

# Louth: Antimicrobial Guidelines - Louth Hospitals: Antimicrobial Guidelines: Neonatal - ■Meropenem IV

## Neonatal - Meropenem IV

Meropenem is a broad-spectrum carbapenem antibiotic [1]. It is a restricted antimicrobial in LH and should only be prescribed following consultation with the Clinical Microbiologist.

### MEDICATION SAFETY ISSUES

- Meropenem is a beta-lactam antibiotic. Avoid if history of immediate hypersensitivity reaction to beta-lactam antibacterials (e.g. penicillins or cephalosporins). Use with caution in patients with sensitivity to beta-lactam antibacterials [2,3].
- Incompatible with Aciclovir, Amphotericin B, Calcium Gluconate, Metronidazole, Sodium Bicarbonate and Zidovudine [1].

### USES

Treatment of multi-drug resistant infection caused by certain gram-negative and gram-positive organisms, hospital-acquired septicaemia and meningitis [2]. Not licensed for use in children < 3 months of age [3].

### PRESENTATION

Meropenem 500 mg Powder for Solution for Injection or Infusion [6].

### DOSAGE [3,4]

Age	Dose	Interval
Neonate <7 days	40mg/kg	Every 12 hours
Neonate 7 – 28 days	40mg/kg	Every 8 hours
Child 1 to 3 months	40mg/kg	Every 8 hours

### RECONSTITUTION [3,7]

**NB. There are TWO STEPS for reconstitution. BOTH Step 1 and Step 2 below must be followed.**

**Step 1 :** Reconstitute 500mg vial with 9.5mL WFI (Displacement volume 0.5mL) to give 50mg/mL. The displacement value of 0.5mL is for Hikma/Demo/Noridem brands (Fannin) of Meropenem 500mg. Check the displacement value if a different brand is used.

**Step 2 :** Further dilute 4mL of this solution with 6mL sodium chloride 0.9% or glucose 5% to a final volume of 10mL. The resulting solution contains meropenem 20mg/mL.

### ADMINISTRATION

Administer as an IV infusion over 30 minutes.

### SAMPLE CALCULATION

A 10 day old baby with meningitis weighing 2.3kg. Dose = 40mg/kg = 92mg every 8 hours.

Reconstitue meropenem as above to a solution containing 20mg/mL.

Withdraw 4.6mL (92mg) and administer by IV infusion over 30 minutes.

### STORAGE

After reconstitution the solution should be used immediately. The time interval between the beginning of reconstitution and the end of intravenous infusion should not exceed 1 hour [6].

### MONITORING

- Monitor renal, hepatic, and hematologic function tests [8].
- Dose reduction may be required in renal impairment – refer to BNFC and seek advice [3].
- Observe for changes in bowel frequency (Pseudomembranous colitis has been reported with the use of meropenem) [4].

## ADVERSE EFFECTS

Nausea, vomiting, diarrhoea (antibiotic-associated colitis reported), abdominal pain, disturbances in liver function tests, headache, thrombocytopenia, rash, pruritus; *less commonly* paraesthesia, eosinophilia, thrombocytopenia, leucopenia; *rarely* convulsions; also reported haemolytic anaemia, positive Coombs' test, Stevens-Johnson syndrome, toxic epidermal necrolysis [3].

## REFERENCES

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3. British Medical Association, Royal Pharmaceutical Society of Great Britain, Royal College of Paediatrics and Child Health, et al. BNF for Children. London: BMJ Group, Pharmaceutical Press and RCPCH Publications Limited; 2020. Available from [www.medicinescomplete.com](http://www.medicinescomplete.com) , accessed 23/11/2020.
4. Children's Health Ireland. Paediatric Formulary. Meropenem Monograph. Available via smartphone application, accessed 23/11/2020.
5. Takemoto C. Paediatric and neonatal dosage handbook. 18<sup>th</sup> Edition. Lexicomp, 2011 – 2012.
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7. Medusa Injectable Drugs Guide. Meropenem Intravenous – Paediatric Monograph, 2018. Available from [www.medusa.wales.nhs.uk](http://www.medusa.wales.nhs.uk) , accessed 23/11/2020.
8. Gray A et al. Injectable Drugs Guide. London: Pharmaceutical Press; 2020. Available from [www.medicinescomplete.com](http://www.medicinescomplete.com) , accessed 23/11/2020.

## Summary of Changes from Previous Versions

Date	Change
Feb 2021: Rev. No. 2	<p>Updated based on Rotunda Meropenem Monograph Mar 2019. Changes to OLOL monograph:</p> <ul style="list-style-type: none"> <li>• Addition that meropenem is restricted in LH and should only be prescribed following consultation with the clinical microbiologist.</li> <li>• Caution on use in patients with previous reaction to beta-lactams reworded as per current BNFC wording.</li> <li>• Dose for child 1 to 3 months changed from 20 – 40mg/kg to 40mg/kg as per Rotunda monograph. Doses referenced to BNFC also.</li> <li>• References updated.</li> </ul>
June 2017: Rev. No. 1	<p>Meropenem Hikma Fannin brand stocked in OLOL. Displacement value changed to 0.5ml and calculation updated.</p>
Jan 2015	<p>This is the first version of this guideline. It is based on the Rotunda Hospital Neonatal Monograph for Meropenem, Doc. No. 1, Revision No. 0, date of issue 10/11/14.</p> <p>Changes in OLOL monograph compared to the Rotunda monograph:</p> <ul style="list-style-type: none"> <li>• Medication Safety: Do not use if previous severe hypersensitivity reaction to penicillin as per BNF for Children (“severe hypersensitivity” added)</li> <li>• Uses: added that meropenem not licensed for children under 3 months</li> <li>• Dose: added dosing for children 1 to 3 months</li> <li>• Reconstitution: Further dilution added to give a standard concentration of 20mg/mL for all doses. BNF for Children advises 1 – 20mg/mL.</li> <li>• Monitoring: added that dose reduction may be required for renal impairment</li> <li>• Adverse Effects: full list from BNF for Children included.</li> </ul>