MONOGRAPH

Meropenem 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	Compability	Monitoring

DRUG CLASS

Carbapenem antibiotic.[1-3]

INDICATIONS AND RESTRICTIONS

Meropenem is a broad spectrum antibiotic active against many gram-positive and resistant enteric gram-negative bacteria including *Pseudomonas aeruginosa* and extended-spectrum beta-lactamase (ESBL) producing isolates. It is NOT active against *Stenotrophomonas maltophilia* and Methicillin Resistant *Staphylococcus aureus* (MRSA).[4]

IV: Monitored (orange) antibiotic

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

CONTRAINDICATIONS

- Hypersensitivity to meropenem, any component of the formulation or patients with a high-risk allergy to carbapenems. [1, 5-8]

PRECAUTIONS

- Meropenem may be prescribed in selected patients with a high-risk allergy to another beta-lactam sub-class (e.g. some penicillins, cephalosporins) in discussion with immunology. In patients with a previous low-risk reaction to meropenem or another carbapenem (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, 6, 9]
- Avoid use in combination with sodium valproate where possible due to a significant reduction in the concentration of sodium valproate.[1, 6, 9]
- Meropenem has been known to lower the seizure threshold and may cause seizures, especially in patients with renal impairment and/or underlying neurological conditions.[9]
- Each gram vial contains 3.92 mmol (90.2 mg) of sodium.[1, 3, 7, 9]

FORMULATIONS

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

- 500 mg powder for injection

Imprest location: Formulary One

DOSAGE & DOSAGE ADJUSTMENTS

Neonates: Refer to Neonatal Medication Protocols

Children (>4 weeks to 18 years):

Usual dose (including febrile neutropenia): IV 20 mg/kg/dose (to a maximum of 1 gram) given 8 hourly.[2, 8, 9]

Severe infections (including CNS infections) and Cystic Fibrosis: IV 40 mg/kg/dose (to a maximum of 2 grams) given 8 hourly.[2, 8, 9]

Renal impairment:

eGFR calculator

eGFR	**Dose recommendation**[6, 8, 9]
≥ 50 mL/minute/1.73m^2	No dose adjustment necessary
≥ 26 to < 50 mL/minute/1.73m^2	100% of the normal dose 12 hourly
≥ 10 to < 26 mL/minute/1.73m^2	50% of the normal dose 12 hourly
< 10 mL/minute/1.73m^2	50% of the normal dose 24 hourly

Hepatic impairment:

No dosage reductions are required in hepatic impairment.[8, 9]

Dosing in Overweight and Obese Children: Dose based on measured body weight.[10]

RECONSTITUTION & ADMINISTRATION

IV reconstitution[11]

Vial strength	Volume of water for injection required	Resulting concentration	Powder volume
500 mg	9.6 mL	50 mg/mL	0.4 mL
1 gram	19.1mL	50 mg/mL	0.9 mL

IV injection:

- Reconstitute to a concentration of 50 mg/mL and give via slow IV injection over 3 to 5 minutes.[6, 8, 9]

IV infusion (preferred for doses of 40 mg/kg)**:**

- After reconstitution, dilute to a suitable volume with compatible fluid and infuse over 15 to 30 minutes. [8, 9]
- Meropenem is also suitable for extended infusion. In critically unwell patients the required intermittent dose can be given over 3 hours.[3]

COMPATIBILITY *(LIST IS NOT EXHAUSTIVE)*

Compatible fluids:

- Sodium chloride 0.9%
- Glucose 5%
- Glucose/sodium chloride solutions [3, 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).[1, 6, 8]

ADVERSE EFFECTS

Common: thrombocytosis, abnormal liver function tests and lactate dehydrogenase, nausea, pain, vomiting, diarrhoea, abdominal pain, headache and injection site reactions, inflammation, skin reactions.[1, 6]

Infrequent: *Clostridioides difficile*-associated disease, itch, rash, eosinophilia, paraesthesia, urticaria,.[1]

Rare: seizures, thrombocytopenia, thrombophlebitis, paraesthesia, leucopenia, neutropenia, agranulocytosis, severe cutaneous adverse reactions (SCARs), anaphylaxis, seizures, haemolytic anaemia, multi-organ hypersensitivity syndrome.[1, 6]

STORAGE

- Store vials below 25˚C.[3, 5]
- Store syringes prepared by PCS between 2 – 8 ˚C[3]

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 **meropenem**. 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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