




MONOGRAPH

Aciclovir 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](#)

<p>DESCRIPTION</p> 	<p>Aciclovir is a guanine analogue. It inhibits viral DNA polymerase and DNA synthesis following phosphorylation by viral and cellular enzymes.⁽¹⁾</p>
<p>INDICATIONS AND RESTRICTIONS</p>	<p>IV: Monitored (orange) antiviral</p> <p>Use that is consistent with a standard approved indication must be communicated to ChAMP by documenting that indication on all prescriptions (inpatient and outpatient).</p> <ul style="list-style-type: none"> • 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. <p>Oral and Topical: Unrestricted (green) antiviral</p> <ul style="list-style-type: none"> • Oral and topical aciclovir are not restricted agents. Follow standard ChAMP guidelines where appropriate. • 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) as well as the prophylaxis of Cytomegalovirus (CMV) in specific high risk groups.⁽²⁾
<p>CONTRAINDICATIONS</p>	<p>Aciclovir is contraindicated in those with a hypersensitivity to aciclovir, valaciclovir or any components of the formulation.^(2,3)</p>
<p>PRECAUTIONS</p>	<p>DO NOT REFRIGERATE the IV formulation as crystallisation may occur. The crystals may not redissolve when brought back to room temperature.^(4, 5)</p> <p>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).^(6, 7)</p> <p>For Oncology patients ensure that IV maintenance fluids are running during treatment with IV Aciclovir.</p>

	<p>Avoid extravasation as the injection is alkaline with a pH of 11.^(4,7)</p> <p>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.^(2, 3)</p> <p>Consider if oral valaciclovir is appropriate for your patient for ease of dosing: Valaciclovir Monograph</p>						
<p>FORMULATIONS</p>	<p>Available at PCH:</p> <ul style="list-style-type: none"> • 250mg/10mL solution for injection (Pfizer) • 200mg tablets (dispersible) (GenRx) • 3% Eye Ointment (Zovirax) • 5% Topical Cream (APOHealth) <p>Other formulations available:</p> <ul style="list-style-type: none"> • 250mg/10mL solution for injection (multiple generic brands) • 200mg tablets (multiple generic brands) • 800mg tablets (multiple generic brands) 						
<p>DOSAGE</p>	<p>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.</p> <p style="text-align: center;"><u>Dosing should be based on IDEAL body weight</u></p> <p>Neonates: Please refer to KEMH Neonatal Medication Protocols</p> <p><u>IV Treatment:</u></p> <p><u>IMMUNOCOMPROMISED CHILDREN:</u> <u>IV treatment (immunocompromised children)</u> Herpes Simplex Encephalitis, Zoster Ophthalmicus, Varicella Encephalitis, Varicella with complications (non-encephalitis), Shingles or disseminated viral infection in an immunocompromised host:^(3, 8)</p> <table border="1" data-bbox="584 1715 1544 1800"> <tr> <td>Term to 18 years</td> <td>20mg/kg/dose IV 8 hourly (maximum dose 750mg)</td> </tr> </table> <p>Localised (non-encephalitis) HSV infection: skin, eyes, mouth HSV in an immunocompromised host:⁽⁸⁻¹⁰⁾</p> <table border="1" data-bbox="584 1951 1544 2076"> <tr> <td>Term to < 3 months</td> <td>20mg/kg/dose IV 8 hourly</td> </tr> <tr> <td>≥3 months and above</td> <td>10mg/kg/dose IV (to a maximum of 750mg) 8 hourly</td> </tr> </table>	Term to 18 years	20mg/kg/dose IV 8 hourly (maximum dose 750mg)	Term to < 3 months	20mg/kg/dose IV 8 hourly	≥3 months and above	10mg/kg/dose IV (to a maximum of 750mg) 8 hourly
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≥3 months and above	10mg/kg/dose IV (to a maximum of 750mg) 8 hourly						

IV Prophylaxis (immunocompromised children)

Prevention of recurrent Herpes Simplex Virus and prevention of HSV in HSV seropositive patients, Cytomegalovirus and Varicella-Zoster Virus infection post Haematopoietic Stem Cell Transplant or Autologous Stem Cell Rescue:⁽²⁾

3 months to <12 years	10mg/kg/dose IV (to a maximum of 750mg) 8 hourly
12 years and above	5mg/kg/dose IV (to a maximum of 750mg) 8 hourly

Convert to oral aciclovir or valaciclovir as soon as oral medications are tolerated.

**IMMUNOCOMPETENT CHILDREN:
IV treatment (immunocompetent children)**

Herpes Simplex Encephalitis⁽¹¹⁾

Children < 5 years	20mg/kg/dose IV (to a maximum of 750mg) 8 hourly
Children ≥ 5 years and <12 years	15mg/kg/dose IV (to a maximum of 750mg) 8 hourly
Children ≥ 12 years	10mg/kg/dose IV (to a maximum of 750mg) 8 hourly

Herpes Stomatitis; Eczema herpeticum:⁽⁵⁾

Children 3months to 12 years	10mg/kg/dose IV (to a maximum of 400mg) 8 hourly
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ORAL treatment:

Treatment of Herpes Simplex (Non-Encephalitis) in immunocompromised child⁽⁵⁾

3 months to 18 years	20mg/kg/dose (maximum 400mg) five times per day
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Prevention of Herpes Simplex in immunocompromised child⁽⁶⁾

1-23 months	100-200mg 3 times per day
2-17years	200-400mg 3 times per day

Treatment of Herpes Simplex (Non-Encephalitis) in immunocompetent child⁽⁵⁾

3 months to 18 years	10mg/kg/dose (maximum 400mg) five times per day
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	<p>Antiviral treatment is indicated for immunocompetent patients who present within 72 hours of the onset of the rash, and for all immunocompromised patients regardless of the duration of the rash.⁽¹¹⁾</p> <p>Treatment of Varicella, Zoster:⁽¹¹⁾</p> <table border="1" data-bbox="584 371 1493 506"> <tr> <td data-bbox="584 371 708 506">Child</td> <td data-bbox="708 371 1493 506">20mg/kg/dose (maximum 800mg) five times per day</td> </tr> </table> <p><u>Ocular and Topical treatment:</u> Zoster Ophthalmicus, 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.^(6,11)</p> <p>Herpes Simplex (cold sores): 5% topical cream: Apply topically five times per day.^(1,11)</p>	Child	20mg/kg/dose (maximum 800mg) five times per day
Child	20mg/kg/dose (maximum 800mg) five times per day		
<p>DOSAGE ADJUSTMENT</p>	<p>Dosage adjustment required in renal impairment:</p> <p>Dosage adjustment may be required in cases of impaired renal function (with creatinine clearance of less than 50mL/min).⁽¹¹⁾</p> <p>To calculate the estimated glomerular filtration rate (eGFR):</p> $eGFR \text{ (mL/min/1.73m}^2\text{)} = \frac{36.5 \times \text{height (in cm)}}{\text{Serum creatinine (micromol/L)}}$ <p>IV:</p> <p>CL_{cr} >50mL/minute : normal dose CL_{cr} 25 – 50mL/minute : 100% 12 hourly CL_{cr} 10 – 25mL/minute : 100% 24 hourly CL_{cr} <10mL/minute: 50% 24 hourly.^(1,2,11)</p> <p>Oral: Herpes Simplex</p> <p>CL_{cr} > 10mL/minute : normal dose CL_{cr} < 10mL/minute : 100% 12 hourly.⁽⁶⁾</p> <p>Oral: Herpes Zoster</p> <p>CL_{cr} > 25mL/minute : normal dose CL_{cr} 10 – 25mL/minute : 100% 8 hourly CL_{cr} < 10mL/minute : 100% 12 hourly.^(1,6)</p>		
<p>RECONSTITUTION</p>	<p>Solution for infusion:</p> <p>Further dilution is required (see administration section below), use solution prepared in Pharmacy Compounding Services (PCS) where possible.</p>		

	<p>Powder for reconstitution:</p> <p>Reconstitute the 250mg vial with 10mL and the 500mg vial with 20mL water for injection to give a 25mg/mL solution. Further dilution is then required (see administration section below).⁽⁴⁾</p>
ADMINISTRATION	<p>IV Infusion:</p> <p>Dilute dose to a final concentration of 2.5mg/mL to 5mg/mL with compatible fluid and infuse over one hour.⁽⁴⁾</p> <p>In fluid restricted patients, a concentrated solution of 25mg/mL may be given via central line over one hour by a controlled rate infusion pump.^(4, 6, 7)</p> <p>Reconstituted solutions must be used immediately and must not be refrigerated as crystals will form.⁽⁸⁾</p> <p>All preparations should be visually inspected and discarded if crystals or turbidity appear during preparation or infusion.⁽⁴⁾</p> <p>Oral:</p> <p>Oral preparations may be given without regard to food.^(2,12) If dosing 5 times per day, the dose may be given every 4 hours whilst awake.⁽⁵⁾ 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.</p> <p>Note: Acihexal[®] brand of aciclovir is NOT dispersible.⁽¹²⁾</p>
MONITORING	<p>Renal function (including urine output) and hepatic function should be monitored weekly with prolonged therapy (longer than 7 days).^(2, 12)</p> <p>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 (particularly in IV treatment).^(6, 7)</p> <p>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 (particularly in IV treatment).^(6, 7)</p>
ADVERSE EFFECTS	<p>Common: Nausea, vomiting, diarrhoea, hallucinations (with high dose), headache, encephalopathy, injection site reactions.⁽¹⁾</p> <p>Rare: agitation, vertigo, confusion, dizziness, oedema, renal impairment, arthralgia, sore throat, dyspnoea, abdominal pain, constipation, rash, weakness, coma, seizures, anaemia, neutropenia, leucopenia, thrombocytopenia, crystalluria, anorexia, fatigue, hepatitis, urticaria, pruritus, photosensitivity, Stevens-Johnson syndrome, toxic epidermal necrolysis, anaphylaxis.^(1,3)</p>
COMPATIBLE FLUIDS	<ul style="list-style-type: none"> Glucose 5% - Note: do not dilute to a final concentration of <2.5mg/mL with glucose 5% due to reduced stability.

	<ul style="list-style-type: none"> • Sodium chloride 0.45% and 0.9%. • Glucose/sodium chloride solutions. • Hartmann's.^(4, 7)
STORAGE	<p>Do NOT refrigerate (crystals will form).⁽⁴⁾</p> <p>All formulations should be stored below 25°C.</p> <p>Any remaining ampoules of 250mg/10mL solution for infusion must be discarded 9 months after the foil packaging is opened.^(4, 8)</p>
INTERACTIONS	<p>Aciclovir has drug interactions; please consult PCH approved references (such as Clinical Pharmacology), your ward pharmacist or Pharmacy for more information</p> <ul style="list-style-type: none"> • There is an increase in the risk of nephrotoxicity if aciclovir administered with other nephrotoxic drugs.^(1,5,6) • Aciclovir causes additive toxicity with mycophenolate, monitor for adverse effects.^(1, 2) • Aciclovir may cause additive toxicity with amphotericin. • Aciclovir may cause additive nephrotoxicity with aminoglycosides. • Aciclovir may increase the concentration of aminophylline and theophylline, a dose adjustment may be required. • Probenecid inhibits the renal tubular excretion of aciclovir increasing aciclovir concentration.^(1, 6)
COMMENTS	<p>Aciclovir is poorly and erratically absorbed from the gut.⁽¹¹⁾</p> <p>Each 1 gram vial of aciclovir contains 4.2mmol of sodium⁽⁴⁾</p>
MANUFACTURER SAFETY DATA SHEET (SDS)	<p>To access to the Manufacturer SDS for this product, use the following link to ChemAlert.</p>

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 internal policies, procedures and guidelines
Antimicrobial Stewardship Policy
ChAMP Empiric Guidelines


References
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Useful resources

[Neonatal Medication Protocols](#) (KEMH)

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