MONOGRAPH

Rifampicin 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

Rifamycin antibiotic.[1, 2]

Rifampicin is a High Risk Medicine.

INDICATIONS AND RESTRICTIONS

- Rifampicin is used in combination with other agents in the treatment of:
  - *Mycobacterium tuberculosis* and other mycobacterial infections[2, 3]
  - Methicillin Resistant *Staphylococcus aureus* (MRSA) and other complicated Staphylococcal infections[2, 3]
  - Post exposure prophylaxis for invasive meningococcal disease or *Haemophilus influenza* type b[2, 3]
- Rifampicin has also been used for the management of pruritus from severe cholestasis.[2]

All Formulations: Restricted (Red) antibiotic

- ChAMP approval is required prior to prescription. If prescribed for pruritus from severe cholestasis ChAMP approval is not required.
- Some rifampicin products are **Special access scheme products**. SAS application(s) must be completed in accordance with the TGA regulations.

CONTRAINDICATIONS

- Hypersensitivity to rifampicin, rifamycin antibiotics or any component of the formulation.[2-6]
- Rifampicin is contraindicated in jaundice (unless being prescribed for pruritus from severe cholestasis).[2, 6]
- Contraindicated in acute porphyrias.[7, 8]

PRECAUTIONS

- Rifampicin is a strong enzyme inducer of cytochrome P450 and interacts with many medications, check for possible interactions prior to prescribing.[3, 4, 6]
- Several anti-retroviral medications used for the treatment of HIV interact with rifampicin. In the context of HIV-TB co-infection advice should be sought from Infectious Diseases specialist to optimise treatment regimens.[2, 3, 6]
- Bacterial resistance occurs rapidly if used as a single agent in active infection and therefore rifampicin should always be used as part of a multidrug regimen. Monotherapy is standard for prophylaxis of close contacts of meningococcal disease or *Haemophilus influenza* type B.[1, 2]
- Liver function should be assessed before treatment with rifampicin and rifampicin used with caution in patients with pre-existing liver impairment and treatment with other hepatotoxic medications.[2, 3, 6]
- In some cases, hyperbilirubinaemia resulting from competition between rifampicin and bilirubin for excretory pathways of the liver can occur in the early days of treatment. An isolated rise in bilirubin and/or transaminase level is not always an indication for interrupting treatment. The patient's clinical condition, repeat test results and trends in levels should be considered when deciding if cessation is warranted.[6]
- Rifampicin has been associated with reports of interstitial lung disease which can be fatal. Patients who present with acute onset or unexplained worsening of pulmonary symptoms and fevers should be carefully assessed. If interstitial lung disease is confirmed, rifampicin should be immediately discontinued.[8]
- Use of rifampicin can result in red or orange discolouration of urine, faeces, saliva, sputum, sweat and tears. Soft contact lenses may be permanently discoloured.[3, 4, 6]
- Extravasation of IV rifampicin may cause local irritation and inflammation.[4, 9]
- Rifampicin syrup contains sodium metabisulfite which may cause allergic reactions in susceptible patients.[6]

FORMULATIONS

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

- 150 mg and 300 mg capsules.
- 100 mg/5mL oral liquid (60 mL bottle).
- 600 mg powder for injection vial (includes 10 mL supplied water for injection for use as a diluent).
- Rifampicin 75 mg, isoniazid 50 mg dispersible tablets (SAS)

- Rifampicin 75 mg, isoniazid 50 mg, pyrazinamide 150 mg dispersible tablets (SAS)

Imprest location: Formulary One

DOSAGE & DOSAGE ADJUSTMENTS

Neonates: Refer to Neonatal Medication Protocols

Used only as part of a multidrug regimen. The potential for significant drug interactions must be considered before commencing therapy.[3, 6]
Monotherapy is suitable for prophylaxis of close contacts of meningococcal disease or *Haemophilus influenza* type B.[2]

Children ≥ 4 weeks:
IV:

- **Usual dose:** 10 mg to 20 mg/kg/DAY (to a maximum of 600 mg) in 1 to 2 divided doses.[1, 2, 4, 7]
- Rifampicin has excellent oral bioavailability – consider switching to oral dosing as soon as clinically appropriate.[2, 9]

Oral:

- **Usual dose:** 10 mg to 20 mg/kg/DAY (to a maximum of 600 mg) in 1 to 2 divided doses.[1, 2, 7]
- **Tuberculosis:** 15 mg/kg/DAY (range 10 mg to 20 mg/kg/DAY to a maximum of 600 mg) once daily.[2, 7]
    - Weight should be monitored during treatment and doses adjusted accordingly.
    - Doses can be rounded to the nearest mL or nearest full capsule if within the range of 10 mg to 20 mg/kg to facilitate administration.[10]
    - Dispersible fixed dose combinations of rifampicin with isoniazid or rifampicin with isoniazid and pyrazinamide are available via SAS.
    - Recommended doses for fixed dose combinations for tuberculosis (note: additional agents may also be required).

Weight	**Intensive phase**	**Continuation phase[11]**
	Isoniazid 50 mg, rifampicin 75 mg and pyrazinamide 150 mg	Isoniazid 50 mg, rifampicin 75 mg
≥ 4 kg to < 8 kg	1 tablet once daily	1 tablet once daily
≥ 8 kg to < 12 kg	2 tablets once daily	2 tablets once daily
≥ 12 kg to < 16 kg	3 tablets once daily	3 tablets once daily
≥ 16 kg to < 25 kg	4 tablets once daily	4 tablets once daily
≥ 25 kg	Standard / single agent formulations recommended	

- **Pruritis from severe cholestasis:** 10 mg/kg/DAY (to a maximum of 600mg) in 1 to 2 divided doses.[1, 7]
- **Meningococcal prophylaxis:**

  See Medical Prophylaxis Guideline and Provision of chemoprophylaxis or topical therapy to household contacts of communicable diseases for further information.

  - **Term neonate < 4 weeks old:** 5 mg/kg/dose 12 hourly for TWO days.[2, 7]
  - **Child ≥ 4 weeks of age:** 10 mg/kg/dose (to a maximum of 600 mg) 12 hourly for TWO days.[2]
- ***Haemophilus influenzae* (type b) prophylaxis:**
  - **Term neonate < 4 weeks old:** 10 mg/kg/dose once daily for FOUR days.[1, 2, 7]
  - **Child ≥ 4 weeks of age:** 20 mg/kg/dose (to a maximum of 600 mg) once daily for FOUR days.[1, 2, 4, 7]

Dosing in Overweight and Obese Children: Dose based on total body weight.[12]

Renal impairment:

- eGFR calculator
- There is limited information available regarding the doses required in renal impairment. Dose adjustment is not likely to be required based on adult data.[3, 4, 10]
- Rifampicin should still be used with caution in patients on doses above 10 mg/kg/day.[7]

Hepatic impairment:

- Use of rifampicin is contraindicated in jaundice (unless being prescribed for pruritus from severe cholestasis).[2, 6]
- It should be used cautiously in liver impairment due to the risk of worsening liver function with increased plasma levels and a prolonged rifampicin clearance.[3]
- Treatment should be ceased if hepatotoxicity occurs during therapy.[3]
- The daily dose in liver failure should not exceed 8 mg/kg/day.[7, 8]
- Patients should be advised to discontinue treatment and seek immediate medical attention if symptoms such as fever, persistent nausea, vomiting, malaise or jaundice develop.[6, 7]

RECONSTITUTION & ADMINISTRATION

IV reconstitution:

- Reconstitute the 600 mg vial with 10 mL of the supplied diluent and swirl gently to make a final concentration of 60 mg/mL.[4, 9]
- Further dilute with compatible fluid to a final concentration of 6 mg/mL or weaker prior to administration.[9]

IV infusion:

- Infuse over 30 minutes to 3 hours.[4, 5, 9]

Oral:

- Oral rifampicin is best administered on an empty stomach, approximately half an hour before food or 2 hours after food.[1-4]
- Fixed dose combination tablets are recommended to be dispersed in 50 mL of water and consumed within 10 minutes of dissolving. If this volume of fluid is not tolerated, smaller volumes can be used.[11] A minimum volume of 2.5 mL per tablet is required, however the taste is reported to be unpleasant with smaller volumes.[13]

COMPATIBILITY *(LIST IS NOT EXHAUSTIVE)*

Compatible fluids:

- Glucose 5%
- Sodium Chloride 0.9%.[9]

Compatible at Y-site:

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

MONITORING

- In children with an underlying condition or if there is clinical suspicion of deranged levels, baseline renal, hepatic and haematological function tests should be obtained prior to treatment. Regular monitoring should occur throughout treatment.[6]
- Regular monitoring of hepatic function should be conducted, especially in cases of pre-existing liver impairment. Treatment should be ceased immediately if symptoms of hepatotoxicity develop.[2, 4]
    - Mildly deranged hepatic function may be tolerated but this should be discussed with Infectious Diseases if therapy is continued.[2]
    - Rises in AST up to 3 to 5 times the upper limit of normal may be tolerated if the patient remains asymptomatic and is not jaundiced.[2]
- Haematological function should be measured regularly throughout treatment and treatment stopped if thrombocytopenia occurs. Coagulation should be assessed in patients at risk of vitamin K deficiency.[2, 3, 7]

ADVERSE EFFECTS

Common: orange-red colouration of body fluids, staining of soft contact lenses, increased hepatic enzymes, nausea, vomiting, cramps, rash, arthralgia and myalgia (in the first weeks), headache, dizziness, drowsiness, ataxia, confusion, fatigue and weakness may occur.[2, 6, 7]

Infrequent: self-limited flushing and itching (unrelated to an allergy, more common with intermittent doses), hepatotoxicity (more common if isoniazid is also used).[2, 7]

Rare: thrombophlebitis (IV), thrombocytopenia (usually reversible on stopping, more common with intermittent regimens), hypoprothrombinaemia, psychosis, hepatitis and *Clostridioides difficile* associated disease, multi-organ hypersensitivity syndrome.[2, 7]

STORAGE

IV Vial: store below 25 °C. Protect from light.[6, 9]

Oral capsule: store below 25 °C.[3, 6]

Fixed dose combination tablets: store below 25°C[8]

Oral syrup: store below 25 °C.[3, 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 **rifampicin**. 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

1. Royal Australian College of General Practitioners, Pharmaceutical Society of Australia, Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists. AMH: Children's Dosing Companion. Adelaide: Australian Medicines Handbook Pty Ltd; 2022.
2. Australian Medicines Handbook. Adelaide, S. Aust.: Australian Medicines Handbook; 2023 [cited 2023 30th October]. Available from: https://amhonline-amh-net-au.pklibresources.health.wa.gov.au/.
3. Up To Date - Paediatric Drug information [Internet]. Lexicomp. 2023 [cited 2023 November 6th]. Available from: https://www-uptodate-com.pklibresources.health.wa.gov.au/contents/table-of-contents/drug-information/pediatric-drug-information.
4. Clinical Pharmacology powered by ClinicalKey [Internet]. Elsvier. 2023 [cited 2023 November 6th]. Available from: https://www-clinicalkey-com.pklibresources.health.wa.gov.au/pharmacology/.
5. IBM Micromedex [Internet]. Truven Health Analytics. 2023 [cited 2023 November 6th]. Available from: http://www-micromedexsolutions-com.pklibresources.health.wa.gov.au/micromedex2/librarian.
6. MIMS Australia. MIMS online [full product information]. St Leonards, N.S.W: CMP Medica Australia.; 2023 [cited 2023 31th October].
7. Paediatric Formulary Committee. BNF for Children: 2023. London: BMJ Group Pharmaceutical Press; 2023.
8. Electronic Medicines Compendium (emc). Surrey: DataPharm Ltd; 2023.
9. Symons K. Ermer J. (editors). Australian injectable drugs handbook. Collingwood: The Society of Hospital Pharmacists of Australia; 2022.

10. Guidelines for Tuberculosis Control in Western Australia [Internet]. Health Department of Western Australia. 2019 [cited 2023 October 27th]. Available from: https://ww2.health.wa.gov.au/-/media/Files/Corporate/general-documents/Tuberculosis/PDF/WATBCP-Guidelines-for-TB-Control.pdf.
11. World Health Organization, editor. WHO operational handbook on tuberculosis. Module 5: management of tuberculosis in children and adolescents. Geneva: WHO; 2022.
12. Hall RG, 2nd. Evolving Larger: Dosing Anti-Tuberculosis (TB) Drugs in an Obese World. Curr Pharm Des. 2015;21(32):4748-51.
13. Expert Opinion. Infectious Diseases Pharmacist. 2023.

Useful resources (including related forms)
WATBCP-Guidelines-for-TB-Control.pdf (health.wa.gov.au)
World health Organisation – Tuberculosis Guidelines

This document can be made available in alternative formats on request.

File Path:	*W:\Safety & Quality\CAHS\CLOVERS MEDICAL Pharmacy\Procedures Protocols and Guidelines\ChAMP\Word*		
Document Owner:	Head of Department – Infectious Diseases		
Reviewer / Team:	Children's Antimicrobial Management Program Pharmacist		
Date First Issued:	October 2013	Last Reviewed:	November 2023
Amendment Dates:	September 2017	Next Review Date:	December 2026
Approved by:	Medication Safety Committee	Date:	December 2023
Endorsed by:	Chair, Drug and Therapeutics Committee	Date:	December 2023
Aboriginal Impact Statement and Declaration (ISD)		Date ISD approved:	31st August 2023
Standards Applicable:	NSQHS Standards: NSMHS: N/A Child Safe Standards: N/A		

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