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, 2]

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, 4]

IV: Monitored (orange) antiviral

As per indications stipulated in Formulary One. For any other use, phone approval must be obtained from ChAMP before prescribing as per the Antimicrobial Stewardship Policy.

Oral and Topical: Unrestricted (green) antiviral

- Oral and topical aciclovir are not restricted agents. Follow standard ChAMP guidelines or Formulary One where appropriate.

CONTRAINDICATIONS

- Hypersensitivity to aciclovir, valaciclovir or any component of the formulation.[1, 3-6]
- Due to similar chemical structure and possible cross reactivity aciclovir should not be used in patients with famciclovir, valganciclovir or ganciclovir hypersensitivity.[3]

PRECAUTIONS

- DO NOT REFRIGERATE IV preparations as crystallisation may occur. The crystals may not redissolve when brought back to room temperature.[7]
- Hydration requirements:
    - 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, 3, 5, 7]
- Extravasation can cause severe local inflammation and tissue necrosis as the injection is alkaline with a pH of 11. Monitor injection site closely.[1, 3, 4, 7]
- Aciclovir 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 (e.g. seizures or hallucinations).[1, 3-6]
- Each 1 gram vial of aciclovir contains 4.2mmol of sodium.[7]

FORMULATIONS

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

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

Imprest location: Formulary One

DOSAGE & DOSAGE ADJUSTMENTS

Neonates: Refer to Neonatal Medication Protocols

Children:

Dosing in Overweight and Obese Children: Dose based on ideal body weight[3, 8]

- For ease of dosing consider if oral valaciclovir is appropriate for your patient, refer to: Valaciclovir Monograph

Children: Treatment - Immunocompetent			
INDICATION	**AGE**	**DOSE**	**DURATION**
Herpes Simplex Virus (HSV)			
• Encephalitis • Disseminated disease	≥ 4 weeks to < 12 years	IV: 20 mg/kg/dose (to a maximum of 750 mg) 8 hourly[9]	14 to 21 days[2]
	≥ 12 years	IV: 10 mg/kg/dose (to a maximum of 750 mg) 8 hourly[2, 4, 9]	
• Localised infections • Gingivostomatitis • Severe primary or recurrent mucocutaneous herpes • Herpetic Whitlow • Eczema herpeticum • Oral switch post IV therapy	≥ 4 weeks to < 3 months	IV: 20 mg/kg/dose (to a maximum of 750 mg) 8 hourly[2, 9]	7 days[2, 9] OR 5 days for episodic treatment[2, 9]
	≥ 3 months to 18 years	IV: 10 mg/kg/dose (to a maximum of 750 mg) 8 hourly[9] **OR** Oral: 10 mg/kg/dose (to a maximum of 400 mg) five (5) times daily[2, 9] Consider valaciclovir in children ≥3 months	
• Cold sores – topical therapy	≥ 3 months to 18 years	5 % topical cream: Apply topically five times per day at the first sign of lesion.[9]	4 to 5 days[9]
• HSV keratitis, • Dendritic ulcers **Note:** prompt referral to ophthalmologist is recommended	≥ 3 months to 18 years	3 % eye ointment: Apply 1cm of the ointment to the eye(s) five times per day.[2, 9]	14 days or at least 3 days after healing, whichever is shorter[2, 9]
Varicella Zoster Virus (VZV)			
• Severe chickenpox	≥ 4 weeks to < 12 years	IV: 20 mg/kg/dose (to a maximum of 750 mg) 8 hourly[2, 4, 9] Following clinical improvement switch to oral therapy: Oral: 20 mg/kg/dose (to a maximum of 800 mg) five times a day[2, 9]	Minimum 7 days (IV and oral)[2] Up to 14 days may be used in patients slow to respond[2]

• Severe chickenpox	≥ 12 years	IV: 10 mg/kg/dose (to a maximum of 750 mg) 8 hourly[2, 9] Following clinical improvement switch to oral therapy: Oral: 20 mg/kg/dose (to a maximum of 800 mg) five times a day[2, 9]	Minimum 7 days (IV and oral)[2] Up to 14 days may be used in patients slow to respond [2]
• Patients with pre-existing skin disease (eczema) • Shingles (within 72 hours of rash presentation) • Zoster ophthalmicus	≥4 weeks to 18 years	Oral: 20 mg/kg/dose (to a maximum of 800 mg) five times a day.[2, 4, 9] Consider valaciclovir in children ≥2 years	7 days[2]
Children: Treatment - Immunocompromised			
INDICATION	**AGE**	**DOSE**	**DURATION**
Herpes Simplex Virus (HSV)			
• Encephalitis • Disseminated disease	≥4 weeks to < 12 years	IV: 20 mg/kg/dose (to a maximum of 750 mg) 8 hourly[2, 9]	14 to 21 days [2]
	≥ 12 years	IV: 10 mg/kg/dose (to a maximum of 750 mg) 8 hourly[2, 9]	14 to 21 days [2]
• Localised infections • Gingivostomatitis • Severe primary or recurrent mucocutaneous herpes • Herpetic Whitlow • Eczema herpeticum • Oral switch post IV therapy	≥4 weeks to < 3 months	IV: 20 mg/kg/dose (to a maximum of 750 mg) 8 hourly[9]	7 to 14 days[4, 9]
	≥3 months to < 18 years	IV: 10 mg/kg/dose (to a maximum of 750 mg) 8 hourly[4, 9] **OR** Oral: 10 mg/kg/dose (to a maximum of 400 mg) five (5) times daily[9] Consider valaciclovir in children ≥3 months	

Varicella Zoster Virus (VZV)			
• Chickenpox • Disseminated shingles • Zoster ophthalmicus	≥4 weeks to <12 years	IV: 20 mg/kg/dose (to a maximum of 750 mg) 8 hourly[2, 8, 9]	7 – 14 days[2]
	≥ 12 years	IV: 10 mg/kg/dose (to a maximum of 750 mg) 8 hourly [2, 8, 9] **Oral switch on advice from Infectious Diseases:** Oral: 20 mg/kg/dose (to a maximum of 800 mg) five (5) times daily.[2]	10 – 14 days[2]

Children: Prophylaxis – Immunocompetent

Valaciclovir is often preferred due to improved compliance with once or twice daily dosing.

INDICATION	**AGE**	**DOSE**	**DURATION**
Suppressive therapy for infants post disseminated neonatal HSV disease	All neonates and infants	Oral: 300 mg/**m²**/dose given 8 hourly Review dose monthly to account for weight gain.	6 months post treatment of HSV disease[4, 10]
Suppressive therapy for frequent, severe recurrences of HSV	≥3 months to 18 years	Oral: 10 mg/kg/dose (to a maximum of 400 mg) 12 hourly[2] Dose may be increased to 20 mg/kg/dose (to a maximum of 400 mg) 8 hourly if ongoing recurrences.[4, 8] Consider valaciclovir in children ≥3 months. Discuss all children under 3 months with Infectious Diseases.[2]	6 months then review[2]

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.

INDICATION	AGE	DOSE	DURATION
Prevention of HSV or VZV in seropositive patients[3, 8]	≥4 weeks to 18 years	IV: 5 mg/kg/dose (to a maximum of 750 mg) 8 hourly[3, 11]	Variable – during period of risk
	≥4 weeks to 18 years	Oral: 30mg/kg/dose twice or three times daily. Maximum daily dose of 1600mg DAILY.[4]	
Post exposure prophylaxis to varicella.[3]	≥4 weeks to 18 years	Oral: 20 mg/kg/dose (to a maximum of 800 mg) four times a day[3, 8]	5 - 7 days starting 7-10 days after exposure[3, 8]

Renal impairment:

Dosage adjustment may be required in cases of impaired renal function (with creatinine clearance of less than 50mL/min). Patients with any degree of renal impairment should be closely monitored for neurotoxicity.[4]

eGFR calculator

IV therapy:

eGFR[3, 4]	Dose adjustment
≥50 mL/minute/1.73m^2	normal dose
≥25 to <50 mL/minute/1.73m^2	100% 12 hourly
≥10 to <25 mL/minute/1.73m^2	100% 24 hourly
<10 mL/minute/1.73m^2	50% 24 hourly

Oral therapy:

eGFR - Oral: Herpes Simplex[8]	
≥10 mL/minute/1.73m^2	normal dose
<10 mL/minute/1.73m^2	100% 12 hourly
eGFR - Oral: Herpes Zoster[8]	
≥25 mL/minute/1.73m^2	normal dose
≥10 to <25 mL/minute/1.73m^2	100% 8 hourly
<10 mL/minute/1.73m^2	100% 12 hourly

Hepatic impairment:

No dosage adjustment is required.[4]

RECONSTITUTION & ADMINISTRATION

Reconstitution:

IV Solution for injection:

- Further dilution is required refer to administration below.
- Use solution prepared in Pharmacy Compounding Services (PCS) where possible.[7]

IV Powder for injection:[7, 12]

Vial size	Volume of water for injections or sodium chloride 0.9%	Concentration	Powder volume[12]
250 mg	10 mL	25 mg/mL	Negligible (0.1-0.2mL)
500 mg	20 mL	25 mg/mL	Negligible (0.1-0.2mL)

Administration:

IV Infusion:

- Dilute dose to a final concentration of 5mg/mL with compatible fluid and infuse over one hour. A maximum concentration of 7mg/mL can be given via a peripheral cannula.[3-5, 7]
- 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.[3, 5, 7]
- All preparations should be visually inspected and discarded if crystals or turbidity appear during preparation or infusion.[3, 7]

Oral:

- Oral preparations may be given without regard to food.[3, 4, 13]
- If dosing 5 times per day, the dose may be given every 4 hours whilst awake.[4]
- Tablets may be dispersed in water to facilitate oral administration in children unable to swallow tablets or for administration via an enteral tube.
- As aciclovir is practically insoluble, doses should be rounded to the nearest half or quarter tablet for doses less than a full tablet.[13]

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.[5, 7]
- Sodium chloride 0.45% and 0.9%[5, 7, 12]
- Glucose/sodium chloride solutions[7, 12]
- Hartmann's.[7, 12]

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), hepatic function and full blood picture should be monitored weekly with prolonged therapy (longer than 7 days).[3, 4]
- Monitor IV site for any signs of extravasation or phlebitis.[4]
- Patients on high dose therapy should be closely monitored for neurotoxicity.[4]
- Ensure adequate hydration during treatment to prevent precipitation of aciclovir in the renal tubules that may manifest as haematuria or renal impairment.[1, 3, 5, 7, 8]

ADVERSE EFFECTS

Common: Nausea, vomiting, diarrhoea, abdominal pain, hallucinations (with high dose), headache, encephalopathy, injection site reactions, phlebitis, photosensitivity reaction, skin reactions.[1, 6, 8]

Infrequent: agitation, anaemia, vertigo, confusion, dizziness, oedema, renal impairment, arthralgia, sore throat, abdominal pain, constipation, rash, weakness.[1, 8]

Rare: coma, seizures, neutropenia, leucopenia, thrombocytopenia, crystalluria, anorexia, fatigue, hepatitis, Stevens-Johnson syndrome, toxic epidermal necrolysis, anaphylaxis.[1, 8]

STORAGE

- Do NOT refrigerate (crystals may form and do not re-dissolve at room temperature).[7]
- All formulations should be stored below 25˚C.[6, 7]

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

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Useful resources (including related forms)

Australian Medicines Handbook – Children's Dosing Companion

This document can be made available in alternative formats on request.

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