# Foscarnet Monograph - Paediatric

## Scope (Staff):
Medical, Nursing, Pharmacy

## Scope (Area):
Perth Children's Hospital (PCH)

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

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>• Foscarnet is an antiviral pyrophosphate analogue that prevents DNA synthesis by inhibiting DNA polymerases and reverse transcriptases. <a href="#">(1-5)</a></th>
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</thead>
<tbody>
<tr>
<td>INDICATIONS AND RESTRICTIONS</td>
<td>• Foscarnet is used as an alternative in the treatment of herpes simplex and cytomegalovirus infection with proven or probable resistance to standard therapies. <a href="#">(3, 5)</a></td>
</tr>
</tbody>
</table>
| | **IV: Restricted (red) antiviral**  
• ChAMP approval is required prior to prescription. |
| CONTRAINDICATIONS | • Hypersensitivity to foscarnet. [(3-6)](#)  
• Foscarnet is contraindicated in patients being treated with IV pentamidine due to additional risk of nephrotoxicity and serious hypocalcaemia. [(1)](#) |
| PRECAUTIONS | **Renal function:**  
• Renal function must be closely monitored to minimise the potential of renal impairment, adequate hydration should be maintained in all patients. Renal impairment occurs to some degree in the majority of patients treated with foscarnet. It may occur at any time and is usually reversible within one week of dose adjustment. [(3, 5)](#)  
**Electrolyte disturbances:**  
• Foscarnet chelates bivalent metal ions (e.g. calcium, magnesium) and may be associated with an acute decrease of ionised serum calcium proportional to the rate of foscarnet infusion. [(5)](#)  
• Foscarnet injection contains 0.24mmol (5.5mg) of sodium per mL, use with caution in patients with sodium restrictions. [(1, 5, 7)](#)  
• Monitor and correct any deficiencies of electrolytes (especially calcium and magnesium) prior to and during foscarnet therapy. [(3)](#)  
• If diuretics are indicated thiazide diuretics are preferred over... |
loop diuretics as loop diuretics inhibit renal tubular secretion and may increase the degree of electrolyte disturbance and may impair foscarnet excretion.\(^{(5)}\)

- Seizures, some fatal, have been associated with foscarnet-induced mineral and electrolyte abnormalities; mineral and electrolyte supplementation may be required. Caution and careful management of serum electrolytes in patients with baseline abnormalities of these serum parameters, especially in patients with cardiac or neurologic conditions and those receiving other drugs known to alter minerals and electrolytes.\(^{(3, 6)}\)

**Other**

- Contact with skin or eyes may cause local irritation. If accidental exposure occurs, rinse immediately with cold water.\(^{(5, 7)}\)

- Foscarnet may cause genital irritation through urinary excretion – careful personal hygiene is recommended to reduce the potential for local irritation. Regular nappy changes are also recommended.\(^{(3, 5)}\)

- Foscarnet is highly irritant. To avoid local irritation and thrombophlebitis, ensure that foscarnet is administered via a vein with adequate blood flow for rapid dilution and distribution.\(^{(2, 3, 6)}\)

- Use with caution in patients at increased risk of QT prolongation.\(^{(3)}\)

- Sexually active adolescent females should use effective contraception whilst being treated with foscarnet.\(^{(1)}\)

- Sexually active males are recommended to use barrier contraception and avoid fathering a child during and for a minimum 6 months after treatment with foscarnet.\(^{(8)}\)

**FORMULATIONS**

Available at PCH:

- 6g/ 250mL (24mg/mL) solution for 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 (less than 30 days of age):**

- Not routinely used in neonates, contact Infectious Disease or Clinical Microbiologist for advice.
<table>
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<th>DOSAGE ADJUSTMENT</th>
<th>RECONSTITUTION</th>
<th>ADMINISTRATION</th>
</tr>
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<tr>
<td><strong>Children ≥ 1 month of age</strong>&lt;br&gt;<strong>IV infusion:</strong>&lt;br&gt;<strong>Cytomegalovirus:</strong>&lt;br&gt;• <strong>Induction:</strong> 60mg/kg/dose 8 hourly until symptom improvement (for 14 to 21 days) followed by maintenance therapy.&lt;sup&gt;(1, 8)&lt;/sup&gt;&lt;br&gt;• <strong>Maintenance:</strong> 90 to 120mg/kg/dose once daily.&lt;sup&gt;(1, 8)&lt;/sup&gt;&lt;br&gt;<strong>Mucocutaneous herpes simplex virus (immunocompromised patient):</strong>&lt;br&gt;• 40mg/kg/dose every 8 hours for 14 to 21 day or until lesion(s) healed.&lt;sup&gt;(8)&lt;/sup&gt;&lt;br&gt;<strong>Varicella zoster infection (HIV positive or exposed patient):</strong>&lt;br&gt;• 40-60mg/kg/dose every 8 hours for 7 to 10 days.&lt;sup&gt;(3)&lt;/sup&gt;</td>
<td><strong>Not applicable</strong></td>
<td>• Adequate hydration (either IV or oral) should be given prior to foscarnet to minimise renal toxicity.&lt;sup&gt;(2, 3)&lt;/sup&gt;&lt;br&gt;• Dosing of foscarnet should be accompanied by prehydration prior to the initial infusion of 10-20mL/kg (to a maximum of 1000mL) of age-appropriate fluid to minimise nephrotoxicity with further concurrent hydration of 10-20mL/kg (to a maximum of 1000mL) with subsequent doses.&lt;sup&gt;(3)&lt;/sup&gt;&lt;br&gt;• Oral hydration is also an option for those patients able to tolerate the required oral intake.</td>
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<td><strong>Dosage adjustment required in renal impairment:</strong>&lt;br&gt;• Foscarnet should be used with caution in patients with reduced renal function. Impaired renal function may occur at any time during foscarnet administration. Serum creatinine should be monitored every second day during induction therapy and once weekly during maintenance therapy. Dose adjustments may be required.&lt;sup&gt;(5)&lt;/sup&gt;&lt;br&gt;• To minimise the potential of renal function impairment, adequate hydration should be maintained in all patients. Dosage calculations for patients with renal impairment are complex and differ depending on the indication and degree of impairment. Contact the ChAMP Pharmacist or Pharmacy for advice.&lt;sup&gt;(2, 6)&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
</tbody>
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### IV infusion (central venous access device):
- The concentrated solution (24mg/mL) may be used.\(^{(6, 7)}\)
- Doses of ≤60mg/kg should be administered over a minimum of one hour and doses >60mg/kg to ≤120mg/kg over a minimum of two hours. \(^{(2, 6-8)}\)

### IV infusion (peripheral vein):
- Dilute to a final concentration of 12mg/mL or less and infuse over 1 to 2 hours. \(^{(2, 6, 8)}\)
- Doses of ≤60mg/kg should be administered over a minimum of one hour and doses >60mg/kg to ≤120mg/kg over a minimum of two hours. \(^{(6-8)}\)
- Foscarnet is highly irritant. To avoid local irritation and thrombophlebitis, ensure that foscarnet is administered via a vein with adequate blood flow for rapid dilution and distribution. \(^{(2, 6)}\)

### Monitoring
- Baseline renal function and electrolytes (including calcium, phosphate, potassium and magnesium) should be monitored every second day during induction then weekly thereafter. \(^{(1-4, 8)}\)
- Monitor complete blood count regularly as needed. \(^{(1-4)}\)
- Foscarnet may cause genital irritation through urinary excretion, careful personal hygiene is needed and children in nappies should be changed regularly and be closely monitored for genital irritation and ulceration. \(^{(1, 3, 6)}\)

### Adverse Effects
- **Common:** nephrotoxicity (generally occurs within the first 2 weeks of treatment, damage may be permanent, but is often reversible. The risk is reduced by ensuring adequate hydration before and during treatment), electrolyte disturbances (generally occurs within the first 2 weeks of treatment, correct any deficiencies as they occur), involuntary muscle contractions, seizures, headache, dizziness, anxiety, paraesthesia, cough, dyspnoea, fatigue, chills, malaise, fever, sweating, thrombophlebitis, genital ulceration, nausea, vomiting, diarrhoea, abdominal pain, anaemia, rash, itch, ECG changes, anaemia, thrombocytopenia, leucopenia, granulocytopenia, neutropenia. \(^{(1, 8)}\)
- **Rare:** pulmonary haemorrhage, pneumonitis, cholestatic liver changes, hepatosplenomegaly, nephrogenic diabetes insipidus, oedema, neuropathy. \(^{(1, 8)}\)

### Compatible Fluids
- Glucose 5%
- Sodium Chloride 0.9% \(^{(6, 7)}\)

### Storage
- Store below 30°C and do not refrigerate. \(^{(7)}\)
### INTERACTIONS

Foscarnet may interact with other medications; please consult PCH approved references (e.g. *Clinical Pharmacology*), your ward pharmacist or Pharmacy on extension 63546 for more information.

- Foscarnet is nephrotoxic; administration with other nephrotoxic medications (including aminoglycosides, amphotericin B and methotrexate) may have additional adverse renal effects, avoid combinations.\(^{(1)}\)

- Foscarnet may cause electrolyte disturbances (particularly hypocalcaemia and hypokalaemia) which may be worsened if administered with other medications which also alter electrolyte concentrations; monitor closely and supplement where appropriate.\(^{(1)}\)

- Foscarnet may increase the risk of seizures; use caution with other medications that may increase the risk of seizures.\(^{(1, 2)}\)

- Concomitant use of foscarnet and pentamidine is contraindicated due to the additional risk of nephrotoxicity and serious hypocalcaemia.\(^{(1, 5)}\)

### COMMENTS

- Foscarnet injection contains 0.24mmol (5.5mg) of sodium per mL.\(^{(1, 5, 7)}\)

- Patients should be instructed to drink plenty of fluids whilst being treated with foscarnet.\(^{(1)}\)

- Patients should be instructed to inform the treating team if they experience any tingling, numbness, abnormal muscle stiffness or movement.\(^{(1)}\)

- Patients and parents/carers of young children should be instructed to clean genitals well after urinating and inform the treating team if sores appear. For children in nappies, regular nappy changes and good cleaning are essential to avoid local irritation and ulceration.\(^{(1)}\)

### MANUFACTURER SAFETY DATA SHEET (SDS)

To access to 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 **foscarnet. **Any variations to the doses recommended should be clarified with the prescriber prior to administration**

### Related CAHS internal policies, procedures and guidelines

- Antimicrobial Stewardship Policy
- ChAMP Empiric Guidelines and Monographs
- KEMH Neonatal Medication Protocols
References and related external legislation, policies, and guidelines

3. Foscarnet: Paediatric drug information [Internet]. Lexicomp. 2020 [cited 09/12/2020].

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