Wits Reproductive Health and HIV Institute

A Quick Reference to Drugs commonly used in the Management of TB

ORAL AGENTS – 1st line

NAME	**RIFAMPICIN** (Bactericidal, Sterilizing)
DOSE/KG	10 mg/kg/day
USUAL DOSE	600 mg dly
MAXIMUM DOSE	600 mg dly
CAUTION	Hepatic disease, alcoholism, porphyria, hypersensitivity to Rifampicin
COMMON SIDE EFFECTS	↑ ALT, GI , Hypersensitivity, Orange discoloration of body fluids
PAEDIATRIC DOSE	10 mg/kg/day (up to 20 mg/kg/day for TBM/Miliary TB)
RENAL DOSE	N/A
LIVER IMPAIRMENT DOSE	8 mg/kg/day
PREGNANCY	Category C
LACTATION	Amount excreted too small to harm
BUILDING A REGIMEN	High early bactericidal activity. With Isoniazid achieves greater killing than either drug alone. Resistance more rare than Isoniazid resistance

NAME	**ISONIAZID** (Bactericidal)
DOSE/KG	5 mg/kg/day (10 mg/kg/day = High dose INH)
USUAL DOSE	300 mg dly
MAXIMUM DOSE	300 mg dly
CAUTION	Hepatic disease, Epilepsy, hypersensitivity to Isoniazid, porphyria
COMMON SIDE EFFECTS	Skin rash, peripheral neuropathy, ↑ ALT, neurotoxicity, haematological effects
PAEDIATRIC DOSE	5-10 mg/kg/day (up to 15 mg/kg/day for TBM/Miliary TB)
RENAL DOSE	N/A
LIVER IMPAIRMENT DOSE	N/A
PREGNANCY	Category C
LACTATION	Monitor infant for adverse effects
BUILDING A REGIMEN	Highest early bactericidal activity. With Rifampicin achieves greater killing than either drug alone. Strain of TB may still be susceptible in certain cases of resistance depending on mutation

NAME	**PYRAZINAMIDE** (Sterilizing)
DOSE/KG	20-30 mg/kg/day
USUAL DOSE	1600 mg dly
MAXIMUM DOSE	2 g dly
CAUTION	Gout, Hepatic disease, Diabetes, Renal impairment, hypersensitivity to pyrazinamide, isoniazid, ethionamide or niacin, porphyria
COMMON SIDE EFFECTS	Hepatotoxicity, arthralgia (hyperuricaemia), GI side effects, skin rash
PAEDIATRIC DOSE	15-30 mg/kg/day (up to 40 mg/kg/day for TBM/Miliary TB)

RENAL DOSE	Use doses at lower limit of recommended range. GFR<10 ml/min - ↓dose by 50%
LIVER IMPAIRMENT DOSE	Avoid drug if possible
PREGNANCY	Category C
LACTATION	No problems with usage
BUILDING A REGIMEN	Good sterilizing activity, contributes to shortening of duration of treatment. Resistance not tested routinely

NAME	**ETHAMBUTOL** (Bacteriostatic, may be bactericidal at high doses)
DOSE/KG	15-20 mg/kg/day
USUAL DOSE	800 mg dly
MAXIMUM DOSE	1000 mg dly
CAUTION	Eye defects, renal disease or hyperuricaemia
COMMON SIDE EFFECTS	Ocular toxicity, arthralgia (hyperuricaemia), GI side effects
PAEDIATRIC DOSE	15-25 mg/kg/day (up to 15 mg/kg/day for TBM/Miliary TB)
RENAL DOSE	GFR <10 ml/min – 15 mg/kg every 48 hours
LIVER IMPAIRMENT DOSE	N/A
PREGNANCY	Max 15 mg/kg/day
LACTATION	No known adverse effects
BUILDING A REGIMEN	

ORAL AGENTS – 2st line

NAME	**ETHIONAMIDE** (Bacteriostatic)
DOSE/KG	15-20 mg/kg/day
USUAL DOSE	1000 mg dly (Split dose 250 mg mane, 750 mg nocte to minimize nausea)
MAXIMUM DOSE	1000 mg dly
CAUTION	Hepatic disease, previous hypersensitivity to Ethionamide or porphyria. Use with caution in diabetes, alcoholics, psychiatric illness, depression, hypothyroidism and epilepsy
COMMON SIDE EFFECTS	GI side effects, CNS toxicity, Hepatotoxicity
PAEDIATRIC DOSE	10 mg/kg/day
RENAL DOSE	GFR <30 ml/min or on dialysis – Decrease dose by 50%
LIVER IMPAIRMENT DOSE	N/A
PREGNANCY	Category C. Teratogenic in animals. Avoid
LACTATION	Safety not established
BUILDING A REGIMEN	

NAME	**CYCLOSERINE (AND TERIZIDONE – a derivative of Cycloserine)** (Bacteriostatic)
DOSE/KG	10-20 mg/kg/day. + Pyridoxine to prevent CNS Side effects
USUAL DOSE	500-750 mg dly or 250-500 mg bd
MAXIMUM DOSE	1000 mg dly
CAUTION	Contraindicated in psychiatric conditions, epilepsy, severe renal impairment, alcohol abuse and porphyria. Caution in elderly and those

	with renal impairment
COMMON SIDE EFFECTS	CNS toxicity (more common with Cycloserine), skin rash
PAEDIATRIC DOSE	10 mg/kg/day
RENAL DOSE	Extend dose interval and adjust by monitoring drug levels (Target – 20-30micromg/ml) GFR 10-50 ml/min – Extend dosing interval to 24 hrs GFR <10 ml/min – Extend dosing interval to 36-48 hrs
LIVER IMPAIRMENT DOSE	N/A
PREGNANCY	Use only if no alternatives
LACTATION	Give infant Pyridoxine
BUILDING A REGIMEN	Does not share cross-resistance with other anti-TB drugs

NAME	**PARA-AMINO SALICYLIC ACID (PAS)**
DOSE/KG	150 mg/kg/day or 10-12 g/day in 2 divided doses
USUAL DOSE	5 g bd
MAXIMUM DOSE	12 g/day
CAUTION	Allergy to aspirin or PAS. Avoid in advance renal impairment
COMMON SIDE EFFECTS	Anorexia, diarrhoea, hypothyroidism. Low risk of hepatitis
PAEDIATRIC DOSE	150 mg/kg/day in 2 or 3 divided doses
RENAL DOSE	Avoid
LIVER IMPAIRMENT DOSE	N/A
PREGNANCY	Avoid
LACTATION	Concentrations excreted in breast milk are low
BUILDING A REGIMEN	

FLUOROQUINOLONES – 2nd line

NAME	**LEVOFLOXACIN** (Bactericidal)
DOSE/KG	-
USUAL DOSE	750 mg dly
MAXIMUM DOSE	750 mg dly
CAUTION	As for Ciprofloxacin
COMMON SIDE EFFECTS	As for Ciprofloxacin.
PAEDIATRIC DOSE	7.5-10 mg/kg/day (Max 750 mg)
RENAL DOSE	GFR <30 ml/min – 750-1000mg 3 times/week
LIVER IMPAIRMENT DOSE	N/A
PREGNANCY	Avoid
LACTATION	Avoid
BUILDING A REGIMEN	

NAME	**OFLOXACIN** (Bactericidal)
DOSE/KG	-
USUAL DOSE	800 mg dly or 400 mg bd
MAXIMUM DOSE	800 mg dly
CAUTION	Avoid in patients with prolonged QT interval. Previous hypersensitivity

	to fluoroquinolones. Caution in patients with CNS disorders, hepatic or renal involvement and in children
COMMON SIDE EFFECTS	GI side effects, Headaches, dizziness, drowsiness, insomnia, arthralgia. Hypersensitivity
PAEDIATRIC DOSE	15-20 mg/kg/day
RENAL DOSE	GFR <30 ml/min – 800 mg 3 times/week
LIVER IMPAIRMENT DOSE	N/A
PREGNANCY	Avoid
LACTATION	Avoid
BUILDING A REGIMEN	

NAME	**CIPROFLOXACIN** (Bactericidal)
DOSE/KG	-
USUAL DOSE	500-750 mg bd (Doses at higher range preferred in TB)
MAXIMUM DOSE	750 mg bd
CAUTION	Avoid in patients with prolonged QT interval. Previous hypersensitivity to fluoroquinolones. Caution in patients with CNS disorders, hepatic or renal involvement and in children
COMMON SIDE EFFECTS	GI side effects, Headaches, dizziness, drowsiness, insomnia, arthralgia. Hypersensitivity
PAEDIATRIC DOSE	20-30 mg/kg/day in 2 divided doses
RENAL DOSE	GFR <30 ml/min – 1000-1500 mg 3 times/week
LIVER IMPAIRMENT DOSE	N/A
PREGNANCY	Avoid
LACTATION	Avoid
BUILDING A REGIMEN	

NAME	**MOXIFLOXACIN** (Bactericidal)
DOSE/KG	-
USUAL DOSE	400 mg dly
MAXIMUM DOSE	400 mg dly
CAUTION	As for Ciprofloxacin
COMMON SIDE EFFECTS	As for Ciprofloxacin
PAEDIATRIC DOSE	7.5-10 mg/kg/day (Max 400 mg)
RENAL DOSE	No dose adjustment
LIVER IMPAIRMENT DOSE	N/A
PREGNANCY	Avoid
LACTATION	Avoid
BUILDING A REGIMEN	

INJECTABLE AGENTS

NAME	**STREPTOMYCIN** (Bactericidal)
DOSE/KG	15-20 mg/kg/day IMI
USUAL DOSE	750 mg dly IMI
MAXIMUM DOSE	1000 mg dly IMI
CAUTION	Patients with renal failure, impaired hearing or vestibular defects, previous hypersensitivity to Streptomycin. Contraindicated in

	myasthenia gravis
COMMON SIDE EFFECTS	Ototoxicity, renal toxicity, hypersensitivity, skin rash
PAEDIATRIC DOSE	20-40 mg/kg/day
RENAL DOSE	GFR 10-50 ml/min – 15 mg/kg every 24-72 hours GFR <10 ml/min – 15 mg/kg every 72-96 hours
LIVER IMPAIRMENT DOSE	N/A
PREGNANCY	Can cause ototoxicity in foetus – avoid
LACTATION	No known adverse effects
BUILDING A REGIMEN	

NAME	**KANAMYCIN** (Bactericidal)
DOSE/KG	15 mg/kg/day IMI
USUAL DOSE	750-1000 mg dly IMI
MAXIMUM DOSE	1500 mg dly IMI
CAUTION	Patients with renal failure, impaired hearing or vestibular defects, previous hypersensitivity to Kanamycin. Contraindicated in myasthenia gravis
COMMON SIDE EFFECTS	Ototoxicity, renal toxicity, hypersensitivity, skin rash
PAEDIATRIC DOSE	15-30 mg/kg/day
RENAL DOSE	GFR <30 ml/min – 12-15 mg/kg 2-3 times/week
LIVER IMPAIRMENT DOSE	N/A
PREGNANCY	Avoid
LACTATION	No known adverse effects
BUILDING A REGIMEN	Vs Amikacin - As effective, less well tolerated, cheaper Vs Streptomycin - Streptomycin-resistant strains usually susceptible to Kanamycin and Amikacin

NAME	**AMIKACIN** (Bactericidal)
DOSE/KG	15-20 mg/kg/day IMI
USUAL DOSE	750-1000 mg dly IMI
MAXIMUM DOSE	1500 mg dly IMI
CAUTION	Patients with renal failure, impaired hearing or vestibular defects, previous hypersensitivity to Amikacin. Contraindicated in myasthenia gravis. Caution in neonates
COMMON SIDE EFFECTS	Ototoxicity, renal toxicity, peripheral neuropathy, hypersensitivity, skin rash
TARGET DRUG LEVELS	Peak > 30 mg/L; trough < 1 mg/L
PAEDIATRIC DOSE	<10 years – 25 mg/kg dly on first day; then 18 mg/kg dly >10 years – 20 mg/kg dly on first day; then 15 mg/kg dly
RENAL DOSE	GFR <60 ml/min – Loading dose 10 mg/kg with further doses guided by drug levels
LIVER IMPAIRMENT DOSE	N/A
PREGNANCY	Avoid
LACTATION	No known adverse effects
BUILDING A REGIMEN	Vs Kanamycin – As effective, better tolerated, more expensive

	Vs Streptomycin - Streptomycin-resistant strains usually susceptible to Kanamycin and Amikacin

Resources:

1. Schaaf H, Zumla AI et al. Tuberculosis: A Comprehensive Clinical Reference. Elsevier 2009.
2. South African Medicines Formulary. Produced by the Division of Clinical Pharmacology, University of Cape Town.