### Cefepime Monograph - Paediatric

<table>
<thead>
<tr>
<th>Scope (Staff):</th>
<th>Medical, Nursing, Pharmacy</th>
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<tbody>
<tr>
<td>Scope (Area):</td>
<td>PCH</td>
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This document should be read in conjunction with this [DISCLAIMER](#).

### DESCRIPTION
- Cefepime is a broad spectrum, bactericidal cephalosporin antibiotic. It interferes with bacterial cell wall peptidoglycan synthesis by binding to penicillin-binding proteins resulting in cell lysis.\(^1,2\)
- Cefepime is active against most enteric Gram-negative bacilli, including *Pseudomonas aeruginosa*.\(^2\)

### INDICATIONS AND RESTRICTIONS
**IV: Monitored (orange) antibiotic**
- If the use is consistent with a standard approved indication, this must be communicated to ChAMP by documenting that indication on all prescriptions (inpatient and outpatient). The ChAMP team will review if ongoing therapy is required and/or if the order does not meet ChAMP Standard Indications.
- If use is not for a standard approved indication, phone approval must be obtained from ChAMP before prescription.

### FORMULATIONS
**Available at PCH:**
- 2 grams powder for injection vial (Omegapharm)

**Other formulations available:**
- 1 gram powder for injection vial (Omegapharm)
- 2 grams powder for injection vial (Maxipeme)

### DOSAGE
The doses listed below fall within the standard range. Higher doses may be prescribed for certain situations and should occur in consultation with Infectious Diseases or Clinical Microbiology consultants.

**IV:**
- **Usual dose:** 50mg/kg to a maximum of 2 grams 8 hourly \(^{1-3}\)

**Neonates:**
- Please refer to neonatal clinical care drug protocols
**DOSAGE ADJUSTMENT**

- Dosage adjustment may be required in cases of impaired renal function (with creatinine clearance of less than 50mL/min).
- To calculate the estimated glomerular filtration rate (eGFR) use the following formula (also available via the link)\(^{(2)}\)

\[
\text{eGFR (mL/min/1.73m}^2\text{)} = \frac{36.5 \times \text{height (cm)}}{\text{Serum creatinine (micromol/L)}}
\]

**Dosage adjustment required in renal impairment:**

**Children ≥ 12 years old:**

Give the standard first dose then:

- eGFR \(\geq 50\)mL/minute : normal
- eGFR 30 - <50mL/minute : 100% 12hourly
- eGFR 10 - <30mL/minute : 100% 24 hourly
- eGFR <10mL/minute : 50% 24 hourly.\(^{(1)}\)

**Children < 12 years of age:**

Give the standard first dose then:

- eGFR \(\geq 50\)mL/minute : normal
- eGFR 30 - <50mL/minute : 50mg/kg/dose, 12hourly
- eGFR 10 - <30mL/minute : 50mg/kg/dose, 24 hourly
- eGFR <10mL/minute : 25mg/kg/dose, 24 hourly.\(^{(1, 3)}\)

Contact Pharmacy for further advice.

**RECONSTITUTION**

**IV:**

Reconstitute each vial with the exact volume of water for injection in the table below to give a 100mg/mL solution.\(^{(4)}\)

<table>
<thead>
<tr>
<th>Vial size</th>
<th>Reconstitution volume</th>
<th>Final concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 gram</td>
<td>8.7mL</td>
<td>100mg/mL</td>
</tr>
<tr>
<td>2 grams</td>
<td>17.4mL</td>
<td>100mg/mL</td>
</tr>
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**ADMINISTRATION**

**IV push:**

- Reconstitute to a concentration of 100mg/mL and give slowly over 3 to 5 minutes\(^{(4)}\)

**IV infusion:**

- Dilute with compatible fluid to a concentration of 40mg/mL or less and infuse over 30 minutes\(^{(2, 3)}\)

**Continuous infusion:**

- May be given over 24 hours by continuous infusion. Contact Pharmacy for advice.
### MONITORING
- Renal and haematological function should be monitored weekly with prolonged therapy (i.e. longer than 7 days) or high dose treatment.\(^1\)

### ADVERSE EFFECTS
- **Common:** Diarrhoea, nausea, vomiting, pain and inflammation at injection site, rash, headache, dizziness, allergy and *Clostridium difficile*- associated disease.\(^1\)
- **Rare:** Neurotoxicity (e.g. confusion, seizures, encephalopathy) and nephrotoxicity (increased in high dose and/or renal impairment), blood dyscrasias (e.g. neutropenia), thrombocytopenia, bleeding and renal impairment. Immunological reactions (including eosinophilia, drug fever, anaphylaxis, angioedema, urticaria, haemolytic anaemia, Stevens-Johnson syndrome, toxic epidermal necrolysis, interstitial nephritis, arthritis, serum sickness-like syndrome).\(^1\)

### COMPATIBLE FLUIDS
- Glucose 5%
- Glucose/sodium chloride combinations
- Sodium chloride 0.9%
- Glucose in 5% Hartmann’s solution\(^4\)

### STORAGE
- Store vials below 25˚C\(^5\)
- Store syringes prepared by CIVAS between 2 and 8˚C.
- Reconstituted solutions should be protected from light.\(^4\)

### PRECAUTIONS
- Use with caution in patients with seizure disorders or renal impairment.
- Use in patients with renal impairment increases the risk of neurotoxicity.\(^1, 5, 6\)

### CONTRAINDICATIONS
- Cefepime is contraindicated in patients with a history of severe allergy to a cephalosporin antibiotic or any component of the formulation.
- Care should also be taken in those with a history of allergy to penicillins and carbapenems as cross reactivity may occur between penicillins, cephalosporins and carbapenems.\(^1, 3, 4\)

### INTERACTIONS
- Cefepime a number of drug interactions; please consult PCH approved references, your ward pharmacist or Pharmacy on 6456 0190 (option 1) for more information.
- IV aminoglycoside antibiotics are inactivated by IV penicillins and cephalosporins. Aminoglycoside antibiotics are rapidly bactericidal and should be administered first. The line should then be flushed well with a compatible fluid and the penicillin administered.\(^1, 4\)
Care should be taken and renal function monitored when used with other nephrotoxic drugs (e.g. aminoglycosides or potent diuretics) due to an increased risk of neurotoxicity.^[1] Probenecid increase the half-life and prolongs the activity of cephalosporins, monitor for adverse effects.^[1]

**COMMENTS**

- Each vial of cefepime also contains L-arginine as a buffer.^[4]

**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 cefepime. Any variations to the doses recommended should be clarified with the prescriber prior to administration**

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**Related internal policies, procedures and guidelines**

- Antimicrobial Stewardship Policy (Medication Management Manual)
- ChAMP Empiric Guidelines (ChAMP Manual)

**References**

3. Clinical Pharmacology [Internet]. Elsvier BV. 2015 [cited 28/05/2015].

**Useful resources (including related forms)**

- eTG Therapeutic Guidelines
- Clinical Pharmacology