MONOGRAPH

Metronidazole 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

Nitroimidazole antibiotic.[1-3]

INDICATIONS AND RESTRICTIONS

Metronidazole is active against anaerobic bacteria and some protozoa (e.g. giardia and trichomonas). It is commonly used in the treatment of *Clostridioides difficile* associated disease.[4]

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 metronidazole, tinidazole or any component of the formulation.[4, 5]

PRECAUTIONS

- Caution should be taken in any patient with a history of blood dyscrasias due to the risk of leucopenia – especially during extended treatment (>10 days) or high dose treatment.[4, 6] If leucopenia or abnormal neurological signs occur, discontinue metronidazole immediately.[6]
- Monitor for peripheral and central neuropathy (such as paresthesia, ataxia, dizziness, convulsive seizures) with prolonged courses and/or high doses of metronidazole (>10 days). Neuropathy has been reported with cumulative doses of more than 30grams.[2, 5]
- Ethanol (**which may be contained in other liquid preparations of medications**) should be avoided with metronidazole and for 24 hours after the last dose of metronidazole due to the risk of disulfiram-like reactions e.g. nausea, vomiting, headache, palpitations.[5, 6]
- Avoid the use of metronidazole with fluorouracil due to the increased risk of fluorouracil toxicity.[4]
- Each 100mL of the DBL and Baxter brand of the IV solution contains 13.5mmol of sodium. Each 100mL of the Claris and Sandoz brands contain 13.9mmol of sodium [1] This large amount of sodium can promote sodium retention and exacerbate peripheral oedema.[6]
- QT prolongation has been reported with metronidazole use. Use metronidazole with caution in patients with conditions that may increase the risk of QT prolongation.[6]

FORMULATIONS

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

- 40mg/mL oral suspension
- 200mg tablets
- 500mg/100mL solution for infusion
- 500mg suppositories (refer to AMH CDC for dosing information)

Imprest location: Formulary One

DOSAGE & DOSAGE ADJUSTMENTS

Neonates: Refer to Neonatal Medication Protocols

IV - Children ≥ 4 weeks:

- **Usual dose:** 12.5mg/kg/dose (to maximum of 500mg) 12 hourly[4, 7]
- **Severe infections (including Clostridial or CNS infections):** 12.5mg/kg/dose (to a maximum of 500 mg) 8 hourly[4, 7]

Note: oral administration is preferred for *Clostridioides difficile* associated disease.[8]

- **Surgical Prophylaxis (see individual surgical prophylaxis guidelines):** 12.5mg/kg (to a maximum of 500mg) as a single dose within 120 minutes prior to surgical incision.[3, 7]

Oral - Children ≥ 4 weeks:

- **Usual dose:** 10mg/kg/dose (to a maximum of 400mg) 12 hourly[4, 7]
- **Severe infections (including *Clostridioides difficile* associated disease):** 10mg/kg/dose (to a maximum of 400mg) 8 hourly[4, 7]

Oral metronidazole is the preferred route of administration for the treatment of *Clostridioides difficile* associated disease. Intravenous administration should be reserved for those cases in which oral therapy is inappropriate.[8]

- **Amoebiasis:** 15mg/kg/dose (to a maximum of 800mg) 8 hourly.[4, 7]
- **Giardiasis:** 30mg/kg/dose (to a maximum of 2000mg) once daily for three days. Alternatively, use 10mg/kg/dose (to a maximum of 400mg) 8 hourly for five to seven days.[4, 7]

Renal impairment:

- eGFR calculator (Google Chrome®)

Dose reduction is generally not required in cases of significant renal impairment. However, metabolites may accumulate in severe impairment possibly increasing the risk of adverse effects. Contact Pharmacy for advice.[3]

- For patients with a creatinine clearance less than 10mL/minute, consider dosing at a maximum of 16mg/kg/DAY in 4 divided doses.[2, 9, 10]

Hepatic impairment:

- In severe hepatic impairment (Child Pugh Class C), reduce the total daily dose to 50% as there may be accumulation of metronidazole and its metabolites.[2, 5]
- Single doses for surgical prophylaxis do not require adjustment.[2, 5]

ADMINISTRATION

IV Administration:

- Administer undiluted solution over 20 to 30 minutes at a maximum rate of 25mg/minute. The solution may be further diluted to 1 in 5 or greater with a compatible fluid if necessary.[1]
- Metronidazole is incompatible with aluminium, and must not be administered with equipment containing aluminium components (e.g. needles and cannula hubs).[1, 5, 9]

Oral Administration:

- Administer tablets with or soon after food to reduce stomach upset.[4]
- Administer oral liquid 1 hour before food to assist in absorption.[4]
- Metronidazole has good oral (70% - 90%) bioavailability – consider switching to oral dosing as soon as clinically appropriate. Good CNS levels are seen with oral administration.[1, 4, 11]

COMPATIBILITY *(LIST IS NOT EXHAUSTIVE)*

Compatible fluids:

- Glucose 5%
- Sodium chloride 0.9%
- Glucose/sodium chloride solutions[1]

Note: Glucose 10% is not recommended due to the high osmolarity of the resulting solution.[1]

Compatible at Y-site:

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

MONITORING

Monitor full blood picture (especially differential leucocyte count) and liver function weekly if treatment is to extend beyond 10 days. Monitor for neurotoxic reactions (such as peripheral neuropathy, numbness, tingling, pain and/or weakness of the hands or feet) regularly.[2, 4, 6, 9]

ADVERSE EFFECTS

Common: thrombophlebitis (with IV use), nausea, anorexia, abdominal pain, vomiting, dry mouth, diarrhoea, metallic taste, myalgia, CNS effects (e.g. dizziness, headache).[4]

Infrequent: furry tongue, glossitis, stomatitis, paraesthesia

Rare: peripheral neuropathy, pancreatitis, hepatitis, optic neuritis, thrombocytopenia, *Clostridioides difficile* associated disease, hypersensitivity reactions (e.g. rash, itch, flushing and fever), anaphylactic shock, angioedema, Stevens-Johnson syndrome, leucopenia, seizures and dark urine.[4, 10]

Leucopenia, peripheral neuropathy and CNS toxicity are more likely with high-dose and/or prolonged treatment.[4]

STORAGE

- **IV:** Store below 25°C (do not refrigerate) and protect from light. Exposure to normal room light during the administration process does not result in decomposition.[1, 6]
- **Suspension:** Store below 25°C and protect from light.[6]
- **Oral tablets:** Store below 30°C and protect from light.[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 **metronidazole**. 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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File Path:	W:\Paediatrics\PMH\ChAMP\Monographs\FINALISED\00 Current version 00		
Document Owner:	Head of Department – Infectious Diseases		
Reviewer / Team:	Children's Antimicrobial Management Program Pharmacist		
Date First Issued:	August 2013	**Last Reviewed:**	September 2021
Amendment Dates:	September 2021	**Next Review Date:**	September 2024
Approved by:	Drug and Therapeutics Committee	**Date:**	September 2021
Endorsed by:	Chair, Drugs and Therapeutics Committee	**Date:**	September 2021
Standards Applicable:	NSQHS Standards:  NSMHS: N/A Child Safe Standards: N/A		