**MONOGRAPH**

**Linezolid Monograph - Paediatric**

**Scope (Staff):** Clinical Staff - Medical, Nursing, Pharmacy

**Scope (Area):** Perth Children’s Hospital (PCH)

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This document should be read in conjunction with this [DISCLAIMER](#)

### DESCRIPTION

- Linezolid is an oxazolidinone antibacterial, it binds to the 50S ribosomal subunit and prevents formation of a functional 70S complex and inhibits bacterial protein synthesis.\(^1,2\)
- Linezolid is reserved for use in multidrug-resistant infections.
- It is active against Gram-positive organisms, including methicillin resistant *Staphylococcus aureus*, coagulase negative staphylococci, vancomycin resistant enterococci (VRE) and penicillin-resistant strains of *Streptococcus pneumoniae*.\(^1,3,4\)
- It is not active against Gram-negative bacteria.\(^4,5\)

### INDICATIONS AND RESTRICTIONS

**IV and Oral: Restricted (red) antibiotic**

- ChAMP approval is required prior to prescription. Contact the on-call ID Consultant or Fellow for approval PRIOR to prescribing. Document the indication, the ChAMP approver and the date and time on the prescription or in the medication box.

### FORMULATIONS

**Available at PCH:**

- 600mg tablet
- 100mg/5mL oral granules for suspension (150mL bottle)
- 600mg/300mL Infusion

**Other formulations available:**

- Nil

### DOSAGE

- The doses listed below fall within the standard range.
- Higher doses may be prescribed for certain situations in consultation with an infectious diseases or clinical microbiology consultant.

**Neonates:**

- Please refer to [neonatal clinical care drug protocols](#)

**IV or Oral:**

- Children 1 month to < 12years: 10mg/kg/dose (to a maximum of
<table>
<thead>
<tr>
<th><strong>DOSAGE ADJUSTMENT</strong></th>
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<tbody>
<tr>
<td><strong>Dosage adjustment required in renal impairment:</strong></td>
</tr>
<tr>
<td>• No dosage adjustment required in renal impairment, although metabolites may accumulate when creatinine clearance is &lt; 30mL/minute, the clinical significance of this is unknown.(^{(1,2,4)})</td>
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<tr>
<td>• There is an increased incidence of some serious adverse events (e.g. thrombocytopenia and anaemia) in those with reduced renal function.(^{(1,6,7)}) Monitor complete blood count each week.(^{(1)})</td>
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<tr>
<td><strong>Dosage adjustment required in hepatic impairment:</strong></td>
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<tr>
<td>• No dosage adjustment is required in mild to moderate hepatic impairment. (\text{There is minimal information on the use of linezolid in severe hepatic impairment, use with caution.})(^{(2,4,6,7,9)})</td>
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<tr>
<td><strong>RECONSTITUTION</strong></td>
</tr>
<tr>
<td><strong>IV</strong></td>
</tr>
<tr>
<td>• Not applicable</td>
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<tr>
<td><strong>Oral Suspension:</strong></td>
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<tr>
<td>• Reconstitute with of water as follows: tap bottle until all granules flow freely; add approximately half the total volume of water as per the manufacturer’s instructions for reconstitution and shake well to obtain a uniform suspension.</td>
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<td>• Add remainder of the water and again shake well.</td>
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<td>• This will result in 150mL of suspension. Store reconstituted suspension in the original packaging to protect it from light and discard any remaining suspension after 21 days.(^{(2,5,9)})</td>
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<tr>
<td>• <strong>After the initial reconstitution, the suspension should not be shaken further. Prior to measuring the dose, the suspension should be inverted several times to resuspend.</strong>(^{(2,5,9)})</td>
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<tr>
<td><strong>ADMINISTRATION</strong></td>
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<td><strong>IV infusion:</strong></td>
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<td>• Infuse undiluted over 30 to 120 minutes. Do not use if the solution contains particles, is hazy or discoloured.(^{(5-7,9,10)})</td>
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<tr>
<td><strong>Oral suspension:</strong></td>
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<tr>
<td>• Before use, mix gently by inverting the bottle several times, do NOT shake. May be administered with or without food.(^{(2,5,7,9)})</td>
</tr>
<tr>
<td><strong>MONITORING</strong></td>
</tr>
<tr>
<td>• Regular blood pressure monitoring and monitoring for peripheral</td>
</tr>
</tbody>
</table>
neuropathy should be conducted throughout treatment.\(^{(1, 6)}\)
- Lactic acidosis has been reported with linezolid use and acid-base status should be monitored, especially for prolonged courses.\(^{(9)}\)
- Renal, hepatic and haematological function (full blood count) should be monitored at baseline then weekly if prolonged therapy is required (i.e. longer than 7 days).\(^{(1, 4, 6)}\)
- Visual function test should be conducted in patients on treatment for greater than 28 days or in those who report new visual symptoms.\(^{(1, 4)}\)

### ADVERSE EFFECTS

- **Common:** diarrhoea, nausea, vomiting, abdominal pain, taste disturbance, raised hepatic enzymes, candidiasis, myelosuppression (generally with extended treatment >10 days), headache.\(^{(1, 7)}\)
- **Rare:** hypertension, eosinophilia, rash, itching, urticaria, injection site reactions, dizziness, insomnia, hypoaesthesia, paraesthesia, blurred vision, tongue discolouration, optic or peripheral neuropathy (mainly if treated for >28 days, may be reversible), seizures, *Clostridium difficile*-associated diarrhoea, allergy, lactic acidosis, bullous skin disorders, tooth discoulouration (reversible after manual removal by a dentist).\(^{(1, 7)}\)

### COMPATIBLE FLUIDS

- Sodium chloride 0.9\%\(^{(2, 9, 10)}\)
- Glucose 5\%\(^{(2, 9, 10)}\)
- Hartmann’s\(^{(2, 9, 10)}\)

### STORAGE

- **IV:** Store below 25 °C and protect from light. Keep the IV bags in the foil outer-wrap until use.\(^{(5, 7, 10)}\)
- **Oral:** Store tablets and suspension (before and after reconstitution) below 25°C. Once reconstituted, store the suspension in the original packaging to protect it from light and discard any remaining suspension after 21 days.\(^{(2, 5, 7)}\)

### PRECAUTIONS

- Vigilant blood pressure monitoring is required. In the event of an acute elevation in blood pressure, doses of vasoactive drugs may require adjustment. Contact Infectious Diseases or Clinical Microbiology for possible alternative antibiotic agents.\(^{(1, 5)}\)
- This drug has multiple serious drug interactions please see below and consult PCH approved references or contact Pharmacy for further information on agents to avoid.\(^{(1, 4)}\)

### CONTRAINDICATIONS

- Linezolid is contraindicated in patients with a history of severe allergy to linezolid.\(^{(5-7)}\)
- Linezolid is contraindicated for use in patients with uncontrolled hypertension, phaeochromocytoma, thyrotoxicosis and patients who have been treated with a monoamine oxidase inhibitor (e.g. phenelzine or tranylcypromine) in the previous 2 weeks.\(^{(1, 2, 5-7)}\)
| INTERACTIONS | Linezolid has many drug interactions; please consult PCH approved references (such as Clinical Pharmacology), your ward pharmacist or Pharmacy on 6456 0190 (option 1) for more information.  

- Linezolid is known to increase the pharmacological effects of inotropes (adrenaline [epinephrine], noradrenaline [norepinephrine], dopamine etc.) when used concurrently. Use combination with caution.  
- Linezolid is a reversible non-selective monoamine oxidase inhibitor which may contribute to the development of serotonin syndrome when administered in conjunction with other serotonergic agents. Please contact Pharmacy for further information on agents to avoid.  
- Avoid foods containing high levels of tyramine whilst undergoing treatment with linezolid (e.g. mature cheese, yeast extracts such as vegemite, undistilled alcoholic beverages and fermented soya bean products such as soy sauce). Contact team dietician for further information on foods to avoid.  
- The use of linezolid with clarithromycin may increase linezolid concentration, a change in antimicrobial may be required.  
- Rifampicin may reduce the concentration of linezolid reducing the effect, a change of antimicrobial may be required. |
| COMMENTS | Linezolid has good oral bioavailability (100%), consider switching to oral dosing as soon as clinically appropriate.  
Each 300mL IV bag contains 5mmol of sodium and 13.7 grams of glucose.  
Patients and/or their carers should be instructed to contact the prescriber if they have any tingling, altered sensation or change in vision whilst on treatment. |
| MANUFACTURER SAFETY DATA SHEET (SDS) | To access the Manufacturer SDS for this product, use the following link to ChemAlert. |

**Please note: The information contained in this guideline is to assist with the preparation and administration of linezolid. Any variations to the doses recommended should be clarified with the prescriber prior to administration**

**Related internal policies, procedures and guidelines**

- Antimicrobial Stewardship Policy
- ChAMP Empiric Guidelines
References

2. Micromedex 2.0 [Internet]. Truven Health Analytics. 2015 [cited 25/02/2016].

This document can be made available in alternative formats on request for a person with a disability.