MONOGRAPH

Aciclovir Monograph - Paediatric

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

Child Safe Organisation Statement of Commitment
CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this DISCLAIMER

⚠️HIGH RISK MEDICINE⚠️

QUICKLINKS

| Dosage/Dosage Adjustments | Administration | Compatibility | Monitoring |

DRUG CLASS

Aciclovir is a guanine analogue.\(^{(1)}\)
Aciclovir is a High Risk Medicine.

INDICATIONS AND RESTRICTIONS

- Aciclovir is active against a number of herpes viruses. It is frequently used in the prevention and treatment of Herpes Simplex Virus (HSV) and Varicella-Zoster Virus (VZV) in specific high risk groups. \(^{(1-3)}\)

**IV: Monitored (orange) antiviral**

Use that is consistent with a standard approved indication 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 prescribing.

**Oral and Topical: Unrestricted (green) antiviral**

- Oral and topical aciclovir are not restricted agents. Follow standard ChAMP guidelines where appropriate.
## CONTRAINDICATIONS

- Hypersensitivity to aciclovir, valaciclovir or any component of the formulation.\(^{(1, 2, 4-6)}\)
- Due to similar chemical structure and possible cross reactivity aciclovir should not be used in patients with famciclovir, valganciclovir or ganciclovir hypersensitivity.\(^{(2)}\)

## PRECAUTIONS

- **DO NOT REFRIGERATE** the IV formulation as crystallisation may occur. The crystals may not redissolve when brought back to room temperature.\(^{(7, 8)}\)
- Ensure adequate hydration during treatment to prevent precipitation of aciclovir in the renal tubules that may manifest as haematuria or renal impairment (particularly with IV treatment).\(^{(1, 5, 9)}\)
- For Oncology patients ensure that IV maintenance fluids are running during treatment with IV aciclovir.
- Extravasation can cause severe local inflammation and tissue necrosis as the injection is alkaline with a pH of 11. Monitor injection site closely.\(^{(1, 10)}\)
- The IV preparation should be used with caution in patients with underlying neurological abnormalities, hypoxia, renal, hepatic or electrolyte abnormalities, as aciclovir has been associated with reversible encephalopathic changes.\(^{(3, 4)}\)
- Each 1 gram vial of aciclovir contains 4.2mmol of sodium.\(^{(8)}\)

## FORMULATIONS

Listed below are products available at PCH, other formulations may be available, check with pharmacy if required:

- 250mg/10mL solution for injection
- 200mg tablets (dispersible)
- 3% Eye Ointment
- 5% Topical Cream

Imprest location: Formulary One

## DOSAGE & DOSAGE ADJUSTMENTS

**Neonates:** Refer to Neonatal Medication Protocols

**Children:**

- **Dosing should be based on IDEAL body weight.** Refer to: Dosing in Overweight and Obese Children
- 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.
- For ease of dosing consider if oral valaciclovir is appropriate for your patient, refer to: Valaciclovir Monograph
<table>
<thead>
<tr>
<th>INDICATION</th>
<th>AGE</th>
<th>DOSE</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Herpes Simplex Virus</strong>&lt;sup&gt;(7, 9, 11)&lt;/sup&gt;</td>
<td></td>
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<tr>
<td>- Encephalitis</td>
<td>Term to &lt;12 years</td>
<td>IV: 20mg/kg/dose (to a maximum of 750mg) 8 hourly</td>
<td>21 days</td>
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<tr>
<td></td>
<td>≥ 12 years</td>
<td>IV: 10mg/kg/dose (to a maximum of 750mg) 8 hourly</td>
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<tr>
<td><strong>Herpes Simplex Virus</strong> (complicated)&lt;sup&gt;(2)&lt;/sup&gt;</td>
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<tr>
<td>- e.g. disseminated disease, pneumonitis, infections requiring hospitalisation</td>
<td>Term to 18 years</td>
<td>IV: 10mg/kg/dose (to a maximum of 750mg) 8 hourly</td>
<td>14 to 21 days</td>
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<tr>
<td>- Non-encephalitis</td>
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<tr>
<td>Localised disease in immunocompromised patients (use initial IV therapy)</td>
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<tr>
<td></td>
<td>Term to 18 years</td>
<td>Oral: 10mg/kg/dose (to a maximum of 400mg) five (5) times daily</td>
<td>7 days or 5 days for episodic treatment</td>
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<tr>
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<td></td>
<td>Consider valaciclovir in children ≥3 months</td>
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<tr>
<td><strong>Herpes Simplex Virus</strong> (localised)&lt;sup&gt;(11)&lt;/sup&gt;</td>
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<tr>
<td>- Gingivostomatitis</td>
<td>Term to 18 years</td>
<td>Oral: 20mg/kg/dose (to a maximum of 750mg) 8 hourly</td>
<td>Minimum 7 days (IV and oral)</td>
</tr>
<tr>
<td>- Severe primary or recurrent mucocutaneous herpes</td>
<td></td>
<td>See below for dosing for oral switch to complete course</td>
<td>Immunocompromised patients up to 14 days</td>
</tr>
<tr>
<td>- Herpetic Whitlow</td>
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<tr>
<td>- Eczema herpeticum</td>
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<tr>
<td>- Oral switch post IV therapy</td>
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<tr>
<td></td>
<td>Term to &lt;12 years</td>
<td>IV: 20mg/kg/dose (to a maximum of 750mg) 8 hourly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥ 12 years</td>
<td>IV: 10mg/kg/dose (to a maximum of 750mg) 8 hourly</td>
<td></td>
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<tr>
<td><strong>Varicella Zoster Virus</strong>&lt;sup&gt;(7)&lt;/sup&gt;</td>
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<tr>
<td>- Patients with pre-existing skin disease</td>
<td>Term to 18 years</td>
<td>Oral: 20mg/kg/dose (to a maximum of 800mg) five (5) times a day</td>
<td>7 days</td>
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<tr>
<td>- Zoster ophthalmicus</td>
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<tr>
<td>- Oral switch post IV therapy</td>
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</tr>
<tr>
<td><strong>Varicella Zoster Virus</strong>&lt;sup&gt;(7, 11)&lt;/sup&gt;</td>
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<td></td>
<td>Term to 18 years</td>
<td>Oral: 20mg/kg/dose (to a maximum of 800mg) five (5) times a day</td>
<td>7 days</td>
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<td></td>
<td></td>
<td>Consider valaciclovir in children ≥2 years</td>
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<tr>
<td></td>
<td></td>
<td>Immunocompromised patients up to 14 days</td>
<td></td>
</tr>
</tbody>
</table>
Children: Prophylaxis – Immunocompetent
*Valaciclovir is often preferred due to improved compliance with once or twice daily dosing.*

<table>
<thead>
<tr>
<th>INDICATION – Prophylaxis Immunocompetent</th>
<th>AGE</th>
<th>DOSE</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herpes Simplex Virus&lt;sup&gt;(11)&lt;/sup&gt;</td>
<td>Term to 18 years</td>
<td>Oral: 10mg/kg/dose (to a maximum of 400mg) 12 hourly</td>
<td>6 months then review</td>
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<tr>
<td>- Suppressive therapy (frequent, severe recurrences)</td>
<td></td>
<td>Consider valaciclovir in children ≥3 months</td>
<td></td>
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</tbody>
</table>

Children: Prophylaxis – Immunocompromised
*Convert to oral aciclovir or valaciclovir as soon as oral medications are tolerated. Valaciclovir is often preferred due to improved compliance with twice daily dosing.*

<table>
<thead>
<tr>
<th>INDICATION – Prophylaxis - Immunocompromised</th>
<th>AGE</th>
<th>DOSE</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention of HSV or VZV in seropositive patients&lt;sup&gt;(2, 9, 12)&lt;/sup&gt;</td>
<td>Term to 18 years</td>
<td>IV: 5mg/kg/dose (to a maximum of 750mg) 8 hourly</td>
<td>Variable – during period of risk</td>
</tr>
<tr>
<td>1 to 23 months</td>
<td>Oral: 100mg – 200mg four times a day</td>
<td></td>
<td></td>
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<tr>
<td>2 to 18 years</td>
<td>Oral: 200mg – 300mg three times a day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post exposure prophylaxis&lt;sup&gt;(2)&lt;/sup&gt;</td>
<td>Term to 18 years</td>
<td>Oral: 20mg/kg/dose (to a maximum of 800mg) four times a day</td>
<td>5 to 7 days beginning 7-10 days after exposure</td>
</tr>
<tr>
<td>- Varicella</td>
<td></td>
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</tbody>
</table>

Ocular and Topical treatment:
Children 3 months to 18 years:
- Herpes Simplex Keratitis, Dendritic Ulcers:
3% eye ointment: Apply 1cm of the ointment to the eye(s) five times per day for 14 days or for at least 3 days after healing, whichever is shorter.<sup>(7, 9)</sup>
- Herpes Simplex (cold sores):
5% topical cream: Apply topically five times per day.<sup>(7)</sup>

Renal impairment:
Dosage adjustment may be required in cases of impaired renal function (with creatinine clearance of less than 50mL/min).

*eGFR calculator* (Google Chrome<sup>®</sup>)
IV:

\[ \text{CL}_{\text{cr}} \geq 50 \text{mL/minute} : \text{normal dose} \]
\[ \text{CL}_{\text{cr}} \geq 25 \text{ to } <50 \text{mL/minute} : 100\% \text{ 12 hourly} \]
\[ \text{CL}_{\text{cr}} \geq 10 \text{ to } <25 \text{mL/minute} : 100\% \text{ 24 hourly} \]
\[ \text{CL}_{\text{cr}} < 10 \text{mL/minute} : 50\% \text{ 24 hourly}. \]

**Oral: Herpes Simplex**

\[ \text{CL}_{\text{cr}} > 10 \text{mL/minute} : \text{normal dose} \]
\[ \text{CL}_{\text{cr}} < 10 \text{mL/minute} : 100\% \text{ 12 hourly}. \]

**Oral: Herpes Zoster**

\[ \text{CL}_{\text{cr}} > 25 \text{mL/minute} : \text{normal dose} \]
\[ \text{CL}_{\text{cr}} 10 \text{ to } 25 \text{mL/minute} : 100\% \text{ 8 hourly} \]
\[ \text{CL}_{\text{cr}} < 10 \text{mL/minute} : 100\% \text{ 12 hourly}. \]

**Hepatic impairment:**

No dosage adjustment is required. \(^{2, 6}\)

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**RECONSTITUTION & ADMINISTRATION**

**Solution for infusion:**

- Further dilution is required, use solution prepared in Pharmacy Compounding Services (PCS) where possible.

**IV Infusion:**

- Dilute dose to a final concentration of 5mg/mL with compatible fluid and infuse over one hour. \(^{3, 5, 6, 8, 10}\)
- In fluid restricted patients, a concentrated solution of 25mg/mL may be given via central venous access device (CVAD) over one hour by a controlled rate infusion pump. \(^{8, 9}\)
- All preparations should be visually inspected and discarded if crystals or turbidity appear during preparation or infusion. \(^{2, 8}\)

**Oral:**

- Oral preparations may be given without regard to food. \(^{2, 3, 6, 13}\)
- If dosing 5 times per day, the dose may be given every 4 hours whilst awake. \(^{7}\)
- Tablets may be dispersed in water to facilitate oral administration in children unable to swallow tablets or for administration via a nasogastric tube or PEG. Refer to [SHPA: Don’t Rush to Crush: Aciclovir](#).

**COMPATIBILITY (LIST IS NOT EXHAUSTIVE)**

**Compatible fluids:**

- Glucose 5% - Note: do **not** dilute to a final concentration of <2.5mg/mL with glucose 5% due to reduced stability. \(^{8}\)
- Sodium chloride 0.45% and 0.9%.
- Glucose/sodium chloride solutions.
- Hartmann’s.(8, 10)

**Compatible at Y-site:**

*Compatibilities of IV drugs* must be checked when two or more drugs are given concurrently.

### MONITORING

- Renal function (including urine output) and hepatic function should be monitored weekly with prolonged therapy (longer than 7 days).(2, 14)
- Monitor IV site for any signs of extravasation or phlebitis.(2, 6)
- Full blood picture, renal function and neurotoxicity should be monitored with high dose therapy.(6)

**For Oncology patients:** Ensure IV maintenance fluids are running during IV aciclovir treatment to prevent precipitation of aciclovir in the renal tubules that may manifest as haematuria or renal impairment.(9)

**For all other patients:** Ensure adequate hydration during treatment to prevent precipitation of aciclovir in the renal tubules that may manifest as haematuria or renal impairment.(9)

### ADVERSE EFFECTS

**Common:** Nausea, vomiting, diarrhoea, hallucinations (with high dose), headache, encephalopathy, injection site reactions.(1)

**Infrequent:** agitation, vertigo, confusion, dizziness, oedema, renal impairment, arthralgia, sore throat, dyspnoea, abdominal pain, constipation, rash, weakness.

**Rare:** coma, seizures, anaemia, neutropenia, leucopenia, thrombocytopenia, crystalluria, anorexia, fatigue, hepatitis, urticaria, pruritus, photosensitivity, Stevens-Johnson syndrome, toxic epidermal necrolysis, anaphylaxis.(4, 6)

### STORAGE

- Do NOT refrigerate (crystals may form and do not re-dissolve at room temperature).(8)
- All formulations should be stored below 25˚C.(4, 5)

### INTERACTIONS

This medication may interact with other medications; consult PCH approved references (e.g. Clinical Pharmacology), a clinical pharmacist or PCH Medicines Information Service on extension 63546 for more information.

**Please note:** The information contained in this guideline is to assist with the preparation and administration of aciclovir. 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


Useful resources (including related forms)

- Australian Medicines Handbook – Children’s Dosing Companion
<table>
<thead>
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<th><strong>File Path:</strong></th>
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<td>Head of Department – Infectious Diseases</td>
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<tr>
<td><strong>Reviewer / Team:</strong></td>
<td>Children’s Antimicrobial Management Program Pharmacist</td>
</tr>
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<td>Chair, Drugs and Therapeutics Committee</td>
</tr>
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<td>May 2021</td>
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</table>
| **Standards Applicable:** | NSQHS Standards: ![icon] ![icon] ![icon]  
NSMHS: N/A  
Child Safe Standards: N/A |

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