Phenoxymethylpenicillin (Penicillin V) Monograph - Paediatric

Scope (Staff): Clinical Staff – Medical, Nursing, Pharmacy
Scope (Area): Perth Children’s Hospital (PCH)

This document should be read in conjunction with this DISCLAIMER

DESCRIPTION

Phenoxymethylpenicillin (also known as penicillin V) interferes with bacterial cell wall peptidoglycan synthesis by binding to penicillin binding proteins resulting in cell lysis.\(^1,2\)

Penicillin V is inactivated by beta-lactamases. This is oral penicillin.

INDICATIONS AND RESTRICTIONS

Oral: Unrestricted (green) antibiotic

This is not a restricted agent. Follow standard ChAMP guidelines where appropriate.

Phenoxymethylpenicillin is mainly active against Gram-positive organisms and oral anaerobes.

The treatment indications for oral penicillin are:

- Treatment of acute pharyngitis or tonsillitis due to \textit{Streptococcus pyogenes}, to prevent acute rheumatic fever (ARF). Children at risk of ARF include Aboriginal, Torres Strait Islander, Maori, Pacific Islander, refugee or children born in high risk rheumatic heart disease (RHD) countries; those with existing RHD
- Treatment of acute pharyngitis or tonsillitis due to \textit{S. pyogenes} in children with moderate to severe pharyngitis
- Scarlet fever.\(^2\)
- Treatment of ARF (if intolerant of intramuscular benzathine benzylpenicillin - BPG)
- Dental infections (severe superficial infections)

The prophylaxis indications for oral penicillin are:

- Secondary prophylaxis for ARF (if intolerant of intramuscular BPG)
- Prophylaxis of infection due to encapsulated organisms (e.g. pneumococcal infection), post-splenectomy, in hyposplenic patients and patients with sickle cell disease\(^2\)
- Prophylaxis following Haematopoietic stem cell transplantation (HSCT) until day 100, and no active Graft Versus Host Disease (GVHD) and all immunosuppressive agents ceased
### CONTRAINDICATIONS
Phenoxymethylpenicillin is contraindicated in patients with a history of severe allergy to a penicillin antibiotic.\(^{(1-3)}\)

### PRECAUTIONS
Care should be taken in patients with a previous reaction to cephalosporins and carbapenems as cross reactivity may occur between penicillins, cephalosporins and carbapenems.\(^{(1-3)}\)

### FORMULATIONS
**Available at PCH:**
- 250mg tablets (Aspecillin VK)
- 50mg/mL powder for suspension (AFT brand)

**Other formulations available:**
- 25mg/mL powder for suspension
- 30mg/mL suspension
- 250mg and 500mg tablets (multiple generic brands)
- 250mg and 500mg capsules (multiple generic brands)

### 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 (less than 30 days of age):
Please refer to [Neonatal Medication Protocols](#).

#### Children:
**Treatment:**

<table>
<thead>
<tr>
<th>Indication</th>
<th>Dose</th>
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<tbody>
<tr>
<td>Treatment of acute pharyngitis or tonsillitis due to <em>S. pyogenes</em> (including scarlet fever)</td>
<td>All children: 15mg/kg/dose (to a maximum of 500mg) 12 hourly for 10 days.(^{(4)})</td>
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</table>

**Note:** Antibiotics are not indicated for mild tonsillitis in children not at risk of ARF.\(^{(1)}\)

For Streptococcal pharyngitis in **high risk** populations give a 10 day course to eradicate *S. pyogenes* from the pharynx and reduce the risk of ARF.\(^{(1)}\)

| Treatment of ARF (if intolerant of intramuscular benzathine benzylpenicillin -BPG or BPG not given) | Child 1 month – 12 years: 250mg twice daily for 10 days\(^{(4, 5)}\)  
  Child 12 – 18 years: 500mg twice daily for 10 days\(^{(4, 5)}\) |

| Dental infections (severe superficial infections) | All children: 12.5mg/kg/dose (to a maximum of 500mg) four times a day for 5 days.\(^{(4)}\) |
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**Prophylaxis:**

<table>
<thead>
<tr>
<th>Indication</th>
<th>Dose</th>
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<tr>
<td>Secondary prophylaxis for ARF</td>
<td><strong>Child 1 month – 18 years:</strong> 250mg twice daily for 10 years</td>
</tr>
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</table>

**Note:** *IM Benzathine benzylpenicillin* is preferred for treatment and prophylaxis of ARF/RHD due to improved efficacy and patient compliance.\(^{(2, 4, 5)}\)

| Prophylaxis of infection post splenectomy, in hyposplenic patients and patients with sickle cell disease | **Child <1 year old:** 62.5mg twice daily.\(^{(2)}\)  
**Child 1-5 years old:** 125mg twice daily.\(^{(2)}\)  
**Children ≥ 5 old:** 250mg per dose, twice daily.\(^{(2, 6)}\) |
|---|---|

| Prophylaxis following Haematopoietic stem cell transplantation (HSCT) | **Child <1 year old:** 62.5mg twice daily.\(^{(2)}\)  
**Child 1-5 years old:** 125mg twice daily.\(^{(2)}\)  
**Children ≥ 5 old:** 250mg per dose, twice daily.\(^{(2, 6)}\)  
Treatment should be continued until day +100, and no active GVHD and all immunosuppressive agents have been ceased |
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<td>Prophylaxis prior to dental surgery</td>
<td><strong>Children:</strong> 40mg/kg (to a maximum of 2grams) as a single dose 1 hour prior to the procedure.(^{(2)})</td>
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</table>

**Dosage adjustment required in renal impairment:**

- No dosage adjustment is required in renal impairment, however the half-life may be prolonged in significant renal impairment.\(^{(1, 7)}\)
- The potassium content of the preparation should be considered in patients with severe renal impairment.\(^{(8)}\)

**Dosage adjustment required in hepatic impairment:**

- There are no specific recommendations for dosage adjustment in patients with hepatic impairment. It appears that no dose adjustment is necessary.\(^{(3)}\)
### RECONSTITUTION

Oral powder for suspension 50mg/mL (AFT Phenoxymethylpenicillin)

To reconstitute the AFT brand phenoxymethylpenicillin:
- Add 60mL of water for reconstitution and shake well.
- Store the resultant suspension between 2 and 8 degrees and discard any remaining suspension after 10 days.\(^8\)
- Refer to packaging for the reconstitution of other formulations as required.

### ADMINISTRATION

Phenoxymethylpenicillin may be given without regard to food, however absorption may be slightly higher if administered on an empty stomach.\(^{3, 7}\)

### MONITORING

Renal, hepatic and haematological function should be monitored with prolonged therapy (i.e. longer than 10 days).\(^{1, 7}\)

### ADVERSE EFFECTS

**Common:** diarrhoea, nausea, vomiting, allergy, *Clostridium difficile* associated disease, immunological reactions (rash, erythema, urticaria, contact dermatitis, fever, anaphylactic shock, angioedema, bronchospasm, interstitial nephritis, haemolytic anaemia, eosinophilia, serum sickness-like syndrome, exfoliative dermatitis, Stevens-Johnson syndrome and toxic epidermal necrolysis).\(^{1, 8}\)

**Rare:** black tongue, electrolyte disturbances, neurotoxicity (with high dose e.g. drowsiness, hallucinations, coma, seizures), bleeding, blood dyscrasias (e.g. thrombocytopenia).\(^{1, 8}\)

### COMPATIBLE FLUIDS

Not applicable

### STORAGE

- The 50mg/mL powder for suspension should be stored at less than 25°C prior to reconstitution.
- Once reconstituted, the resultant suspension should be refrigerated between 2 and 8°C.\(^8\)
- Refer to packaging for storage conditions of alternative brands and strengths.
- Tablets should be stored at less than 30°C.\(^{3, 8}\)

### INTERACTIONS

Phenoxymethylpenicillin has drug interactions; please consult PCH approved references (such as *Clinical Pharmacology*), your ward pharmacist or Pharmacy on extension 60190 for more information

- Probenecid decreases phenoxymethylpenicillin excretion thereby prolonging its activity.\(^{1, 7}\)
- Phenoxymethylpenicillin increases the toxicity of methotrexate by reduction of excretion, monitor closely.\(^{1, 8}\)
- Tetracycline antibiotics (e.g. doxycycline, minocycline and
tetracycline) may reduce the effect of phenoxymethylpenicillin.\textsuperscript{(7)}

**Please note: The information contained in this guideline is to assist with the preparation and administration of \textit{phenoxymethylpenicillin (penicillin V)}. 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 and monographs

**References**

9.
Useful resources (including related forms)

**Neonatal Medication Protocols** (KEMH)

**Clinical Pharmacology**

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

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Document Owner:  Head of Department – Infectious Diseases

Reviewer / Team:  Children's Antimicrobial Management Program Pharmacist

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