		Type: <b>Drug Guideline</b>	Document reference: <b>5429</b>	Manual Classification: <b>Waikato DHB Drug Guidelines</b>
Title: <b>Levetiracetam for Neonates</b>			Effective date: <b>20 August 2020</b>	
Facilitator <small>sign/date</small>	Authorised <small>sign/date</small>	Authorised <small>sign/date</small>	Version: <b>2</b>	Page: <b>1 of 2</b>
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## BRIEF ADMINISTRATION GUIDE

For detailed information refer to The [Australasian Neonatal Medicines Formulary levetiracetam](#) guideline

**Indication:** Seizures

**Route:** Intravenous, or oral

- Injection supplied as levetiracetam 500 mg in 5 mL (100 mg/mL) vial
  - pH 5.5
- Oral liquid supplied as 100 mg/mL

Note: Levetiracetam is not approved in NZ for children under 4 years so its use is considered “off-license”

**Dose:** **Loading dose** (including for status epilepticus): 40 mg/kg (range 15-50 mg/kg)

**Maintenance dose:** 10 mg/kg, starting 12 hours after the loading dose.  
Increase dose slowly as required (range 10-30 mg/kg, maximum 60 mg/kg/day)  
0 to 7 days postnatal age administer 12 hourly, 8+ days administer 8-12 hourly

**Notes:**

- Reduce dose in renal impairment or severe hepatic impairment
- *The oral dose should be the same as the intravenous dose (but monitor for seizure activity and adjust dose if required)*
- If therapy is to be stopped levetiracetam should be withdrawn slowly

### Preparation and administration:

#### Intravenous

- Draw up 3 mL of levetiracetam and add 17 mL of compatible fluid (sodium chloride 0.9% or glucose 5%) to make a final concentration of 300mg/20mL = **15 mg/mL**
- Draw up the required volume for the dose and if desired dilute further with compatible fluid
- Infuse dose over **15 minutes** via Guardrail profiled syringe driver


Note: when treating **status epilepticus** dilute levetiracetam 1:1 and administer over 5 minutes as a slow IV push (not using Guardrails)

#### Oral

- Draw up prescribed dose of oral solution and administer.  
Note: if dose / volume is too small to measure take 1mL of levetiracetam solution and dilute to 10mL with water for injection to make a final concentration of 10 mg/mL, then take final dose from this.
- Can be diluted with water or milk and given with or without feeds

### Monitoring:

- Watch for signs of hypersensitivity and adverse effects
- Monitor seizure activity: frequency, duration and severity
- Monitor fluid balance closely
- Routine vital signs including check for infection due to neutropenia
- Check renal function, LFTs, CBC

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Note: Serum levetiracetam levels are not routinely measured

### Storage and Stability:

- Diluted solutions are stable for 24 hours when refrigerated (2 to 8°C) or 6 hours at room temperature.
- Once the oral solution bottle is opened discard after 7 months.

### Competency for Administration

This procedure is carried out by, or under, the direct supervision of a registered nurse/registered midwife who holds current Waikato DHB Generic Medicine Management and IV certification plus Guardrails competency (if administering IV) as well as Neonatal specific competency NCV/NAC (if administering via CVAD).

### Guardrails Information

Levetiracetam is Guardrail profiled on the CC pump for NICU. Following are the guardrail limits:

Guardrails Drug Name Profile	Levetiracetam LOAD*		Levetiracetam MAINT*		
	0.4-1kg	1-5kg	0.4-1kg	1-2kg	2-5kg
<b>Concentration(mg/ml)</b>					
Minimum	3.75	5	1.2	3.1	5
Maximum	16	16	16	16	16
<b>Dose rate (mg/kg/hr)</b>					
Soft minimum	40	40	20	20	20
Default	160	160	40	40	40
Soft maximum	162	162	120	120	120
Hard maximum	200	200	122	122	122

### References

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