

# LEVETIRACETAM

Indication		<ul style="list-style-type: none"> <li>• Antiepileptic for focal (partial) seizures<sup>1,2</sup></li> <li>• Second line agent for seizures refractory to other anticonvulsants<sup>2,3</sup></li> </ul>
ORAL	Presentation	<ul style="list-style-type: none"> <li>• Oral solution: 100 mg in 1 mL</li> </ul>
	Dosage	<ul style="list-style-type: none"> <li>• Loading dose<sup>3</sup> <ul style="list-style-type: none"> <li>○ 20 mg/kg</li> </ul> </li> <li>• Maintenance <ul style="list-style-type: none"> <li>○ 10 mg/kg every 12 hours<sup>4,5</sup></li> <li>○ May be up-titrated by 10 mg/kg/day to a maximum dose of 40–60 mg/kg/day according to response and tolerance</li> <li>○ Administer the total daily dose in 2 divided doses<sup>4,5</sup> (every 12 hours)</li> </ul> </li> </ul>
		Preparation
	Administration	<ul style="list-style-type: none"> <li>• Draw up prescribed dose</li> <li>• Oral/OGT/NGT without regard to feeds<sup>3</sup></li> </ul>
INTRAVENOUS	Presentation	<ul style="list-style-type: none"> <li>• Vial: 500 mg in 5 mL</li> </ul>
	Dosage	<ul style="list-style-type: none"> <li>• Loading dose<sup>2,3</sup> <ul style="list-style-type: none"> <li>○ 20 mg/kg</li> </ul> </li> <li>• Maintenance <ul style="list-style-type: none"> <li>○ 10 mg/kg every 12 hours<sup>4,5</sup></li> <li>○ May be up-titrated by 10 mg/kg/day to a maximum dose of 40–60 mg/kg/day according to response and tolerance<sup>4,5</sup></li> <li>○ Administer the total daily dose in 2 divided doses<sup>4,5</sup> (every 12 hours)</li> </ul> </li> </ul>
	Preparation	<ul style="list-style-type: none"> <li>• Draw up 100 mg (1 mL) and make up to 10 mL total volume with 0.9% sodium chloride <ul style="list-style-type: none"> <li>○ <i>Concentration now equal to 10 mg/mL</i></li> </ul> </li> <li>• Draw up prescribed dose from 10 mg/mL solution plus sufficient volume to prime the infusion line</li> </ul>
	Preparation (status epilepticus)	<ul style="list-style-type: none"> <li>• Draw up 100 mg (1mL) of the 500 mg/mL solution</li> <li>• Make up to 2 mL total volume with 0.9% sodium chloride <ul style="list-style-type: none"> <li>○ <i>Concentration now equal to 50 mg/mL</i></li> </ul> </li> </ul>
Administration	<ul style="list-style-type: none"> <li>• IV infusion (loading and maintenance dose) <ul style="list-style-type: none"> <li>○ Prime the infusion line and reduce total syringe volume to the prescribed dose</li> <li>○ IV infusion via syringe driver pump over 15 minutes<sup>3</sup></li> <li>○ On completion, disconnect syringe and infusion line</li> <li>○ Flush access port at same rate as infusion</li> </ul> </li> <li>• IV injection (status epilepticus) <ul style="list-style-type: none"> <li>○ Over 5 minutes<sup>6</sup></li> </ul> </li> </ul>	

<b>Special considerations</b>	<ul style="list-style-type: none"> <li>• Dosage <ul style="list-style-type: none"> <li>○ Manage under neurology team guidance</li> <li>○ Use the same dose when converting from oral to IV <sup>6</sup> as bioavailability almost 100%</li> <li>○ Wean gradually (do not stop abruptly) to minimise the potential of increased seizure frequency<sup>3,6</sup></li> <li>○ Loading dose may be omitted if clinically indicated</li> </ul> </li> <li>• Primarily eliminated renally. Although no recommendations for dose adjustment, if renal impairment<sup>2,6</sup>, seek pharmacist advice</li> <li>• May be administered subcutaneous during palliative care if necessary. Seek advice from Palliative Care Team 1800 249 648</li> <li>• Refer to Queensland Clinical Guideline: <i>Neonatal seizures</i><sup>7</sup></li> </ul>
<b>Monitoring</b>	<ul style="list-style-type: none"> <li>• Conscious state (e.g. drowsiness)</li> </ul>
<b>Compatibility</b>	<ul style="list-style-type: none"> <li>• Fluids <ul style="list-style-type: none"> <li>○ 5% glucose<sup>8</sup>, 0.9% sodium chloride<sup>8</sup></li> </ul> </li> <li>• Y-site <ul style="list-style-type: none"> <li>○ No information<sup>8</sup></li> </ul> </li> </ul>
<b>Incompatibility</b>	<ul style="list-style-type: none"> <li>• No information<sup>8</sup></li> </ul>
<b>Interactions</b>	<ul style="list-style-type: none"> <li>• No information<sup>8</sup></li> </ul>
<b>Stability</b>	<ul style="list-style-type: none"> <li>• Oral solution <ul style="list-style-type: none"> <li>○ Store below 25 °C<sup>9</sup></li> <li>○ Discard 4 weeks after opening or as per local infection control policy (limited evidence)</li> </ul> </li> <li>• Vial <ul style="list-style-type: none"> <li>○ Store below 25 °C<sup>9</sup></li> </ul> </li> </ul>
<b>Side effects</b>	<ul style="list-style-type: none"> <li>• Blood pathology: thrombocytopenia<sup>3</sup>, pancytopenia<sup>10</sup>, blood dyscrasia<sup>3</sup>, hepatic failure<sup>10</sup></li> <li>• Digestive: diarrhoea<sup>10</sup>, vomiting<sup>10</sup>, hepatic failure<sup>3</sup></li> <li>• Integumentary: eczema<sup>11</sup>, pruritus<sup>11</sup>, allergic reaction<sup>11</sup></li> <li>• Immunologic: anaphylactic type reactions<sup>3</sup>, Stevens-Johnsons syndrome<sup>3</sup></li> <li>• Nervous: irritability<sup>11</sup>, CNS sedation<sup>10</sup></li> <li>• Respiratory: cough<sup>10</sup>, nasopharyngitis<sup>11</sup>, pharyngitis<sup>11</sup></li> </ul>
<b>Actions</b>	<ul style="list-style-type: none"> <li>• Antiepileptic<sup>6</sup></li> <li>• Modulates neurotransmission by binding to synaptic vesicle protein 2A (SV2a) which seems to provide a unique mechanism of action when conventional treatment fails<sup>4,12</sup></li> <li>• SV2a prevents neurotransmitter release and vesicle transport within the neuron<sup>4,12</sup></li> <li>• SV2a appears important in both partial and generalised seizures<sup>4,12</sup></li> </ul>
<b>Abbreviations</b>	CNS: central nervous system, IV: intravenous, OGT: orogastric tube, NGT: nasogastric tube
<b>Keywords</b>	levetiracetam, seizures, antiepileptic, neurological, epilepsy, Kepra, AED

The Queensland Clinical Guideline *Neonatal Medicines* is integral to and should be read in conjunction with this monograph. Refer to the disclaimer. Destroy all printed copies of this monograph after use.

## References

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## Document history

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