Levetiracetam (subcutaneous) Information Sheet

500 mg/5 mL concentrate for injection

Practice points

- Levetiracetam can be given as a continuous subcutaneous infusion (CSCI) or twice daily in 100 mL sodium chloride 0.9% and infused over 30 minutes.
- There is limited compatibility data so it is recommended to administer alone in a CSCI.
- Dilute as much as possible to reduce the likelihood of site reactions.
- Ensure dose adjustment is made for renal impairment (see below).
- Taper where possible. Do not stop abruptly.
- Not funded in the community setting and costs approximately $6 per ampoule.

Background

Levetiracetam is thought to inhibit seizure activity by blocking N-type voltage-gated calcium channels and/or by binding synaptic vesicular protein SV2A and modulating neurotransmitter release. It is effective in a broad range of seizure types.

Indications

Levetiracetam is increasingly used as monotherapy for seizure prophylaxis in patients with primary or metastatic disease. Off-licence use of subcutaneous levetiracetam offers the possibility of maintaining seizure control when the oral route is lost, and there is no IV access. It is a less sedating option than benzodiazepines.

Adverse events

- Generally well tolerated
- More than 10% may experience fatigue, drowsiness, headache
- More than 10% and fewer than 1% may experience anorexia, abdominal pain, nasopharyngitis, cough, dizziness, blurred vision, nausea, diarrhoea, dyspepsia, irritability/mood swings, rash, myalgia, tremor, vertigo

Interactions

- Levetiracetam has very few clinically significant interactions.
- It is not metabolised via the CYP450 pathway in the liver. Instead, it is mainly excreted unchanged via the kidneys, with the remainder undergoing non-hepatic hydrolysis.
- It is not known to interact with dexamethasone which had led to an increase in its use in managing seizures in the palliative setting.

Dosing

- The bioavailability of oral levetiracetam is 95 to 100%.
- The dose ratio is 1:1 when switching from oral to subcutaneous (the dose of levetiracetam is the same PO/IV/SC).
- Without prior oral administration, give a starting dose of 500 mg to 1 g over 24 hours.
- Escalation should be in 2 weekly steps (minimum) until therapeutic dose is reached.
- Dose adjustment required in renal failure (see below).
- No dose adjustment required in the elderly in the absence of renal/liver impairment.
- Levetiracetam must not stopped abruptly, but gradually withdrawn.

- For patients on renal replacement therapy, Levetiracetam is removed by haemodialysis (HD) but not by peritoneal dialysis. A supplementary dose of 250 to 500 mg immediately after each haemodialysis session should be considered for HD patients being treated with a CSCI.

Group	eGFR (mL/min/1.73 m^2)	Dose and frequency (can give in 2 divided doses)
Normal	> 80	1 g to 3 g CSCI over 24 hours
Mild	50–79	1 g to 2 g CSCI over 24 hours
Moderate	30–49	500 mg to 1.5 g CSCI over 24 hours
Severe	< 30	500 mg to 1 g CSCI over 24 hours

Administration

- Use alone in a CSCI using water for injection or sodium chloride 0.9% as the diluent.
- Dilute as much as possible to reduce the likelihood of site reactions. The maximum dose is 2g over 24 hours. Ideally use at least the same volume of diluent as drug volume.
- If volume issues are encountered, use two 12 hourly 30 mL syringe drivers or a 50 ml syringe.
- Anecdotal shared clinical practice suggests that 0.5 mg dexamethasone may be compatible and may potentially reduce site reactions.
- If giving as subcutaneous boluses, give twice daily in 100 mL sodium chloride and infuse over 30 minutes.

In event of seizure

Benzodiazepines remain the first line management for prolonged seizure or status epilepticus.

Advice and support

Within working hours contact the Christchurch Hospital Palliative Care Service on **(03) 364 1473**, or the Nurse Maude Hospice on **(03) 375 4274**.

After hours contact the Christchurch Hospital operator on **(03) 364 0640** and ask for the palliative care clinician on call.