MONOGRAPH

Erythromycin 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

Macrolide antibiotic.[1]

INDICATIONS AND RESTRICTIONS

Erythromycin has a broad spectrum of activity against Gram-positive cocci, *Corynebacterium* species, Gram-negative cocci, and *Legionella*, *Mycoplasma* and *Chlamydia* species, as well as some Gram-positive and Gram-negative anaerobic bacteria and *Bordetella pertussis*.[2]

Oral: Unrestricted (green) antibiotic

This is not a restricted agent. Follow standard ChAMP guidelines where appropriate.

IV: Monitored (orange) antibiotic

- If the use is consistent with a standard approved indication, this must be communicated to ChAMP by documenting that indication on all prescriptions (inpatient and outpatient).
- 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.

CONTRAINDICATIONS

- Hypersensitivity to erythromycin, other macrolide antibiotics or any component of the formulation.[1, 3]
- All formulations of erythromycin are contraindicated in patients receiving: astemizole, pimozide, terfenadine, cisapride, atorvastatin, lovastatin, simvastatin, ergotamine and/or dihydroergotamine.[1, 3]

PRECAUTIONS

- Erythromycin has been shown to prolong the QT interval; the risk is increased if administered via the IV route at a rapid infusion rate, in patients with proarrhythmic conditions or patients with uncorrected electrolyte imbalance.[1-4]
- Erythromycin is a potent inhibitor of cytochrome P450 enzyme CYP3A4 and has many clinically relevant drug interactions.[1-3]
- Erythromycin should be used cautiously in neonates due to the risk of pyloric stenosis.[1, 3, 4]
- Erythromycin should be used cautiously in patients with hepatic impairment as it may worsen the impairment.[1]
- Patients with renal impairment may be at an increased risk of erythromycin-associated hearing loss - use with caution.[1]
- Erythromycin suspension contains aspartame - take care in patients with phenylketonuria.[1]
- Erythromycin may aggravate myasthenia gravis.[1, 4]

FORMULATIONS

Listed below are products available at PCH. Other formulations may be available; check with pharmacy if required:

- 250 mg capsules (erythromycin base)
- 400 mg/5 mL oral suspension (erythromycin as erythromycin ethyl succinate)
- 1 g powder for reconstitution (erythromycin lactobionate)

Imprest location: Formulary One

DOSAGE & DOSAGE ADJUSTMENTS

Neonates: Refer to Neonatal Medication Protocols

Doses below are expressed as Erythromycin base. Adult data suggests differences in absorption such that 250mg erythromycin base = 400mg erythromycin as erythromycin ethyl succinate.[1, 3]

However, in paediatric patients, the weight based dosing is often used interchangeably between the formulations[3] as the difference in bioavailability of the different salts is clinically insignificant.[3, 5]

Bacterial infections:

Oral

- **≥ 4 weeks:** 30 to 50 mg/kg/DAY in three or four divided doses. Maximum of 4 grams per DAY.[3, 6, 7]

IV

- **≥ 4 weeks:** 15 to 20 mg/kg/DAY in four divided doses. Maximum of 4 grams per DAY.[3, 6]

Pertussis treatment and prevention:

Oral:

≥ 4 weeks: 10 mg/kg/dose (to a maximum of 250 mg) given 6 hourly for seven days.[1, 7]

Prevention of recurrent rheumatic fever:

Oral:

- Use in cases of confirmed penicillin allergy.
- **≥ 4 weeks:** 250 mg every 12 hours.[1, 7]

Pro-kinetic effect:

Oral

- **≥ 4 weeks:** 3 mg/kg/dose (to a maximum of 250 mg) 6 hourly.
- Dose may be increased to 10 mg/kg/dose (to a maximum of 250 mg) 6 hourly.[3, 8]

IV

- **≥ 4 weeks:** 3 mg/kg/dose (to a maximum of 250 mg) given every 6 to 8 hours.[8]

Renal impairment:

- eGFR calculator
- Use erythromycin with caution in patients with moderate to severe renal impairment due to the increased risk of ototoxicity.[4]
- eGFR ≥ 10 mL/minute: normal dosing
- eGFR < 10 mL/minute: 10-17 mg/kg/dose given up to 8 hourly.[3]

Hepatic impairment:

- No dose adjustments are recommended however erythromycin should be used with caution as it may worse hepatic impairment.[3, 4]

RECONSTITUTION & ADMINISTRATION

Reconstitution - IV:

- Reconstitute the 1 gram vial with 20 mL of water for injection to produce a 50 mg/mL solution.[9]
- This should be further diluted with a compatible fluid to produce a final concentration of 1-5 mg/mL prior to administration.[9]

Reconstitution - Oral:

- Reconstitute with water as follows: tap bottle until all powder flows freely; add approximately half the total volume of water as per the manufacturer's instructions for reconstitution and shake vigorously to suspend powder, add the remaining volume of water to make up to the final volume.[6]
- Store reconstituted suspension between 2-8 °C and discard 10 days after reconstitution.[6]

Administration:

IV infusion:

- Dilute with compatible fluid to a final concentration of between 1 mg/mL and 5 mg/mL and infuse over 20 to 60 minutes.[4, 9]
- Dilute solutions of 1 mg/mL or less are preferred due to the risk of venous irritation and pain.[9]
- Patients who are fluid restricted may have a concentration of 10 mg/mL administered via a central line.[4, 9]

Oral (capsules):

- The oral capsules (erythromycin base) are best absorbed on an empty stomach, either 1 hour before or 2 hours after food. If stomach upset occurs, they can be taken with food.[3]

Oral (suspension):

- The oral suspension may be taken without regard to food intake.[3]

COMPATIBILITY *(LIST IS NOT EXHAUSTIVE)*

Compatible fluids:

- Sodium chloride 0.9%
- Hartmann's[9]

Compatible at Y-site:

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

INCOMPATIBLE drugs:

- IV erythromycin is incompatible with glucose containing solutions.[9]

MONITORING

- Liver function tests should be performed regularly with prolonged use of erythromycin and patients should be observed for changes in bowel frequency.[3]
- With IV administration, blood pressure and heart rate (and ECG in at risk patients) should also be monitored.[3, 8]
- Extravasation of IV erythromycin can cause severe tissue damage. Infusion sites must be monitored and the infusion ceased if there is any sign of extravasation. The infusion rate should be slowed if there is any pain at the infusion site.[9]

ADVERSE EFFECTS

Common: nausea, vomiting, diarrhoea, loss of appetite, altered taste, abdominal pain and cramps, candida infections, insomnia, paraesthesia.[1, 4]

Infrequent: anxiety, thrombophlebitis, torsades de points (more common with faster infusion rates), rash, headache, constipation.[1, 4]

Rare: myasthenia-like syndrome, infantile hypertrophic pyloric stenosis, hypersensitivity, psychiatric disturbances, hallucination, ototoxicity, *Clostridioides difficile* associated disease, cholestatic hepatitis, tubulointerstitial nephritis, pancreatitis, prolonged QT interval, blood dyscrasias (e.g. thrombocytopenia).[1, 4]

STORAGE

- Store vials below 25 ˚C[6, 9]
- Store the capsules below 25 ˚C[6]
- Dry powder for suspension should be stored below 25 ˚C. Once reconstituted, it should be kept between 2 and 8 ˚C and discarded after 10 days.[6]

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 **erythromycin**. 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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