MONOGRAPH

Aztreonam Monograph - Paediatric

Scope (Staff):	Medical, Pharmacy, Nursing
Scope (Area):	All Clinical Areas

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

QUICKLINKS

Dosage/Dosage Adjustments | Administration | Compatibility | Monitoring

DRUG CLASS

Monobactam antibiotic.[1-3]

INDICATIONS AND RESTRICTIONS

Aztreonam is active against most Gram-negative aerobes.[1] It is inactive against Gram negative anaerobic and Gram positive organisms.[1, 3] Aztreonam is generally reserved for treatment in patients with allergy and/or where other agents are unsuitable.[1]

IV: Protected (red) antibiotic

ChAMP approval is required prior to prescription.

CONTRAINDICATIONS

- Hypersensitivity to aztreonam, other monobactams or any component of the formulation.[3-7]
- The IV formulation should NOT be used for inhalation due to the arginine content which can result in airway inflammation.[8]

PRECAUTIONS

- Care should be taken when prescribing aztreonam to those with ceftazidime allergy due to the risk of cross reactivity.[1-4, 6] Aztreonam may be prescribed in selected patients with high-risk allergy to another Beta-lactam sub-class (e.g. penicillins, other cephalosporins, carbapenems) in discussion with immunology.
- In patients with a previous low risk reaction to aztreonam or another Beta-lactam (delayed rash [>1hr after initial exposure] without mucosal or systemic involvement) the risk of subsequent reaction is low. Re-challenge may be acceptable in discussion with immunology.[1]
- Each 1 gram vial of aztreonam also contains 750 mg of L-arginine. Care should be taken in neonates and young infants as they may have limited capacity to metabolise arginine.[4, 7]
- On reconstitution, aztreonam solution ranges in colour from colourless to light straw, to yellow. A slight pink tint may develop on standing. It is safe to use despite colour change.[1, 2]

FORMULATIONS

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

- 1 gram powder for injection vial

Imprest location: Formulary One

DOSAGE & DOSAGE ADJUSTMENTS

Neonates: Not routinely used in neonates, contact Infectious Diseases or Clinical Microbiology consultant for advice. The following doses have been used:

Gestation	Chronological age	IV Dose[4, 6]
< 34 weeks gestation	< 7 days	30 mg/kg/dose given 12 hourly
	≥ 7 days	30 mg/kg/dose given 8 hourly
≥ 34 weeks gestation	< 7 days	30 mg/kg/dose given 8 hourly
	≥ 7 days	30 mg/kg/dose given 6 hourly

IV and IM:

Children ≥ 4 weeks to < 2 years:

- **Usual dose:** 30 mg/kg/dose (to a maximum of 2 grams) every 6 to 8 hours.[1, 3, 9]

Children ≥ 2 years:

- **Usual dose:** 30 to 50 mg/kg/dose (to a maximum of 2 grams) every 6 to 8 hours.[1, 3, 9]
- **Cystic Fibrosis:** 50 mg/kg/dose (to a maximum of 2 grams) 6 to 8 hourly.[1, 3]

Dosing in Overweight and Obese Children: There is minimal information available, consider using doses at the upper end of the dosage range in discussion with Infectious Diseases (e.g. 6 hourly dosing) for obese patients.[10]

Renal impairment:

eGFR calculator

eGFR	Dose recommendation[6]
≥ 30 mL/minute/1.73m^2	normal dosing
≥10 to <30 mL/minute/1.73m^2	15 - 20 mg/kg/dose (to a maximum of 2 grams) given 8 hourly.
< 10 mL/minute/1.73m^2	7.5 - 10 mg/kg/dose (to a maximum of 2grams) given 12 hourly

Hepatic impairment:

Minimal information available regarding dose adjustment, consider a 20 - 25% reduction in dose in patients with chronic hepatic impairment with cirrhosis (especially in patients with alcoholic cirrhosis) and concomitant renal impairment. Use with caution and regularly monitor liver function.[3, 4, 7]

RECONSTITUTION & ADMINISTRATION

IV reconstitution:

- Reconstitute each vial with the volume of water for injection in the table below and shake vigorously. The vial contains approximately 0.3 mL overage. Further dilution with a compatible fluid may be required.[2, 11]

Vial strength	Volume of water for injection required[2, 11]	Resulting concentration[2]
1 gram	9.1 mL (powder volume 1.2 mL)	100 mg/mL (final volume 10.35 mL)

IM reconstitution:

- Reconstitute each vial with the volume of water for injection in the table below and shake vigorously.[2, 11]
- Aztreonam should NOT be mixed with local anaesthetic for IM injection.[6]

Vial strength	Volume of water for injection required[2, 11]	Resulting concentration[11]
1 gram	2.6 mL (powder volume 1.2 mL)	270 mg/mL (final volume 3.8 mL)

IV bolus:

- Give via slow IV injection over 3 to 5 minutes.[1, 2, 6, 11]

IV infusion:

- Dilute with compatible fluid to a final concentration of 20 mg/mL or weaker and infuse over 20 to 60 minutes.[1, 2, 11]

IM injection:

- Administer doses of up to 1 gram via deep injection into a large muscle mass. Refer to Intramuscular injections (internal WA Health link)

COMPATIBILITY *(LIST IS NOT EXHAUSTIVE)*

Compatible fluids:

- Sodium chloride 0.9%[2, 7, 11]

Compatible fluids at a lower concentration of 20 mg/mL[11]:

- Glucose 5% and 10%
- Glucose/sodium chloride solutions
- Hartmann's
- Mannitol 5% and 10%
- Ringer's[11]

Compatible at Y-site:

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

MONITORING

- Renal, hepatic and haematological function should be monitored weekly with prolonged therapy (i.e. longer than 7 days).[4-6]
- Glucose levels should be monitored in neonates and infants due to the potential exaggerated response to the arginine content of the preparation which may result in altered glucose homeostasis.[4]

ADVERSE EFFECTS

Common: rash, diarrhoea, nausea, vomiting, fever, taste disturbance, transient increases in liver aminotransferases, eosinophilia, thrombophlebitis at injection site.[1]

Infrequent: headache, dizziness, abdominal cramps and bloating, oral ulceration[1]

Rare: anaphylaxis, toxic epidermal necrolysis, *Clostridioides difficile*-associated disease, gastrointestinal bleeding, prolonged bleeding time, thrombocytopenia, neutropenia, hepatitis, jaundice, hypotension, chest pain, dyspnoea, seizures, anaemia, asthenia, breast tenderness, chest pain, confusion, diplopia, insomnia, leucocytosis, myalgia, paraesthesia, tinnitus.[1, 3]

STORAGE

- Store the 1 g powder for injection vial below 30ºC.[2, 7]
- Products prepared by Pharmacy Compounding Services (PCS) should be stored between 2 and 8ºC.[2]

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 **aztreonam**. 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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