml ³ Note that 1mg/ml & 75mg/5ml oral suspension also in tariff, but 75mg/5ml oral solution is more cost effective.
Co-Careldopa	No licensed liquid. Consider switching to LICENSED Co-beneldopa - capsules/dispersible tablets. (Dose conversion table available on NEWt Guidelines)	Crush co-careldopa tablets and disperse in water and give immediately. ^{2,3} (Info only available for Sinemet brand) Do NOT crush MR tablets. ²	25mg/100mg/5ml oral suspension included in Part VIII B of Drug Tariff Note: cheaper to order higher strength Minimum quantity 100ml ³ Note that 12.5mg/50mg/5ml oral suspension also in tariff, but 25mg/100mg/5ml strength is more cost effective.
Colecalciferol	Review prescribing and monitoring of patient in line with the Nottinghamshire Vitamin D guideline. Vitamin D for prevention / maintenance should be purchased over the counter unless exception criteria met as per CCG position statements. LICENSED products available - details in guideline and on Nottinghamshire Formulary.		
Cyclizine	No licensed liquid. Consider switching to alternative anti-emetic: promethazine, metoclopramide or domperidone (available as LICENSED liquids)	If absolutely necessary, crush tablets and disperse in water. Protect from light. The crushed tablets have a bitter taste. ² Administer immediately.	Unlikely to need: licensed alternatives available
Dabigatran	No licensed liquid available. Consider rivaroxaban or apixaban as licence covers crushing tablets.	Dabigatran capsules should not be opened. The capsule shell is specially formulated to release slowly at the correct point in the gastrointestinal tract. The pellets inside the shell are designed to create an acidic micro-environment to improve drug dissolution and absorption. Opening the capsules may greatly affect the oral bioavailability of the drug, with a risk of increased side effects (i.e. bleeding), therefore this should never be done. ²	
Dantrolene	No licensed liquid available	The capsules can be opened, and the contents dispersed in water or acidic fruit juice (e.g. orange) for administration. ²	25mg or 100mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Note that 10mg/5ml oral suspension also in tariff, but 25mg and 100mg/5ml more cost effective. No information on administering the oral solution via enteral feeding tubes has been located. ²
Dexamethasone	LICENSED soluble tablets and oral solution available. 2mg soluble tablets and 2mg/5ml oral solution are most cost effective strengths. Expiry of oral solution once opened 1 to 3 months depending on manufacturer.	If absolutely necessary, tablets can be crushed and dispersed in water. Care should be taken not to inhale the dust. ² Enteral tubes - use soluble tablets or oral solution. ² It may be preferable to use soluble tablets rather than the liquid for intrajejunal administration. ²	Unlikely to need: licensed alternative available
Diazepam	LICENSED oral solution, oral suspension and rectal solution tubes available.	For enteral administration: Use the syrup or the oral solution, and dilute with water before administration to reduce viscosity and tube binding. ²	Unlikely to need: licensed alternative available
Diclofenac	LICENSED suppositories available. If liquid needed consider alternative NSAID (e.g. ibuprofen suspension 100mg/5ml). Note that diclofenac dispersible tablets have been discontinued.		Unlikely to need: licensed alternatives available
Diltiazem	No licensed liquid available. Where clinically appropriate, consider changing to an alternative once daily calcium-channel blocker such as amlodipine.	Note that all diltiazem tablets and capsules are labelled modified release, but the 60mg tablet preparations (e.g. generic products, Tildiem® modified release) are not slow-release and can be crushed. ² For 60mg tablets: crush and disperse in water - may change pharmacokinetics so if dose increase needed consider QDS dosing. If converting from sustained release (SR), start with 60mg TDS and titrate as dose unlikely to be equivalent due to variation in bioavailability between SR preparations. SR capsules can be opened and the beads mixed with water or soft food (do not crush the capsule contents). ² See NEWT guidelines for more brand specific information with regards to enteral tube administration.	60mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³
Dipyridamole	LICENSED tablets and oral suspension available (50mg/5ml or 200mg/5ml - expires 1 or 2 months after opening depending on manufacturer) Dipyridamole suspension and ordinary tablets are not licensed for use post stroke. (Evidence suggests ineffective). Consider switch to CLOPIDOGREL if appropriate: Clopidogrel is now recommended as the first choice antiplatelet following ischaemic stroke or TIA and in patients with peripheral artery disease or multi-vascular disease (remember to stop aspirin).		Unlikely to need: licensed alternative available
Donepezil	LICENSED orodispersible tablets available (5mg and 10mg tablets) LICENSED oral solution also available (1mg/ml), but is GREY-Non formulary as it is much more expensive than orodispersible tablets.		Unlikely to need: licensed alternative available
Dosulepin	GREY - Non formulary. Dosulepin is no longer recommended for the treatment of depression due to the high risk of fatality in overdose and increased cardiac toxicity. Consider switching to alternative tricyclic antidepressant. LICENSED amitriptyline liquid available.		

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Doxazosin	No licensed oral liquid	Crush standard tablets and disperse in water (generics only, use deionised water for Cardura brand) Give immediately. [ref: <i>Handbook of Drug Administration via Enteral Feeding Tubes, accessed online via Medicines Complete, Sept18</i>] Do not crush or divide MR tablets. ²	4mg/5ml oral solution included in Part VIII B of Drug Tariff Minimum quantity 150ml ³ (costs approx. £85 for 150ml) Note 1mg/5ml oral suspension or solution and 4mg/5ml suspension also in tariff, but are not as cost effective. No information on administering the oral solution via enteral feeding tubes has been located. ²
Duloxetine	No licensed oral liquid	The capsules can be opened and their contents mixed with apple juice or apple sauce. The capsules contain enteric-coated beads which should not be chewed or crushed. The mixture should be given immediately. ² No information on giving duloxetine via enteral feeding tubes has been located.	
Enalapril	No licensed liquid available. Consider switching to alternative ACE inhibitor.	Crush tablets and disperse in water. Give immediately. ² The crushed tablets may have a bitter aftertaste. ²	5mg/5ml oral solution included in Part VIII B of Drug Tariff Minimum quantity 150ml ³ (costs approx £75 for 150ml, DT Dec18) Note other strengths are also in tariff, but are not as cost effective.
Ergocalciferol	GREY - Non formulary. Review prescribing and monitoring of patient in line with the Nottinghamshire Vitamin D guideline. Vitamin D for prevention / maintenance should be purchased over the counter unless exception criteria met as per CCG position statements. LICENSED products available - details in guideline and on Nottinghamshire Formulary.		
Ferrous Sulfate	LICENSED oral drops available (125mg (25mg iron)/5ml, Ironorm®) but they are GREY - Non formulary and it is more cost effective to switch to ferrous fumarate liquid or Sytron (sodium feredate).	Convert to appropriate dose of Ferrous fumarate liquid which can be diluted with water immediately prior to administration if desired to reduce the viscosity of the liquid. Dilution with water may reduce side effects when ferrous fumarate liquid is given through enteral tubes terminating in the jejunum. Higher doses may be needed when given through enteral tubes terminating in the jejunum. Some iron preparations have been reported as being incompatible with some enteral feeds, so ensure enteral feeding tubes are flushed well before and after each dose. ²	Unlikely to need: licensed alternative available
Flecainide	No licensed liquid	If necessary, crush and disperse tablets in water (info for generics only). Give immediately [ref: <i>Handbook of Drug Administration via Enteral Feeding Tubes, accessed online via Medicines Complete, Sept18</i>] Food reduces the rate but not the extent of absorption. ³ NB: May have an anaesthetic effect on the tongue so care should be taken with hot meals after administration. ² If giving via enteral feeding tube, always flush with de-ionised water. ²	25mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 200ml ³ Note that 10mg/5ml oral suspension and 25mg/5ml oral solution also in tariff, but 25mg/5ml oral suspension is more cost effective.
Fludrocortisone Acetate	No licensed liquid	Crush tablets and mix with water. Give immediately ^{2&3} Flush the feeding tube well after enteral administration. ²	50micrograms/5ml or 100micrograms/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ (costs approx. £90 - £140 per 100ml)
Fluoxetine	LICENSED oral solution and dispersible tablets available.	If giving via enteral feeding tube, dilute with the same volume of water. ²	Unlikely to need: licensed alternative available
Folic Acid	LICENSED oral solution available (2.5mg/5ml) 5mg/5ml also available, but not as cost effective as 2.5mg/5ml.	If necessary, the tablets can be crushed and dispersed in water. Give immediately. ² The oral solution can be diluted with water to reduce the osmolality if desired when giving into the jejunum, however this is outside the licence. ²	Unlikely to need: licensed alternative available
Furosemide	LICENSED oral solution available: 20mg/5ml, 40mg/5ml (sugar-free) and 50mg/5ml NB: Some brands contain alcohol	There is an oral solution which is licensed for administration via NG and PEG tubes (Frusol®). The solution does not need to be diluted before administration. ²	Unlikely to need: licensed alternative available
Gabapentin	LICENSED oral solution available, but is expensive. (50mg/ml - expires 1 month after opening) Costs approx. £65 for 150ml Consider continued need if unable to swallow capsules	Administration via NG / PEG tubes The oral solution (Rosemont or Colonis brands only) is licensed for administration via enteral feeding tubes. The solution should not be diluted prior to administration, but should be flushed twice with 10ml water after the dose has been given. Speak to practice pharmacist if administering via NJ or PEJ. (see NEWT guidelines)	Unlikely to need: licensed alternative available
Glibenclamide	No licensed liquid	Crush tablets and mix with water. Give immediately ^{2&3}	No liquid in Drug Tariff
Gliclazide	No licensed liquid	For non-MR tablets: Crush the tablets well (as the drug is practically insoluble) and mix with water or orange juice for administration. ² Do not crush MR tablets ² If giving via enteral tube seek advice from practice pharmacist.	80mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 150ml ³ Note 40mg/5ml oral suspension also in tariff, but 80mg/5ml is more cost effective.
Haloperidol	LICENSED oral solution available various strengths and manufacturers		Unlikely to need: licensed alternative available

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Hydrocortisone	LICENSED granules in capsules for opening (see product information for administration instructions) - AMBER 2 restricted for cortisol replacement therapy of infants and young children with adrenal insufficiency. No licensed liquid Note that muco-adhesive buccal tablets are licensed for mouth ulcer treatment only and must NEVER be used for adrenal replacement therapy (see MHRA alert Dec18)	The standard-release tablets are insoluble but will disperse in water for administration. ² Do not crush MR preparations ²	5mg or 10mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³
Hydroxycarbamide	No licensed liquid	Cytotoxic drug DO NOT CRUSH OR OPEN CAPSULE ²	500mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Costs >£100 for 100ml NB: Cytotoxic - Carers handling the suspension should wear gloves in case of contact with the medication
Hydroxychloroquine	No licensed liquid	The tablets can be crushed and dispersed in water. Give immediately ²	200mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³
Hyoscine BUTYLbromide	No licensed liquid	Tablets are coated so will not disperse easily in water. Not suitable for administration via feeding tube. ²	10mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Sugar free oral solution also available but is more expensive.
Hyoscine HYDRObromide	LICENSED chewable tablets and patches (Scopoderm) available.	The tablets may be sucked if the patient is able, and absorbed through the lining of the mouth, although the level of absorption may vary, particularly in patients with little saliva. ² The tablets can be dissolved in water for administration via enteral tube, but absorption may vary. ²	Unlikely to need: licensed alternative available
Imipramine HCl	Licensed oral solution available (25mg/5ml, - expires 30 days after opening) or consider alternative tricyclic antidepressant.	With enteral administration it may adsorb to the tube, so flush well after dosing. ² If administered directly into the jejunum (i.e. through an NJ, PEJ, or PEGJ tube), monitor for increased systemic effects. ²	Unlikely to need: licensed alternative available
Indapamide	No licensed liquid	Disperse conventional-release tablets in water immediately prior to administration. ² DO NOT crush slow release formulations. ² Consider switch to IR indapamide (1.5mg SR is equivalent to 2.5mg IR) or bendroflumethiazide. For patients with tubes terminating in the stomach, the standard tablets can be dispersed in water for administration. Administration via tubes terminating in the jejunum is not appropriate for indapamide as absorption will be greatly reduced. ²	No liquid in Drug Tariff
Indometacin	LICENSED suppositories available. Consider switching to paracetamol or an alternative NSAID (NB: consider GI/CV safety of different NSAIDs)		Unlikely to need: licensed alternative available
Irbesartan	No licensed liquid Consider switching to alternative ACEI or ARB	Crush tablets and mix with water. Give immediately ² Flush enteral tube well after each dose ²	No liquid in Drug Tariff
Isosorbide mononitrate	No licensed liquid, GTN patch may be an alternative.	Crushing tablets not recommended, may have increased rate of absorption and increased side effects. ² Do not crush or open MR preparations , but if tablets are scored they can be halved. ²	20mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Costs over £100 for 100ml
Ketamine	RED Drug (if not for palliative care) - refer back to specialist. However, prescribing for patients under the care of palliative care teams may be continued by primary care after specialist initiation (AMBER). Ketamine 50mg/5ml oral solution included in Part VIII B of Drug Tariff (unlicensed), minimum quantity 200ml (costs >£100 for 200ml)		
Lansoprazole	LICENSED orodispersible tablets available. License covers administration via NG tube.		Unlikely to need: licensed alternative available
Levetiracetam	LICENSED oral solution available (100mg/ml). Granules also available but are more expensive than liquid.	Granules (Desitrend) are licensed to be administered via feeding tube. Suspend granules by shaking for at least 2 minutes in at least 10ml water. Flush twice with 10ml water after dose. ² Oral solution can also be administered via NG tube but not licensed ²	Unlikely to need: licensed alternative available
Levomepromazine	No licensed liquid. Consider switching to alternative antipsychotic if appropriate (eg: haloperidol, chlorpromazine, sulphiride available as LICENSED liquids)	Crush tablets and disperse in water. Give immediately ² 25mg tablets are quarter scored and can be split if the patient, carer or pharmacy is able. Ensure directions are clearly explained to patient.	2.5mg/5ml oral suspension included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Costs >£100 for 100ml
Levothyroxine	LICENSED oral solution available (100, 50 and 25 micrograms/5ml), but is very expensive (£150+ per month).	If necessary, tablets can be crushed and dispersed in water. Give immediately. ² For patients receiving levothyroxine through enteral feeding tubes long-term, consider holding the feed for one hour before and one hour after each dose to minimise feed interactions. ² Administration - NJ / PEJ / PEGJ tubes There is some indication that absorption of levothyroxine is reduced when administered through enteral feeding tubes terminating in the jejunum. Monitor thyroid function, consider increasing the dose if necessary, and take care when switching between jejunal and gastric-terminating tubes. ²	Unlikely to need: licensed alternative available

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Lisinopril	Consider switching to alternative ACE inhibitor. LICENSED oral solution available (5mg/5ml), costs >£150 for 150ml Lisinopril oral solution is absorbed to a lesser extent than lisinopril tablets. When converting patients to and from the liquid, monitor blood pressure and consider a dose alteration if necessary. ²	If necessary, tablets can be crushed and dispersed in water. Give immediately. ²	Unlikely to need: licensed alternative available
Lofepamine	LICENSED oral suspension available (70mg/5ml)	For enteral administration Rosemont do not recommend diluting the suspension with water before administration as this may destabilise the suspension. If administered directly into the jejunum (i.e. through an NJ, PEJ, or PEGJ tube), monitor for increased systemic effects. Lofepamine has a high level of first pass metabolism so can have increased absorption leading to greater clinical effects and adverse effects. ² The tablets are not suitable for crushing. ²	Unlikely to need: licensed alternative available
Loperamide	LICENSED oral solution (1mg/5ml) and orodispersible tablets available	Opening capsules is not recommended as it can change the bioavailability and will block feeding tubes. ² Loperamide liquid is suitable for administration through enteral tubes terminating in the jejunum. The liquid should be given undiluted to facilitate its dose dependant effect on motility. Flushing should still occur. ²	Unlikely to need: licensed alternative available
Lorazepam	Tablets dissolve under the tongue if patient has sufficiently moist mouth ² LICENSED oral solution (1mg/mL) available if absolutely necessary, but expensive (>£100 for 150ml). Expires 90 days after first opening.	Tablets dissolve under the tongue if patient has sufficiently moist mouth ² If necessary, crush tablets and mix with water. Give immediately. ²	Unlikely to need as other options more cost effective.
Losartan	LICENSED oral suspension available (costs >£50 for 200ml) (2.5mg/ml - comes as powder and solvent to reconstitute - 4 weeks shelf life once reconstituted)	If necessary, tablets can be crushed and dispersed in water immediately prior to administration. ²	Unlikely to need: licensed alternative available
Magnesium	1st choice: LICENSED oral sachets (Magnesium aspartate (magnesium 10mmol) oral powder sachets (Magnaspartate)) 2nd choice: LICENSED chewable tablet (magnesium glycerophosphate 97.2mg = 4mmol magnesium per tablet) 3rd choice: LICENSED magnesium hydroxide mixture (14mmol magnesium in 10ml)		Unlikely to need: licensed alternative available
Mebeverine	Consider if still needed. LICENSED oral suspension available (50mg/5ml), but extremely expensive (>£600 per month). Combined mebeverine and ispaghula husk (Fybogel Mebeverine) may be an option if a laxative is also needed (note GREY on formulary - speak to your medicines management pharmacist as an exception may be made if only other option is the oral suspension)	Do not crush or chew tablets due to unpleasant taste. Do not crush or open MR preparations as they will lose MR properties. (SPC)	Unlikely to need: licensed alternative available
Melatonin	Circadin 2mg MR is the only licensed melatonin preparation in the UK and is the preferred prescribing option (off-label). See melatonin information sheet for more information. NB: Changing between immediate release and modified release preparations is not recommended without discussion with the specialist.	Circadin tablets may be halved using a tablet cutter and maintain slow release properties. Circadin tablets may be crushed. Modified release characteristics are then lost and it acts like an immediate release preparation. Alternatively, open NON-MR capsules and mix contents with water, milk, yoghurt or fruit juice. ² Note that non-MR capsules are RED on the formulary.	Unlikely to need
Memantine	LICENSED orodispersible tablets (Valios) available. Licensed oral solution also available, but not as cost effective as orodispersible tablets.		Unlikely to need: licensed alternative available
Mercaptopurine	LICENSED oral suspension available (20mg/ml Xaluprine [®] . Expires 56 days after opening) Costs >£150 for 100ml NB: Cytotoxic - carers handling the suspension should wear gloves in case of contact with the medication	Cytotoxic drug DO NOT OPEN CAPSULES	Unlikely to need: licensed alternative available
Metformin	LICENSED oral solution available (500mg/5ml, expires 60 days after opening) Other strengths available, but 500mg/5ml most cost effective option as per Drug Tariff Dec18.	Oral solution (Colonis brand) is licensed for administration via enteral feeding tubes. Flush the feeding tube twice with 10mL of water each after each dose. ^{SPC}	Unlikely to need: licensed alternative available
Methotrexate	LICENSED oral solution available, but expensive (Rosemont, 2mg/ml - available as 35ml and 65ml. Expires 3 months after opening) Costs >£100 for 65ml NB: Carers handling the suspension should wear gloves in case of contact with the medication	Cytotoxic drug DO NOT CRUSH TABLETS	Unlikely to need: licensed alternative available

Drug	First Choice: Use a licensed medicine in a suitable formulation (incl change to different drug in same therapeutic class)	Second Choice: Use a licensed medicine in an unlicensed manner ¹	LAST RESORT: Use an unlicensed special (this is an expensive option, avoid where possible)
Methyldopa	No licensed liquid. Where clinically appropriate, change to an alternative antihypertensive therapy.	Tablets can be crushed and dispersed in water immediately prior to administration. They are film coated and not very soluble. The crushed tablets have an unpleasant taste ² Enteral tubes: Take care to crush the tablets well, and to flush the tube well to prevent blockage. Methyldopa interacts with Ensure®, Ensure Plus®, and Osmolite® feeds. Feeds should be stopped for two hours before and one hour after administration. ²	No liquid in Drug Tariff
Methylphenidate	No licensed liquid	The modified-release capsules (Equasym® XL and Medikinet® XL brands) can be opened and the contents sprinkled onto a small amount of apple sauce or yoghurt and taken immediately (licensed). This should be followed by a drink to ensure all the medicine reaches the stomach. The contents of the capsules should not be chewed or crushed. The standard release tablets can be crushed and mixed with water for administration. Do not crush the modified release tablets. ² For enteral tubes: Use the standard release tablets. Crush and mix with water for administration. Do not crush the modified-release tablets or open the modified-release capsules. ²	5mg/5ml oral suspension included in Part VIIIB of Drug Tariff Minimum quantity 150ml ³
Metoprolol	No licensed liquid Consider switching to alternative betablocker e.g. atenolol which is available as LICENSED liquid	For non-MR tablets: The tablet can be crushed and dispersed in water; however, this should be considered a last resort due to effect on dosing accuracy. Does not disperse readily. ^{2,3} DO NOT Crush the MR tablets	12.5mg/5ml or 50mg/5ml oral <u>solution</u> included in Part VIIIB of Drug Tariff Minimum quantity 150ml ³ Note oral suspension also in tariff, but only in 12.5mg/5ml strength (min. quantity 100ml)
Midodrine	No licensed liquid AMBER 2 after consultant initiation.	The tablets can be crushed and mixed with water for administration. ²	
Mirtazapine	LICENSED orodispersible tablets and oral solution available (orodispersible tablets are more cost effective than oral solution if patient can manage them)	Mirtazapine is mostly absorbed in the duodenum. There is therefore a risk that if the drug is given through an enteral tube terminating in the jejunum that the drug will not be fully absorbed and the patient will not receive the prescribed dosage. Any patient requiring mirtazapine through an enteral tube terminating in the jejunum should be reviewed, and if the situation is long-term, consideration should be given to using a different treatment. ² The standard tablet, when crushed, has a bitter taste and an anaesthetic effect on the mouth. ²	Unlikely to need: licensed alternative available
Modafinil	No licensed liquid AMBER 2 after specialist initiation.	Crush tablets and mix with water. Give immediately. ²	100mg/5ml oral <u>suspension</u> included in Part VIIIB of Drug Tariff Minimum quantity 100ml ³ Costs > £150 for 100ml
Morphine	LICENSED preparations available (solution, sachets and suppositories) Zomorph capsules are licensed to be opened and the contents administered directly in semi-solid food (puree, jam, yoghurt) or via wider bore gastric or gastrostomy tubes. See SPC for details. MXL capsules may be swallowed whole or opened and the contents sprinkled on to soft cold food. The capsule and contents should not be crushed or chewed. See SPC for details.	When an immediate-release product is required, administer morphine sulphate oral solution (e.g. Oramorph®). This is the preferred enteral method of administering morphine. The use of controlled-release preparations of morphine via enteral feeding tubes is not usually recommended. ²	Unlikely to need: licensed alternative available
Naproxen	LICENSED dispersible tablets available and are considerably less expensive than liquid* (Stirlescent 250mg Effervescent). If liquid needed consider alternative NSAID (e.g. ibuprofen suspension 100mg/5ml or) *LICENSED 200mg/5ml oral suspension available, but is expensive (>£50 for 100ml).	If considering enteral tube administration - consider switching to an alternative non-steroidal anti-inflammatory drug available via a different route. ²	Unlikely to need: licensed alternative available
Nifedipine	No UK licensed liquid, but there is a German import which is likely to be expensive. Most practical solution is to switch to amlodipine (licensed liquid available) Short acting formulations of nifedipine are not recommended for angina or long term management of hypertension.	Coracten MR capsules can be opened and beads mixed with water (Do not crush) ² If giving via enteral tube, be sure to flush the enteral tube well after dose administration. ²	10mg/5ml oral <u>suspension</u> included in Part VIIIB of Drug Tariff Minimum quantity 100ml ³ 5mg/5ml also available, but not as cost effective as 10mg/5ml. Nifedipine 20mg/ml oral drops can be imported from Germany, but expensive
Nitrazepam	Consider if still needed. LICENSED oral suspension available (2.5mg/5ml) Costs >£100 for 70ml. Alternatively, consider switching to temazepam (LICENSED liquid available)		Unlikely to need: licensed alternative available
Nitrofurantoin	LICENSED oral suspension available (25mg/5ml), but extremely expensive. Costs > £400 for 300ml Consider alternative if clinically appropriate.	Do NOT crush the tablets or open the MR capsules, nitrofurantoin is an irritant ²	Unlikely to need: licensed alternative available
Nortriptyline	No licensed liquid available and tablets are expensive. Consider alternative (e.g. amitriptyline).	Crush or disperse tablets in water .They disperse in one to two minutes. ² Administration - enteral tubes The tablets will disperse in water for administration. They disperse in one to two minutes. No information on administering the oral solution via enteral feeding tubes has been located. If administered directly into the jejunum (i.e. through an NJ, PEJ, or PEGJ tube), monitor for increased systemic effects. ²	10mg/5ml oral <u>suspension</u> included in Part VIIIB of Drug Tariff Minimum quantity 100ml ³ Costs > £200 for 100ml
Olanzapine	LICENSED orodispersible sugar free* tablets available (same dose and frequency as coated tablets). Can be placed on the tongue or dispersed in water, orange juice, milk or coffee. Olanzapine may be irritant to the skin and eyes, so take precautions to avoid contact (e.g. wear gloves). Note that oral lyophilisate is very expensive. *Non sugar-free tablets are more expensive	Administration - enteral tubes Use the Velotab® and disperse in water. ²	Unlikely to need: licensed alternative available

Drug	First Choice: Use a licensed medicine in a suitable formulation (incl change to different drug in same therapeutic class)	Second Choice: Use a licensed medicine in an unlicensed manner ¹	LAST RESORT: Use an unlicensed special (this is an expensive option, avoid where possible)
Omeprazole	Most brands of capsules can be opened (LICENSED); SPC states "Patients can open the capsule and swallow the contents with half a glass of water or after mixing the contents in a slightly acidic fluid e.g. fruit juice or applesauce, or in non-carbonated water. Patients should be advised that the dispersion should be taken immediately (or within 30 minutes) and always be stirred just before drinking and rinsed down with half a glass of water. Alternatively, patients can suck the capsule and swallow the pellets with half a glass of water. The enteric-coated pellets must not be chewed." LICENSED orodispersible tablets available if opening capsules is not an option. Disperse in water then mix with other juice/yoghurt if flavouring required.	Dispersible omeprazole is unsuitable for administration via feeding tubes. If administration via this route required, consider switching to lansoprazole orodispersible tablets. ²	Unlikely to need: licensed alternative available Specialists may recommend unlicensed liquid when small doses required for children. However, bioavailability likely to be reduced due to the removal of the enteric coating.
Oxybutynin	LICENSED patches available (Kentera, 3.9mg/24 hours - replace twice weekly) Oral solution available, but very expensive so only to be used if patches not appropriate. (2.5mg/5ml & 5mg/5ml sugar free costin >£150 for 150ml)	Do not halve, crush or chew the prolonged release tablet ²	Unlikely to need: licensed alternative available
Paracetamol	LICENSED preparations available (soluble tablets (NB: Sodium content), suspension and suppositories.	The soluble tablets are preferable to the suspension which is hyperosmolar and may cause diarrhoea when administered via enteral tubes terminating in the jejunum. However the soluble tablets contain a lot of sodium which may be a problem in some patients. ²	Unlikely to need: licensed products available
Penicillamine	No licensed liquid available, seek advice from specialist.		
Perindopril arginine	GREY - Non formulary No licensed liquid available. Switch to perindopril erbumine (note that 2.5mg perindopril arginine is equivalent to 2mg perindopril erbumine).	Owing to the lack of data consider using another ACE inhibitor where data is available or switch to perindopril erbumine. ²	
Perindopril erbumine	No licensed liquid	Crush tablets and mix with water. Give immediately ² Administration - enteral tubes: Perindopril erbumine may not be effective when administered through enteral tubes terminating in the jejunum due to decreased absorption. Perindopril erbumine should be taken before food, so withhold enteral feeds for at least half an hour before and half an hour after administration.the patient does not have a break in their feeding regimen during which perindopril erbumine can be given. ²	Perindopril erbumine 4mg/5ml oral <u>solution</u> included in Part VIII B of Drug Tariff Minimum quantity 150ml ³ Note that oral suspension is also in tariff but the solution is more cost effective.
Phenobarbital	Consider LICENSED 15mg/5ml elixir (NB Contains 38% v/v ethanol). Consider alcohol free 25mg/5ml unlicensed liquid for children.		Alcohol free unlicensed specials available (but not in drug tariff). Note that Nottingham (NUH) use 25mg/5ml.
Phenytoin	LICENSED preparations available (30mg/5ml oral <u>suspension</u> and chewable tablets (Epanutin Infatabs)). Care is needed when switching between different phenytoin preparations - *90mg liquid equivalent to 100mg tablets, capsules or injection	It is recommended that phenytoin should NEVER be administered via enteral feeding tube. If parenteral therapy is not possible, alternative treatments should be considered. ²	Unlikely to need: licensed alternative available
Pizotifen	No licensed liquid available. See Nottinghamshire Joint Formulary for preferred options in prophylaxis of migraine (section 04.07.04.02)	The tablets have been crushed and mixed with water. ²	Unlikely to need: licensed alternatives available (note that unlicensed liquid costs up to ££350 for 100ml - Dec18)
Potassium Acid Phosphate = Potassium dihydrogen Phosphate	RED - refer requests to prescribe back to specialist. No licensed oral liquid available		Not in drug tariff Injection is packed down for oral use in neonates. 7 days expiry once opened as solution is not preserved. Secondary care may be able to supply if community pharmacy can't source a supplier.
Potassium Chloride	LICENSED preparations available: Sando K (1 tablet =12 mmol K+) effervescent tablets Kay-Cee-L liquid (1ml = 1mmol K+, dilute before use)	Do not crush Slow K which are modified release.	Unlikely to need: licensed alternative available
Pravastatin	No licensed liquid available. Consider switch to atorvastatin chewable tablets	Crush tablets and mix with water. Give immediately ²	Unlikely to need: licensed alternatives available
Primidone	No licensed liquid available	The tablets can be crushed and dispersed in water. ²	50mg/5ml oral <u>suspension</u> included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Note that 62.5mg/5ml & 250mg/5ml oral suspension also in tariff, but 50mg/5ml is more cost effective.
Pregabalin	LICENSED oral <u>solution</u> is available (20mg/ml). Packsize is 473ml (£99). Expiry is as per manufacturers even after opening.		Unlikely to need: licensed alternative available
Probenecid	No licensed liquid available	The tablets can be crushed and dispersed in water. ²	No liquid in Drug Tariff
Procyclidine	LICENSED oral <u>solution</u> available (2.5mg/5ml and 5mg/5ml)		Unlikely to need: licensed alternative available
Propranolol	LICENSED liquid formulations available. (5mg/5ml, 10mg/5ml, 40mg/5ml & 50mg/5ml - may have short expiry)	Do not crush / open modified release preparations. ² The oral solution can be diluted with water to reduce the osmolality if desired when giving into the jejunum (not licensed). ² Absorption of enteral propranolol can be increased by concomitant food or milk. It is therefore advisable to ensure that doses of propranolol are given at the same time of day each day in relation to feeds. ²	Unlikely to need: licensed alternative available
Pyridostigmine	No licensed liquid available	Crush tablets and mix with water. Give immediately ²	Oral suspension (various strengths) in drug tariff, but is very expensive.

Drug	First Choice: Use a licensed medicine in a suitable formulation (incl change to different drug in same therapeutic class)	Second Choice: Use a licensed medicine in an unlicensed manner ¹	LAST RESORT: Use an unlicensed special (this is an expensive option, avoid where possible)
Pyridoxine	No licensed liquid available	Crush tablets and mix with water. Give immediately ²	100mg/5ml oral <u>solution</u> included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Note 100mg/5ml oral suspension also in tariff, but oral solution is more cost effective.
Quetiapine	LICENSED oral suspension available (20mg/ml, Rosemont - Expires 1 month after opening and must be stored in the fridge in original container to protect from light). Note: Expensive - £95 per 150ml	No information on administering the oral solution or suspension via enteral feeding tubes ²	Unlikely to need: licensed alternative available
Quinine sulfate	No licensed liquid available. Consider continued need.	Crush the tablets well, and disperse in a large volume (e.g. 200mL) of water. The crushed tablets have a bitter taste which may be masked by mixing with syrup. Only use if absolutely necessary and swallowing problems are likely to be long-term. ² Enteral tubes: Crush the tablets well, and disperse in a large volume (e.g. 200mL) of water. Flush well to minimise blockage and irritancy, as the coating is likely to block narrow-bore enteral feeding tubes. ²	300mg/5ml oral <u>suspension</u> included in Part VIII B of Drug Tariff minimum quantity 150ml ³ Suspension is very expensive, consider continued need for quinine. 200mg/5ml also available, but 300mg/5ml is more cost effective.
Ramipril	LICENSED oral <u>solution</u> available (2.5mg/5ml, Expires 1 month after opening and must be stored in the fridge) Note: Expensive - £96 per 150ml	Rosemont oral solution is licensed to be administered via NG and PEG tubes ^{SPC}	Unlikely to need: licensed alternative available
Ranitidine	LICENSED preparations available: 75mg/5ml & 150mg/5ml oral <u>solution</u> (contains alcohol, but still used by paediatricians off label as amount of alcohol per dose not thought to be an issue) and 150mg or 300mg effervescent tablets (alcohol free and may be used if alcohol not suitable due to religious beliefs).	Ranitidine will be suitable for administration through enteral tubes terminating in the jejunum. Use the effervescent tablets, dissolved in at least 75mL of water ²	Unlikely to need: licensed alternative available.
Rivaroxaban	No licensed liquid available. License for Xarelto (rivaroxaban) includes crushing tablets and mixing with water or apple puree immediately prior to use. After the administration of crushed Xarelto the dose should be immediately followed by food. See SPC for info on administration via gastric tube.		Unlikely to need as tablets are licensed to be crushed.
Selegiline	LICENSED oral lyophilisates (Zelapar, 1.25mg) available Note that 10mg tablet is equivalent to 1.25mg lyophilisate²	If necessary, tablets disperse in water within 1 minute. ² Give immediately.	Unlikely to need: licensed alternative available
Sertraline	No licensed liquid. Consider switching to alternative SSRI. Fluoxetine (available as LICENSED liquid) or citalopram (available as LICENSED oral drops)	If no other option, crush tablets and disperse in water. Give immediately. ² NB: tablets taste bitter and have an anaesthetic effect on the tongue so care should be taken with hot meals after administration. ²	50mg/5ml oral <u>suspension</u> included in Part VIII B of Drug Tariff Minimum quantity 150ml ³ Note that 100mg/5ml also in tariff, but 50mg/5ml is more cost effective.
Sildenafil	Licensed chewable tablets are GREY. Consider continued need if patient cannot swallow tablets. Oral <u>suspension</u> (Revatio 10mg/ml) is RED for use in paediatric intensive care.		Unlikely to need
Simvastatin	Licensed oral <u>suspension</u> available, but is expensive (>£120 per month). Consider switch to atorvastatin which is available as licensed chewable tablets.		Unlikely to need: licensed alternative available
Sodium Bicarbonate	Capsules can be opened and contents mixed with a glass of water as per instructions in PIL (Focus/Concordia PIL). Licensed oral solution available (1mmol/ml), but is very expensive compared to opening the capsules.	Administration - enteral tubes The capsules can be opened and the contents mixed with water for administration ²	Unlikely to need: licensed alternative available
Sodium Valproate	LICENSED preparations available: Liquid, MR granules and Crushable tablets - crush tablets and mix with water or soft food (eg yoghurt or jam) to mask bitter taste For patients who are stabilised on modified-release formulations, use the modified-release granules. The granules should not be chewed or crushed ²	For enteral tubes: Use the liquid (contains sorbitol). If necessary the liquid can be diluted immediately prior to administration. It should not be diluted in advance as this would dilute the preservative. ²	Unlikely to need: licensed alternative available
Sotalol	No licensed liquid available Consider switching to alternative betablocker: atenolol or propranolol (available as licensed liquids)	The tablet can be crushed and mixed with water. The drug is very soluble. ²	Unlikely to need: licensed alternative available
Spironolactone	No licensed liquid available	Crush tablets and mix with water. Give immediately ²	5mg/5ml, 10mg/5ml, 25mg/5ml, 50mg/5ml & 100mg/5ml oral <u>suspension</u> included in Part VIII B of Drug Tariff Minimum quantity 125ml ³
Tamoxifen	LICENSED oral <u>solution</u> available. (10mg/5ml, 3 months shelf life once opened)	WARNING: Women of child bearing potential should not break or crush the tablets.	Unlikely to need: licensed alternative available
Tamsulosin	No licensed liquid available, consider changing to an alternative drug such as doxazosin.	If no other option, Modified Release capsules can be opened and the contents dispersed in cold water and swallowed immediately, do not crush or chew granules - not suitable for feeding tubes as likely to block them. ² The tablet is modified-release and should not be crushed ²	Note that unlicensed liquid costs more than £283 per 100ml (DT Dec18) - ask practice pharmacist for advice on alternative treatments.
Temazepam	Consider if still needed. LICENSED oral <u>solution</u> available (10mg/5ml), but is expensive (>£150 for 300ml).	The tablets should not be used for enteral tubes - they are quite insoluble and their use may lead to blockage. ² Temazepam may be less effective when administered through enteral tubes terminating in the jejunum. ²	Unlikely to need: licensed alternative available
Terbinafine	No licensed liquid available	Crush tablets and mix with water. Give immediately ²	250mg/5ml oral <u>suspension</u> included in Part VIII B of Drug Tariff Minimum quantity 50ml ³

Drug	First Choice: Use a licensed medicine in a suitable formulation (incl change to different drug in same therapeutic class)	Second Choice: Use a licensed medicine in an unlicensed manner ¹	LAST RESORT: Use an unlicensed special (this is an expensive option, avoid where possible)
Thiamine	No licensed liquid available	Crush tablets and mix with water. Give immediately ^{2&3}	100mg/5ml oral <u>suspension</u> included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Note that 50mg/5ml oral suspension and 100/5ml oral solution in tariff, but not as cost effective as 100mg/5ml oral <u>suspension</u> .
Ticagrelor	LICENSED orodispersible 90mg tablets available (same price as standard 90mg tablets) The SPC for Brilique tablets (60 mg and 90 mg) states that they can be crushed to a fine powder and mixed in half a glass of water and drunk immediately. The glass should be rinsed with a further half glass of water and the contents drunk. The mixture can also be administered via a nasogastric tube (CH8 or greater). It is important to flush the nasogastric tube through with water after administration of the mixture.	Administration - enteral tubes 1st choice - use orodispersible tablets. 2nd choice - The tablets can be crushed and mixed with water for administration through enteral feeding tubes of size 8 or greater. Flush the tube well after administration. ²	Unlikely to need: crushing tablets covered under licence for Brilique
Tizanidine	No licensed liquid available	Crush tablets and mix with water. Give immediately ²	2mg/5ml oral <u>solution</u> included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Note that 2mg/5ml oral suspension also in tariff, but not as cost effective as oral solution.
Tolterodine	No licensed liquid available, consider alternative.	If continued therapy with tolterodine is indicated, disperse the tablets in water immediately prior to administration. ² The modified-release capsules contain time-release beads which can be removed from the capsule and administered orally whole, to patients with the ability to follow the instruction not to chew. ² The preferred form of tolterodine for enteral tube administration is the standard tablets. ²	2mg/5ml oral <u>suspension</u> included in Part VIII B of Drug Tariff Minimum quantity 100ml ³
Topiramate	LICENSED sprinkle capsules available (sprinkle contents on soft food and swallow immediately without chewing)	Enteral tubes: The tablets can be crushed and dispersed in water immediately prior to administration. ² The crushed tablets have a bitter taste ² so sprinkle capsules are preferred for swallowing difficulties.	Unlikely to need: licensed alternative available
Tranexamic acid	No licensed solution	Crush tablets and mix with water. Give immediately ²	500mg/5ml oral <u>solution</u> (contains alcohol) or oral <u>suspension</u> (alcohol free) included in Part VIII B of Drug Tariff Minimum quantity 100ml ³ Note that 250mg/5ml oral suspension is much more expensive (£139 for 60ml DT Dec 18).
Tranexamic acid mouthwash		RED - refer prescribing back to specialist.	
Trazodone	LICENSED oral <u>solution</u> available (50mg/5ml), but is expensive (£46 for 120ml). Consider other licensed antidepressant (e.g. mirtazapine) before using liquid.	Opening the capsules is not recommended but there are reports of this being done. The content of the capsules tastes unpleasant. No information available about crushing the tablets, so this is not recommended. ²	Unlikely to need: licensed alternative available
Trihexyphenidyl HCL (formerly known as benzhexol)	LICENSED oral <u>solution</u> available (5mg/5ml)		Unlikely to need: licensed alternative available
Ursodeoxycholic Acid	LICENSED oral <u>suspension</u> available (250mg/5ml, Ursofalk®)		Unlikely to need: licensed alternative available
Valproic Acid	No licensed liquid. Consider switching to LICENSED Epilim liquid 200mg/5ml. NB: there are pharmacokinetic differences; discuss with specialist before switching. It is recommended that when switching from valproic acid to sodium valproate, a slightly higher (approximately 10%) dose of sodium valproate is used and to monitor for clinical effect. ²	Tablets UNSUITABLE for crushing or dissolving ²	No liquid in Drug Tariff
Vancomycin	LICENSED capsules available and injection is LICENSED for oral administration. Following reconstitution, dilute required dose with 30ml water		Unlikely to need: licensed alternative available
Venlafaxine	No licensed liquid available. Consider switching to mirtazapine (available as orodispersible tablets) if appropriate	For non MR tablets: crush and mix with water orally or via enteral tube. Give immediately. ² Crushed tablets can be administered in jam for patients with swallowing difficulties. The modified-release capsules contain modified-release beads which can be emptied out and given in smooth food, e.g. yogurt, for patients with swallowing difficulties. The beads must be swallowed whole. ² The modified-release capsules are not suitable for enteral tube administration and no information on administering the oral solution via enteral feeding tubes has been located. ²	37.5mg/5ml and 75mg/5ml oral <u>solution</u> included in Part VIII B of Drug Tariff (Minimum quantity 150ml ³) Suspension also listed in tariff, but solution is more cost effective (DT Jan19)
Verapamil	LICENSED oral <u>solution</u> available (40mg/5ml, expires 3 months after opening). Costs >£200 for 28 days at 80mg TDS (DT Jan19) If changing from a modified-release preparation to the liquid, divide the daily dose into three equal doses.	The standard tablets have been crushed and mixed with water for administration. They have a bitter taste and a local anaesthetic effect in the mouth. ² Do NOT crush MR tablets or open the capsules ²	Unlikely to need: licensed alternative available
Warfarin	LICENSED liquid available (1mg/ml) - may have short expiry (28 days) Costs >£100 for 150ml (DT Jan19)		Unlikely to need: licensed alternative available
Zolpidem	Consider if still needed. No licensed liquid available.	Crush tablets and mix with water. Give immediately ²	No liquid in Drug Tariff

Drug	First Choice: Use a licensed medicine in a suitable formulation (incl change to different drug in same therapeutic class)	Second Choice: Use a licensed medicine in an unlicensed manner ¹	LAST RESORT: Use an unlicensed special (this is an expensive option, avoid where possible)
Zonisamide	No licensed oral liquid. Seek specialist advice regarding alternative therapy. MHRA guidance recommends that (where possible) patients on zonisamide (when used for seizures) are maintained on a specific manufacturer's product, due to variability in product characteristics which may lead to a loss of seizure control when switching between brands / manufacturers. If a switch is needed, care and close monitoring is required, and where possible patients should be maintained from then onwards on a single manufacturer's product. ²	If continued therapy is essential, open the capsules and mix with water or sprinkle on apple sauce, chocolate pudding, or mixed with water or apple juice (do not crush or chew contents of capsule). Monitor closely for alteration in clinical effect. ² The capsules can be opened and their contents dispersed in water or apple juice for administration via enteral feeding tubes. ²	50mg/5ml oral <u>suspension</u> included in Part VIII B of Drug Tariff Minimum quantity 200ml ³ Costs >£150 for 200ml
Zopiclone	Consider if still needed. No licensed oral liquid. Consider changing to zolpidem or temazepam	Do not crush, bioavailability may be altered and has bitter taste. ² The tablets are not suitable for crushing or dissolving, and should not be used, as the powder will thicken quickly and may block enteral feeding tubes. ²	3.75mg/5ml oral <u>solution</u> Minimum quantity 150ml ³ and 7.5mg/5ml oral <u>suspension</u> Minimum quantity 100ml ³ included in Part VIII B of Drug Tariff Note that other formulations of the same strengths also in tariff, but most cost effective options listed above.

KEY

¹ Manipulation of a licensed product in this way will be outside of the product's marketing authorisation. However, there is evidence and clinical experience detailed in reputable sources (eg NEWT) confirming that formulation manipulation of this nature can take place without compromising the effectiveness of the medicine. Dispersing or crushing tablets or opening capsules should never be used to administer a fraction of a dose. Manipulation of solid dosage forms in this way for covert administration may be done in exceptional circumstances following agreement by the multidisciplinary team and taking mental capacity into consideration. It should be authorised in writing by the GP. Some formulations should not usually be crushed and this has been taken into account in the advice outlined above. Decisions should be made on an individual basis and the specific needs and best interests of the individual patient taken into account

² The NEWT Guidelines for administration of medication to patients with enteral feeding tubes or swallowing difficulties. [Accessed online, Dec18]

³ Drug tariff (Dec18): All unlicensed medicines are listed with a minimum quantity and corresponding price, which is payable for any amount prescribed up to the minimum quantity. Unless in a special container, subsequent quantities will be payable at the additional price per ml/g/tab/cap up to the total quantity prescribed. It is usually cheaper to order the total volume in one container rather than in smaller containers e.g. 200ml rather than 2 x 100ml.