

Anti-seizure medication guidance for adult patients with a compromised swallow or patients who are nil by mouth

This guideline outlines the general management of anti-seizure medication (ASM) in adult patients with a compromised swallow or those who are nil by mouth (NBM) with a history of epilepsy/seizures. In situations where it is not possible to give the patient's usual medications via an alternative route (e.g. NG/PEG, rectal), an alternative anti-seizure medication may have to be substituted temporarily (for example, IV levetiracetam). In this situation, contact neurology on-call for advice on an appropriate regime. Additionally, patients who present with seizures should be discussed with neurology on-call. If a patient is established on a specific brand of ASMs, please avoid changing the manufacturer unless there is no alternative. With all changes to ASMs, close monitoring of the patient is needed and regular review to consider restarting normal regime as soon as possible.

It is preferable to pass a nasogastric tube in patients with a compromised swallow or patients who are nil by mouth who have a history of epilepsy/seizures to avoid missed doses of medication and thus minimise the risks of loss of seizure control. The alteration of medications for use via enteral feeding tubes generally results in the medication being unlicensed. The advice provided below applies to all types of enteral feeding tube unless otherwise stated. Use 30ml of distilled water to flush the tube before and after drug administration. If more than one medication is to be given, flush with 10ml distilled water between each one. Administration via jejunal feeding tubes may result in loss of efficacy or increased side effects and should be monitored closely.

Please note where medicine is not routinely stocked in NHS Lothian, please discuss with ward pharmacist (during working hours) to arrange an order to be raised with procurement. It may take several days to come in from supplier once ordered.

Table 1: Guidance for conversion of commonly used oral anti-seizure medications.

Drug Name	Available Oral Formulations	Alternative formulations	Method of administration	Additional Information	Drug availability
Carbamazepine	I/R Tablet, M/R Tablet, Liquid (20mg/ml)	Suppository: 125mg & 250mg	<ul style="list-style-type: none"> Suppository (see additional info) Liquid can be given via enteral feeding tubes; dilute with equal volume of water to prevent adsorption onto feeding tube. I/R tablets disperse readily in 10ml water and can be given via enteral feeding tubes. Shake dispersed suspension well before administration as high risk of blocking tube if settles. 	<p>100mg tablet/liquid = 125mg suppository dose. Suppository is irritant to rectal mucosa, max dose 250mg QDS. Limit to 7days.</p> <p>Do NOT crush M/R tablets. When switching from M/R to I/R, use same total daily dose and consider increasing frequency of administration. If total daily dose > 400mg, divide into four equal doses of liquid.</p>	<p><u>I/R & M/R Tablets:</u> Readily available</p> <p><u>Liquid:</u> RHCYP- Borthwick RIE- DCN 130/231, Wd 207/208 SJH- Children's ward, St Michaels, Wd 19A (ENT)</p> <p><u>Suppositories:</u> RHCYP- Critical care RIE- AMU, emergency cupboard, Wd 107, 116D, 118, 207, 208 SJH- emergency cupboard WGH- emergency cupboard</p>
Lacosamide	Tablet, Liquid (10mg/ml)	IV	<ul style="list-style-type: none"> IV injection (licensed for 5 days only). Liquid can be given via NG feeding tubes (anecdotal experience only). <p>There is no information about crushing tablets and giving via enteral feeding tube or giving liquid via jejunal feeding tubes.</p>	All formulations equivalent dose.	<p><u>Tablets:</u> RIE- AMU, DCN 231 SJH- A&E, emergency cupboard</p> <p><u>Liquid:</u> Pharmacy only</p> <p><u>IV:</u> RHCYP- Critical Care RIE- emergency cupboard SJH- emergency cupboard WGH- emergency cupboard</p>

Lamotrigine	Dispersible tablet, Tablet	Nil	<ul style="list-style-type: none"> Dispersible tablets will disperse in minimal amount of water and should be administered immediately. Can be given via enteral feeding tubes. <p>There is no information about crushing non-dispersible tablets.</p> <p>If no enteral tube – contact neurology.</p>	All formulations equivalent dose. If omitted >5 days, may need to reinstitute at low dose and up-titrate.	Dispersible tablets & tablets: readily available
Levetiracetam	Tablet, Liquid (100mg/ml), Granules.	IV	<ul style="list-style-type: none"> IV Liquid may be given via enteral feeding tubes. Tablets may be crushed and dispersed in water for administration via enteral tubes. Crushed suspension should be administered immediately. Flush well. Granules should be mixed with at least 10ml water and shaken for 2minutes. This can be administered via enteral feeding tubes. Flush well. 	All formulations equivalent dose.	<p>Tablets, liquid & IV readily available</p> <p>Granules not routinely stocked in NHS Lothian, can be ordered on request.</p>

Phenytoin	Capsule, Liquid (6mg/ml & 18mg/ml), Chewable Tablets (50mg)	IV	<ul style="list-style-type: none"> IV (see additional info) Liquid - use 6mg/ml where possible as licensed preparation. Mix with equal volume of water before & after administration via gastric feeding tubes. Requires 2hr feed break before & after administration. (see additional info) Epanutin brand capsules can be opened, contents mixed with 10ml water, leave for 5 mins & mix well and be administered via gastric feeding tubes. Chewable tablets may be used for swallowing difficulties only, not suitable for administration via enteral feeding tubes. <p>It is not recommended to administer phenytoin via NJ/PEJ route – contact neuro.</p>	<p>90mg Liquid = 100mg capsules/tablet/IV</p> <p>IV phenytoin requires cardiac monitoring and in-line filter (0.22 - 0.50 microns). Filters can be ordered on PECOS and should be stocked on wards who stock IV phenytoin.</p> <p>Phenytoin administration via enteral tubes should only be carried out where there is no suitable alternative route. Phenytoin binds to feeding tubes and so absorption very unpredictable. Discuss with pharmacy +/- neurologist regarding levels when giving via feeding tubes. Advise to take level before switching routes and 24-48hr after switching.</p>	<p><u>Capsules & IV:</u> Readily available</p> <p><u>Chewable Tablets:</u> RHCYP: Borthwick</p> <p><u>Liquid (6mg/ml):</u> RIE: 116, 118, 207,208, SJH: Childrens ward, emergency cupboard, ITU, ENT (19A)</p> <p><u>Liquid (18mg/ml) – Unlicensed medicine</u> RHCYP: Borthwick</p>
Sodium Valproate	Tablet, Liquid (40mg/ml), Crushable tablet (100mg only), MR granules.	IV	<ul style="list-style-type: none"> IV Liquid can be given via enteral feeding tubes. Dilute with water immediately prior to administration. Crushable tablets can be mixed and dispersed in small volume of water for administration via enteral feeding tubes or mixed with soft food e.g. yoghurt or jam for swallowing difficulties. Modified-release granules can be dispersed in water and administered via enteral feeding tubes. Flush well. 	<p>All formulations equivalent dose.</p> <p>For administration via jejunal feeding tubes, dilute with at least 3 times volume of dose with water.</p> <p>Do NOT crush MR capsules of granules.</p> <p>If patient on MR formulation, give a smaller dose more frequently when converting to liquid (e.g. BD -> QDS)</p> <p>Crushable tablets have an extremely bitter taste.</p>	<p>Tablet (I/R, M/R & crushable), liquid & IV readily available</p> <p>M/R granules not routinely stocked in NHS Lothian, can be ordered on request.</p>

Table 2: Guidance for conversion of other oral anti-seizure medications.

Brivaracetam	Tablet, Liquid (10mg/ml)	IV	<ul style="list-style-type: none"> Liquid for NG/PEG administration or in swallowing difficulties. IV <p>There is no information on crushing tablets or administering liquid via NJ/PEJ.</p>	All formulations equivalent dose.	<p><u>Tablets:</u> RIE: AMU, DCN 231</p> <p><u>Liquid:</u> RHCYP: Borthwick</p> <p><u>IV:</u> RHCYP: Borthwick RIE: emergency cupboard</p>
Cannabidiol	Liquid (100mg/ml)	Nil	<ul style="list-style-type: none"> Liquid may be used for administration via non PVC NG/PEG feeding tubes. <p>There is no information on administering liquid via NJ/PEJ.</p>	Administer other medications before cannabidiol and flush tube well between administration.	Pharmacy only
Cenobamate	Tablet	Nil	Nil data from manufacturer – there are reports other centres crush tablets and administer via gastric feeding tubes. ⁹		<p>Titration pack: RIE 231</p> <p>Tablets: Pharmacy only - Some strengths may not routinely be kept in NHS Lothian, can be ordered on request.</p>
Clobazam	Tablet, Liquid (1mg/ml)	Nil	<ul style="list-style-type: none"> Tablets disperse in water (1-5mins) for administration via enteral feeding tubes, flush well. <p>No evidence of giving liquid via enteral feeding tubes.</p>	<p>All formulations equivalent dose.</p> <p>For swallowing difficulties – use liquid (1st line) as dispersed tablets may taste unpleasant.</p>	<p><u>Tablets:</u> RHCYP: Borthwick RIE: AMU, Wd 204, DCN 231, RIE emergency cupboard SJH: Childrens ward, emergency cupboard WGH: MAU base 1&2, Ward 15, Ward 2</p>

					<u>Liquid:</u> RHCYP: Borthwick
Clonazepam	Tablet, Liquid (2mg/5ml)	IV Injection (Unlicensed)	<ul style="list-style-type: none"> Tablets can be dispersed in 30ml water and administered via enteral feeding tubes. Liquid (ULM) – can be given via non-PVC gastric feeding tube, flush with 3x separate 5ml flushes. <p>There is no information on administering liquid via NJ/PEJ.</p> <p>Contact neurology if no enteral feeding tube to discuss whether use of IV is appropriate.</p>	All formulations equivalent dose.	<u>Tablets:</u> 2mg: RHCYP, Borthwick 0.5mg: RIE: Wd 204, OPD4 Dialysis SJH: emergency cupboard, Maple Villa <u>Liquid:</u> Not routinely stocked in NHS Lothian, can be ordered on request. <u>IV:</u> RIE: 116D, 118
Eslicarbazepine	Tablet	Nil	<ul style="list-style-type: none"> Case reports of crushing and dispersing tablet in water for administration via enteral feeding tubes.^{10,12} 	Limited data about administration via enteral tubes.	Not routinely stocked in NHS Lothian, can be ordered on request.
Ethosuximide	Capsule, Liquid (50mg/ml)	Nil	<ul style="list-style-type: none"> Liquid; quite viscous – mix with equal volume of water immediately before administration. 	All formulations equivalent dose.	<u>Capsule:</u> Pharmacy only <u>Liquid:</u> RHCYP emergency cupboard
Everolimus (Votubia)	Dispersible tablet	Nil	<ul style="list-style-type: none"> Case reports of dispersing in water for administration via enteral feeding tubes. Limited evidence.⁸ 		Pharmacy only. Some strengths may not routinely be kept in NHS Lothian, can be ordered on request.
Felbamate	Tablet, Liquid (30mg/ml)	Nil	<ul style="list-style-type: none"> Tablets can be crushed and dispersed in water for administration via enteral feeding tubes.¹³ 		Not routinely stocked in NHS Lothian, can be ordered on request.

Oxcarbazepine	Tablet Liquid (60mg/ml)	Nil	<ul style="list-style-type: none"> Tablets are film coated but will disperse if shaken in water for 5 minutes. Can be administered via enteral feeding tubes. Liquid can be given via enteral feeding tubes. 	Liquid should be mixed with equal volume of water.	<u>Tablets</u> 150mg: Pharmacy only 300mg: RHCYP, Borthwick Liquid not routinely stocked in NHS Lothian. Can be ordered in on request.
Perampanel	Tablet Liquid 0.5mg/ml	Nil	<ul style="list-style-type: none"> Tablets can be chewed or crushed and dispersed in water for administration via NG/PEG. Flush well.¹¹ Contact neuro in NJ/PEJ 	Limited data about administration via enteral tubes.	Pharmacy only. Some strengths may need to be ordered in. Liquid not routinely stocked in NHS Lothian, can be ordered on request.
Phenobarbital	Tablet, Elixir (3mg/ml), Liquid (10mg/ml – unlicensed preparation)	IV	<ul style="list-style-type: none"> IV – contact neurology Liquid can be given via enteral feeding tubes. Tablets can be crushed and mixed with water for administration via enteral feeding tubes 	All formulations equivalent dose. Elixir liquid (3mg/ml) contains 38% alcohol.	Controlled Drug - Pharmacy Only <u>Elixir liquid (3mg/ml)</u> SJH only <u>Liquid (10mg/ml)</u> RIE & WGH
Primidone	Tablet	Nil	<ul style="list-style-type: none"> Tablets can be crushed or will disperse in around 5 minutes for administration via enteral feeding tubes. Poorly soluble, flush well. 		Pharmacy only

Topiramate	Tablet Sprinkle capsules	Nil	<ul style="list-style-type: none"> Tablets can be crushed and dispersed in water. Shake suspension and administer immediately via enteral feeding tube. Sprinkle capsules can be used in swallowing difficulties only. 	<p>All formulations equivalent dose.</p> <p>Sprinkle capsule - caution - risk of blockage in enteral tubes and so not recommended via this route.</p> <p>Note crushed tablets have a very bitter taste</p>	<p><u>Tablets:</u> RHCYP: Borthwick RIE: AMU, emergency cupboard SJH: emergency cupboard</p> <p>Sprinkle capsules not routinely stocked in NHS Lothian, can be ordered on request.</p>
Vigabatrin	Tablet, Soluble tablets 500mg, Oral SF Granules	Nil	<ul style="list-style-type: none"> The soluble tablets can be administered via enteral feeding tubes The powder should be made up to 100ml of water, fruit juice or milk and administered immediately. Can be dissolved in 10ml if fluid volume issues. Can be administered via enteral feeding tubes. Tablets can be crushed and dispersed in water for administration via enteral feeding tubes 	All formulations equivalent dose.	<p><u>Oral Powder:</u> RHCYP- Borthwick</p> <p>Soluble tablets/normal tablets not routinely stocked in NHS Lothian, can be ordered on request.</p>
Zonisamide	Capsules	Nil	<ul style="list-style-type: none"> Capsules can be opened and contents dispersed in water or apple juice. Can be administered via enteral feeding tubes. 	All formulations equivalent dose.	<p><u>Capsules:</u> RIE: AMU</p> <p>Some strengths may not routinely be kept in NHS Lothian, can be ordered on request.</p>

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