Daily Integration of AMS (DIAMS)

HSgB Paediatric Antimicrobial Dose Quick Guide

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IV Acyclovir (Zovirax®)

Drug name & strength	Inj. Acyclovir 250 mg/vial
Common Indications and Doses	1. **Meningitis/Encephalitis (HSV/VZV):** • **1-2 months old** : IV 10-20 mg/kg/DOSE q8H • **≥3 months old** : IV 500 mg/m²/DOSE q8H Duration over 10-14 days, longer if immunocompromised 2. **Varicella Zoster (Chickenpox) / Herpes Zoster (Shingles):** • **1-2 months old** : IV 10-20 mg/kg/DOSE q8H for 7 to 10 days • **≥3 months old** : IV 250 mg/m²/DOSE q8H for 5 days ***Caution!*** *Avoid exceeding usual adult dose of **IV 500 mg q8h.** Higher doses increases extravasation risk.*
Special dose info	**Dose in obese paediatrics:** use Ideal BW **Renal adjustment dose:** • eGFR 25–50 mL/minute/1.73m² : 100% normal dose **q12H** • eGFR 10-25 mL/minute/1.73m² : 100% normal dose **q24H** • eGFR <10 mL/minute/1.73m² : **50%** normal dose **q24H** Acyclovir is a known vesicant – may irritate venous and soft tissue if extravasated. Monitor line patency closely to avoid thrombophlebitis and extravasation.
Storage	Room temperature (<25 ºC) **[Do not refrigerate as it may precipitate]**
Reconstitution	1 vial with 10 ml WFI or NS
Stability after reconstitution	**Stability is brand specific** **Brand**: Zovirax **Stability**: Use immediately **Brand**: Vaxcel Acyclovir **Stability**: 48 hours at RT <25ºC
Dilution and administration	**Preferred Diluent**: NS Alternative Diluents: Sodium Chloride 0.18 % w/v & Glucose 4 % w/v, Sodium Chloride 0.45 % m/v and Glucose 2.5 % m/v **Max conc.**: 5 mg/ml Infuse over **1 hr** In **fluid restricted:** give undiluted (conc. of 25 mg/ml) via a **central line** using a syringe pump over 1 hr

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Stability after dilution	**<u>Stability is brand specific</u>** **Brand**: Zovirax **Stability**: 12 hours at RT 15-25 °C [Do not refrigerate] **Brand**: Vaxcel Acyclovir **Stability**: 48 hours at RT <25°C [Do not refrigerate]
References	1. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. 2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 440-441. 3. Vaxcel Acyclovir 250mg IV for Infusion Product Insert. 020419(03). 4. Zovirax Product Insert: https://gskpro.com/content/dam/global/hcpportal/en_BW/PI/Zovirax-IV-GDS24.pdf 5. Guy's and St. Thomas', King's College and University Lewisham Hospitals. Paediatric Formulary. 6. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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PO Acyclovir

Drug name & strength	Syrup Acyclovir 200 mg/5 ml Tablet Acyclovir 200 mg or 800 mg
Common Indications and Doses	**1. Varicella Zoster (Chickenpox) / Herpes Zoster (Shingles)** PO 20 mg/kg/DOSE q6H for 5 days (Max: 800 mg/DOSE) **2. Eczema herpeticum** PO 20 mg/kg/DOSE q6H for 5 days (Max: 800 mg/DOSE) **3. Herpes Simplex Treatment (Non-genital)** • **1 – 23 months old** : PO 100 mg 5 times daily for 5 days* • **≥ 2 years old** : PO 200 mg 5 times daily for 5 days* **Longer duration needed if new lesions appear during treatment or if healing incomplete* **4. Herpes Simplex Treatment (Genital)** <12 years old: PO 20 mg/kg/DOSE q6H for 5-10 days (Max: 1g/DAY)
Special dose info	**Dose in obese paediatrics:** use Ideal BW **Renal adjustment dose:** • eGFR 10-25 mL/minute/1.73m^2 : 100% normal dose **q8H** • eGFR <10 mL/minute/1.73m^2 : 100% normal dose **q12H**
References	1. As per standardised HSgB PRIC Guide, 2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 440-441. 3. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. 4. Micromedex Paediatrics v76_2206031830 5. Macpeds 2019-2020 Pediatric Handbook (for eczema herpeticum) 6. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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IV Amikacin

Drug name & strength	Inj. Amikacin 250 mg/2 ml
Common Indication and Doses	1. General dose for susceptible infections • **1 week - 10 years old** : IV 25 mg/kg STAT day 1, then 18 mg/kg daily • **> 10 years old** : IV 20 mg/kg STAT day 1, then 15 mg/kg daily (max 1.5 g/day) 2. Febrile Neutropenia • IV 20 mg/kg/day OD (max 1.5 g/day), in combination with another appropriate antibiotic
Special dose info	**TDM** • 30 mins or just before the next maintenance dose (trough) • Adjust dose based on TDM, especially in renal impairment **Dose in obese paediatrics:** • Obese: Use IBW • Morbidly obese: Use adjusted body weight = IBW + 0.45 (TBW-IBW)
Storage	Room temperature (<25 ºC)
Reconstitution	**Not required (Already in solution form)**
Stability after reconstitution	**NA**
Dilution and administration	**Preferred Diluent**: D5%, NS **Concentration**.: 2.5 - 5 mg/ml **Neonates:** Infuse over 1-2 hrs **Children & older infants:** Infuse over 30-60 mins
Stability after dilution	24 hours at RT
Incompatibilities	Amphotericin B, penicillins and cephalosporins, nitrofurantoin, sulfadiazine
References	1. Frank Shann, 2017. Drug Doses. 2. Micromedex Paediatrics v76_2206031830 3. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. 4. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds) 5. Apalin Duopharma Product Insert (16.1.2012)

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PO Amoxycillin

Drug name & strength	Syrup Amoxycillin Trihydrate 250 mg/5 ml Capsule Amoxycillin 250 mg
Common Indication and Doses	**1. Bacterial tonsilitis / Pharyngitis / Rhinosinusitis / Upper respiratory tract infections:** • **Child:** PO 15 mg/kg/DOSE q8H (max 500mg/DOSE) for 7 days (Max up to 1g/DOSE and duration for 10 days in confirmed Group A Streptococcus or *Streptococcus pneumoniae* infection) **2. Pneumonia / Lower respiratory tract infections:** • **Child:** PO 25-30 mg/kg/DOSE q8H (max 1 g/DOSE) for 5-7 days **3. Mild Leptospirosis:** • **Child:** PO 15 mg/kg/DOSE q8H (max 500 mg/DOSE) for 7 days • For moderate-severe Leptospirosis, refer to *IV Benzylpenicillin / Penicillin G* **** Caution!*** *Do not confuse Syrup Amoxycillin with PO [Syr] Amoxycillin/Clavulanate (Augmentin®)* • *Syrup Amoxycillin is TDS.* • *Syrup AUGMENTIN is BD.* *Please ensure that reference is made to the right drug.*
Special dose info	**Dose in obese paediatrics:** use TBW
References	1. National Antibiotic Guideline (NAG) 2024. MOH Malaysia. 2. Frank Shann, 2017. Drug Doses. 3. Micromedex Paediatrics v76_2206031830 4. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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IV Amoxycillin/Clavulanic Acid (Augmentin®)

Drug name & strength	Inj. Amoxycillin/Clavulanic Acid 1200 mg/ vial
Common Indication and Doses	1. General dose for susceptible infections (e.g., Pneumonia, cellulitis, pyelonephritis): • **1-2 months old:** IV 30 mg/kg/DOSE of Augmentin q12H • **≥ 3 months old:** IV 30 mg/kg/DOSE of Augmentin q8H (max 1.2 g/DOSE)
Special dose info	Use with caution in hepatic impairment. **Renal adjustment dose:** • eGFR 10–30 mL/minute/1.73m^2 : 100% normal dose STAT, then 50% normal dose q12H • eGFR <10 mL/minute/1.73m^2 : 100% normal dose STAT, then 50% normal dose q24H
Storage	Room temperature (<25 ºC)
Reconstitution	1 vial with 20 ml WFI (final volume 20.9 ml)
Stability after reconstitution	20 minutes
Dilution and administration	**Preferred:** **1. Slow bolus:** **Diluent:** Given undiluted Inject over **3-4 mins (within 20 mins)** (may be injected directly into the vein or via a drip tube) **Alternative:** **2. Infusion:** **Diluent:** NS, WFI **Conc.:** 10 mg/ml Augmentin OR 1 vial (1.2 g) in 100 ml Infuse over **30-40 mins**
Stability after dilution	4 hours (not suitable for multiple-dose use)
Incompatibilities	Amino acid solutions, lipid emulsions, blood and glucose solutions, dextran, bicarbonates, aminoglycosides.
References	1. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 370-371. 2. Guy's And St. Thomas', King's College and University Lewisham Hospitals. Paediatric Formulary, 9th ed. Revised Dec 2012. UK: Guy's & St Thomas' NHS Foundation Trust, 2010. 3. Clavam Product leaflet (Revised 4/2016)

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PO [Syr] Amoxycillin/Clavulanate (Augmentin®)

Drug name & strength	Syrup Amoxycillin/Clavulanate 228 mg/5 ml (Ratio 7:1)
Common Indications and Doses	**1. Treatment of susceptible infections:** • Mild-moderate infection : PO 15-20 mg/kg/DOSE of Augmentin q12H • Moderate-severe infection including Pneumonia : PO 20-30* mg/kg/DOSE of Augmentin q12H ** HSgB Paeds ID's consensus based on expert opinion* • (Max: 570 mg AUGMENTIN/dose (= 500 mg AMOXYCILLIN = 12.5 ml) These doses are for **Syrup Augmentin**. Click here for Tablet Augmentin Doses ***Caution!*** *Do not confuse Syrup Amoxycillin/Clavulanate (Augmentin) with PO Amoxycillin* • *Syrup AUGMENTIN is BD.* • *Syrup Amoxycillin is TDS.* *Please ensure that reference is made to the right drug.*
Special dose info	**Renal adjustment dose:** • eGFR <30 mL/minute/1.73m^2 : Use not recommended
References	1. Augmentin Suspension GSK Product Leaflet (Revised 13.6.2019): https://gskpro.com/content/dam/global/hcpportal/en_SG/products/PDF/augmentin/augmentin-suspension-prescribing-information-ipi14-si.pdf 2. Clamovid HOVID Product Leaflet

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PO [Tab] Amoxycillin/Clavulanate (Augmentin®)

Drug name & strength	Tablet Amoxycillin 500 mg/Clavulanate 125 mg (625 mg/tab) (Ratio 4:1)
Common Indication and Doses	1. **Treatment of susceptible infections:** • **Children < 25 kg** : Use *PO [Syr] Amoxycillin/Clavulanate (Augmentin®)* • **Children 25 kg – 40 kg** : PO 625 mg q12H • **Children ≥ 40 kg** : PO 625 mg q8H (Max: 625 mg AUGMENTIN/DOSE (= 500 mg AMOXYCILLIN = 1 tablet) * Dose is derived from 20-40 mg/kg/DAY of Amoxycillin/Clavulanate (4:1 ratio) in divided doses. These doses are for **Tablet Augmentin**. Click here for Syrup Augmentin Doses *** Caution!* *Do not confuse Tab. Amoxycillin/Clavulanate (Augmentin) with PO Amoxycillin.* *Please ensure that reference is made to the right drug.*
Special dose info	**Do not use in patients weighing < 25 kg** as **Augmentin tablet has to be served whole**. The score-line is only to facilitate breaking for ease of swallowing and does not divide into equal doses. **Renal adjustment dose:** **Children ≥ 40 kg :** • eGFR 10-30 mL/minute/1.73m^2 : PO 625 mg q12H • eGFR <10 mL/minute/1.73m^2 : PO 625 mg q24H **Children 33 kg – 40 kg :** • eGFR 10-30 mL/minute/1.73m^2 : PO 625 mg q12H • eGFR <10 mL/minute/1.73m^2 : PO 625 mg q24H **Children 25 kg – 32 kg :** • eGFR <30 mL/minute/1.73m^2 : Use not recommended Use with caution in **hepatic impairment**.
References	1. Augmentin 625mg Tablet, GSK: https://www.medicines.org.uk/emc/product/281/smpc# 2. Micromedex Paediatrics v76_2206031830

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IV Ampicillin

Drug name & strength	Inj. Ampicillin 500 mg/vial
Common Indication and Doses	**1. Usual dose in susceptible infections e.g., Dysentery, UTI:** • IV 25 mg/kg/DOSE q6H (max 1g/DOSE) Increase if necessary to IV 50 mg/kg/DOSE q6H (max 2 g/DOSE) in severe infections *** Caution!* *Do not confuse IV Ampicillin with IV Ampicillin/Sulbactam (Unasyn®)* *Please ensure that reference is made to the right drug.*
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose:** • eGFR 30-50 mL/minute/1.73m^2 : No dose adjustment • eGFR 10-29 mL/minute/1.73m^2 : Usual dose q8-12H • eGFR <10 mL/minute/1.73m^2 : Consider dose reduction q12H
Storage	Room temperature (<25 ºC)
Reconstitution	1 vial with 10 ml of WFI
Stability after reconstitution	1 hour
Dilution and administration	**Preferred:** 1. **Slow bolus:** Given undiluted ≤ 500 mg: 3-5 mins ≥ 500 mg: 10-15 mins **(Rapid administration has been associated with seizures)** **Alternative:** **2. Infusion:** **Diluent:** NS, D5% **Max conc.:** 30 mg/ml Infuse over 15-20 mins **(30 mins if using doses > 50 mg/kg to avoid CNS toxicity)**
Stability after dilution	8 hours RT (<25 ºC) 24H refrigerated (2-4 ºC) at conc of 30mg/ml
Incompatibilities	Aminoglycosides
References	1. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. 2. Ampicillin 500mg for Injection: https://www.medicines.org.uk/emc/product/12892/smpc# 3. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook. 22nd ed. USA: Lexi-comp. 2015 4. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds) 5. Product Leaflet Kampibiotic 500 Injection (Karnatake Ltd) (Revised 25 July 2017)

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PO Ampicillin

Drug name & strength	Syrup Ampicillin 125 mg/5 ml
Common Indication and Doses	**1. Commonly for Dysentery:** • PO 25 mg/kg/DOSE q6H for 5-7 days (Max: 500 mg/DOSE) *** Do NOT convert dysentery IV Ampicillin to Oral Syrup Amoxycillin.* *Syrup Ampicillin has better coverage for dysentery compared to Syrup Amoxycillin.* *** Caution!* *Do not confuse PO Ampicillin with PO Ampicillin/Sulbactam (Unasyn®/Sultamicillin)* *Please ensure that reference is made to the right drug.*
Special dose info	**Dose in obese paediatrics:** use TBW
References	1. National Antibiotic Guideline (NAG) 2019. MOH Malaysia. 2. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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IV Ampicillin/Sulbactam (Unasyn®)

Drug name & strength	Inj. Ampicillin 1000 mg/Sulbactam 500 mg (1.5 g/vial)
Common Indication and Doses	1. **General dose for susceptible infections:** • IV 37.5-75 mg/kg/DOSE of Unasyn q6H (max 3 g/DOSE of Unasyn) 2. ***Acinetobacter baumannii* infection (ensure C&S sensitive to Unasyn)** • IV 300-400 mg/kg/DAY of Ampicillin component in divided q4-6H (max 2g of Ampicillin per dose) *** Caution!* *Do not confuse IV Ampicillin/Sulbactam (Unasyn) with IV Ampicillin* *Please ensure that reference is made to the right drug.*
Special dose info	**Renal adjustment dose:** • eGFR ≥ 30 ml/min/1.73m^2 : no adjustment • eGFR 15-29 ml/min/1.73m^2 : 100% q12H • eGFR 5-14 ml/min/1.73m^2 : 100% q24H
Storage	Room temperature (<25 ºC)
Reconstitution	1 vial with 3.2 ml WFI
Stability after reconstitution	Use immediately
Dilution and administration	**Preferred diluent**: NS, D5% **Max conc**.: 45 mg/ml **Administration:** 1. **Slow IV injection:** 10-15 mins 2. **IV Infusion:** 15-30 mins
Stability after dilution	40 minutes at RT (<25 ºC) with NS/D5
Incompatibilities	Aminoglycosides
References	1. Frank Shann, 2017. Drug Doses. 2. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. (Renal dose) 3. Micromedex Paediatrics v4.5.1 v76_2206031830 4. Schull PD. McGraw-Hill's I.V. Drug Handbook, 1st ed. USA: The McGraw-Hill Companies, Inc.; 2009. 5. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 368-369. 6. Product leaflet Amsubac 1.5g (Karnataka Ltd) (23 Jan 2018)

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PO Ampicillin/Sulbactam (Unasyn®/Sultamicillin)

Drug name & strength	Syrup Ampicillin/Sulbactam 250 mg/5 ml Capsule Ampicillin/Sulbactam 375 mg
Common Indication and Doses	**1. General dose for susceptible infections:** • **< 30 kg** : PO 25-50 mg/kg/DAY of Unasyn in divided q12H • **≥ 30 kg** : PO 375 mg q12H (as per adult dose) *** Caution!* *Do not confuse PO Ampicillin/Sulbactam (Unasyn) with **PO Ampicillin*** *Please ensure that reference is made to the right drug.*
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose:** • No specific data on oral renal dose. Generally as per Ampicillin, if eGFR < 30 ml/min/1.73m^2 to reduce frequency and use with caution.
References	1. Sultamicillin Pfizer Product Leaflet: https://labeling.pfizer.com/ShowLabeling.aspx?id=12271 2. MIMS Unasyn Oral: https://www.mims.com/malaysia/drug/info/unasyn%20oral/dosage

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IV Azithromycin

Drug name & strength	Inj. Azithromycin 500 mg/vial
Common Indication and Doses	**Atypical Pneumonia:** • **≥3 months:** IV 10 mg/kg/DOSE q24H for 1 or 2 doses, then oralise as soon as possible (Max: 500 mg/DOSE)
Special dose info	**Renal adjustment dose:** • eGFR <10 mL/minute/1.73m^2 : Use with caution * Azithromycin is associated with an increased risk of arrhythmia (due to QT prolongation).
Storage	Room temperature (<25 ºC)
Reconstitution	Reconstitute with 4.8 ml of WFI (final volume 5ml)
Stability after reconstitution	24 hours at RT (<25 ºC)
Dilution and administration	**Preferred diluent:** NS, HS, D5% **Conc:** 2 mg/ml Infuse over **1 hour**
Stability after dilution	**Room temperature (<25 ºC):** 24 hours **Refrigerated (2 - 8 ºC)**: 7 days
Incompatibilities	Other intravenous substances, additives or medications should not be added to intravenous azithromycin or infused simultaneously through same intravenous line
References	1. Micromedex Paediatrics v4.5.1 v76_2206031830 2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 368-369. 3. Product Leaflet Vaxcel Azithromycin 500mg (27 April 2017)

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PO Azithromycin (Zithromax®)

Drug name & strength	Syrup Azithromycin 200 mg/5 ml Granules Tablet Azithromycin 250 mg
Common Indication and Doses	**1. Atypical pneumonia:** • PO 10 mg/kg/DOSE q24H on day 1 (max 500 mg/DOSE), then PO 5 mg/kg/DOSE q24H on day 2-5 (max 250 mg/DOSE) **2. Pertussis:** • **≤ 5 months old** : PO 10 mg/kg/DOSE q24H for 5 days • **≥ 6 months old** : PO 10 mg/kg/DOSE q24H day 1 (max 500 mg/DOSE), then PO 5 mg/kg/DOSE q24H day 2-5 (max 250 mg/DOSE) • In child ≥ 6 months old, alternative for Azithromycin in Pertussis is *PO Erythromycin Ethylsuccinate (EES)* **3. Scrub typhus (*Ricketsia tsutsugamushi*):** • PO 10 mg/kg/DOSE q24H for 3 days (max 500 mg/DOSE) Azithromycin is the alternative agent for scrub typhus. Click here for **Oral Doxycycline** (Preferred Agent)
Special dose info	**Renal adjustment dose:** • eGFR <10 mL/minute/1.73m^2 : Use with caution
References	1. Micromedex Paediatrics v4.5.1 v76_2206031830 2. National Antibiotic Guideline (2019). MOH Malaysia. Pg 193, 224. 3. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 352-353. 4. Recommended Antimicrobial Agents for the Treatment and Postexposure Prophylaxis of Pertussis, 2005 CDC Guidelines. https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5414a1.htm

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IV Bactrim (Sulphamethoxazole/Trimethoprim)

Drug name & strength	Inj. Sulphamethoxazole 400 mg + Trimethoprim 80 mg /vial
Common Indication and Doses	**1. General dose for susceptible infections:** • Mild-moderate infections : IV 6-12 mg/kg/DAY of TMP divided q12H (Max: 160 mg/dose of TMP) • Severe infections/Meningitis : IV 15-20 mg/kg/DAY of TMP divided q6-8h (Max: 960 mg/DAY of TMP) **2. Urinary Tract Infection (UTI) Treatment:** • > 6 weeks old: 8mg/kg/DAY of TMP divided q12H for 7-14 days (Max: 960mg/DAY of TMP) **3. Pneumocystis Pneumonia (PCP) Treatment:** • IV 15-20 mg/kg/DAY of TMP divided q6h (Max: 960 mg/DAY of TMP) • Duration: 14-21 days in non-HIV infected patients, 21 days in HIV infected patients followed by secondary prophylaxis. * Patients with mild-moderate PCP and no diarrhoea/malabsorption issues may transition from IV to PO therapy with clinical improvement after acute pneumonitis is resolved.
Special dose info	**Order dose based on Trimethoprim (TMP) component** Avoid in infants < 6 weeks old except in PCP treatment and severe meningitis. **Renal adjustment dose:** • eGFR > 30 mL/minute/1.73^2 : No adjustment • eGFR 15-30 mL/minute/1.73^2 : 50% dose • eGFR <15 mL/minute/1.73^2 : Not recommended
Storage	Room temperature (<25 ºC). **Do not refrigerate.**
Reconstitution	Not required (already in solution)
For dilution, stability, administration & Incompatibilities, refer next page	

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Dilution & Stability after dilution (Brand Specific):			
Roche Bactrim Diluent: D5 Dilution: • 5 ml (1 amp) in 125 ml diluent Stability: • 5 ml (1 amp) in 75 ml diluent: 2 hours (max conc); • 5 ml (1 amp) in 125 ml diluent: 6 hours	**DBL Sulfamethoxazole 400 mg and Trimethoprim 80 mg Concentrate Injection BP 480 mg/5ml Injection** Diluent: NS, D5 Dilution: • Dilute 1 ml to 25 ml diluent **OR** • Dilute 1 amp in 125 ml diluent. Stability: 24 hours	**Bactrim DEVA** Diluent: NS, D5 Dilution: • Dilute 1 ml to 25 ml diluent **OR** • Dilute 1 amp in 125 ml diluent • Dilute 2 amp in 250 ml diluent • Dilute 3 amp in 500 ml diluents Max conc. 5ml (1 amp) in 75 ml diluent Stability: 6 hours	**Cotrim-ratiopharm** Diluent: NS, D5 Dilution: • Dilute 1 amp in 125 ml diluent • Dilute 2 amp in 250 ml diluent • Dilute 3 amp in 500 ml diluent Stability: 24 hours

Administration: Infused over **60-90 minutes**

Alternative (Infusion in fluid restriction):

- Dilute 1 amp (5 ml) into 75 ml D5
- Infuse over **60 minutes**
- (In severe fluid restriction may be given undiluted via a central venous line)

Incompatibilities	No other agents should be added to or mixed with the solution.
References	1. Micromedex Paediatrics v4.5.1 v76_2206031830 (Dose/Renal Dose) 2. Paediatric Injectable Drug 11th Edition (Teddy Bear Handbook) 3. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 378-379. 4. HSgB Dilution Protocol (Revised 2.9.2022). 5. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015

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PO Bactrim (Sulphamethoxazole/Trimethoprim)

Drug name & strength	Syrup Sulphamethoxazole (SMX) 200 mg + Trimethoprim (TMP) 40 mg/5 mL Tablet Sulphamethoxazole (SMX) 400 mg + Trimethoprim (TMP) 80 mg [single strength]
Common Indication and Doses	*** DOSE IS BASED ON TRIMETHOPRIM (TMP) COMPONENT** **1. General dose in susceptible infections:** ● PO 8-12 mg/kg/DAY of TMP in divided every q12H (max 320 mg/DAY of TMP) **2. Pneumocystis Pneumonia (PCP) Prophylaxis:** ● PO 4 mg/kg/DOSE of Trimethoprim daily OR PO 150 mg/m^2/DOSE of Trimethoprim 3x/week (max 160 mg/DOSE of TMP) **3. Pneumocystis Pneumonia (PCP) Treatment:** ● **≥ 2 months** : PO 15-20 mg/kg/DAY of TMP in 3 to 4 divided doses (max 1600 mg/DAY of TMP) ● Duration : 14-21 days in non-HIV infected patients, 21 days in HIV infected patients * Patients with mild-moderate PCP and no diarrhoea/malabsorption issues may transition from IV to PO therapy with clinical improvement. **4. Urinary Tract Infection (UTI) Treatment:** ● PO 4 mg/kg/DOSE of TMP q12H (max 320 mg/DAY of TMP) ● Duration: 7 days (up to 10 days if indicated) **5. Urinary Tract Infection (UTI) Prophylaxis:** ● PO 1-2 mg/kg/DOSE of TMP ON
Special dose info	**Renal adjustment dose:** ● eGFR 15-30 mL/minute/1.73m^2 : 50% normal dose ● eGFR <15 mL/minute/1.73m^2 : Use not recommended **Hepatic impairment:** Contraindicated in severe liver impairment
References	1. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. (Pg 363, 463) 2. Micromedex Paediatrics v4.5.1 v76_2206031830 (General dose, UTI & PCP Treatment duration) 3. National Antibiotic Guideline, 2024 (MOH)

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IV Benzylpenicillin / Penicillin G

Drug name & strength	Inj. Benzylpenicillin 1 MU/ vial or 5 MU/ vial
Common Indication and Doses	**1. Tonsilitis / Upper respiratory tract infections:** • IV 25,000 unit/kg/DOSE q6H **2. Pneumonia / Lower respiratory tract infections:** • IV 50,000 unit/kg/DOSE q6H for 5-7 days (Max 24 MU/DAY) **3. Meningitis:** • IV 100,000 unit/kg/DOSE q6H (Max 24 MU/DAY) **4. Moderate-severe Leptospirosis:** • IV 50,000 unit/kg/DOSE q6H for 7 days (Max 18 MU/DAY) • In mild Leptospirosis, consider *PO Amoxycillin* or *PO Doxycycline* **5. Presumed sepsis:** • **<1 month old:** IV 100,000 U/kg/DOSE q12H (Standardised from HSgB NICU Drug Database, 2020) • **≥1 month old:** IV 50,000 U/kg/DOSE q6H
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose:** • eGFR 10–50 mL/minute/1.73m^2 : 100% normal dose q8-12H • eGFR <10 mL/minute/1.73m^2 : 100% normal dose q12h
Storage	Room temperature (<35 ºC)
Reconstitution	600 mg (1 MU) vial: 2 ml WFI 3 g (5 MU) vial: 10 ml WFI
Stability after reconstitution	2 days at 30ºC ± 2ºC OR 6 days at 2-8ºC
Dilution and administration	**Preferred:** **1. Slow bolus:** Given **undiluted** Inject over **5 mins** (**except** for meningitis, see below) **Alternative:** **2. Infusion:** **Preferred diluent:** NS, D5% **Conc.:** 50,000-100,000 unit/ml Infuse over **15-30 mins** **Meningitis**: Infuse over 30 mins to avoid CNS toxicity and convulsions

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Stability after dilution	No data
Incompatibilities	Amphotericin B, methylprednisolone, promethazine, solutions that contain metal ions
References	1. National Antibiotic Guideline (2019). MOH Malaysia. Pg 175, 178, 225. 2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 364-365. 3. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. Pg 346. 4. HSgB NICU Drug Database, 2020 5. Guy's and St. Thomas', King's College and University Lewisham Hospitals. Paediatric Formulary. 6. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. 7. Product Leaflet Bepen Injection (Revised 12.2.2017) 8. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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IV Cefazolin

Drug name & strength	Inj. Cefazolin 1 g/vial
Common Indication and Doses	1. Usual dose: • 10-15mg/kg/DOSE q8H (max 1g/DOSE) • 33-50mg/kg/DOSE q8H (max 2g/DOSE) in severe infections 2. Surgical prophylaxis: • 50mg/kg/dose (max 2g/DOSE) STAT at induction
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose:** These dosage recommendations apply after an initial loading dose: • eGFR 40-70 ml/min/1.73m^2: 60% of normal DAILY dose given in divided q12H • eGFR 20-<40ml/min/1.73m2: 25% of normal DAILY dose given in divided q12H • eGFR 5-20ml/min/1.73m2: 10% of normal DAILY dose given every q24H Each gram of Cefazolin sodium contains 48.3mg of Sodium
Storage	<30°C
Reconstitution	1 vial with 10 ml of WFI
Stability after reconstitution	24H at 2-8°C (refrigerate)
Dilution and administration	1. **Slow bolus (Doses ≤1g)** Given **undiluted** **Conc:** 100mg/ml Inject over **3-5 mins,** not less than 3 min 2. **Intermittent IV or continuous infusion (Doses exceeding 1g)** **Preferred diluent:** NS, D5%, D10% **Conc:** 5-20mg/ml, run over 30-60 mins
Stability after dilution	12H at 25°C and 24H at 2-8°C
Incompatibilities	Amikacin disulphate, calcium gluconate, colistin methat-sodium, polymyxin-B-sulphate
References	1. Frank Shann, 2017. Drug Doses. 2. Micromedex Paediatrics v4.5.1 v76_2206031830 (Dose, renal dose, administration) 3. Cefazolin-AFT Product Leaflet (Revised July 2018) 4. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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IV Cefepime

Drug name & strength	Inj. Cefepime 1000 mg/vial
Common Indication and Doses	**1. Mild-moderate Infections (skin/skin structure infections):** • IV 50 mg/kg/DOSE q12H (Max: 2 g/DOSE) **2. Moderate-Severe Infections (meningitis, febrile neutropenia, pneumonia):** • 50 mg/kg/DOSE q8H (Max: 2 g/DOSE & 6 g/DAY)
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose:** • eGFR ≥ 50 ml/min/1.73m^2 : no adjustment • eGFR 10-50 ml/min/1.73m^2 : 100% dose q24H • eGFR < 10 ml/min/1.73m^2 : 100% dose q48H
Storage	Room temperature (<25 ºC)
Reconstitution	1 vial with 10 ml WFI, D5%, NS
Stability after reconstitution	**Brand specific** **Cefmex:** Refrigerate (2 - 8 ºC) for 48 hours **Vaxcel Cefepime:** Use immediately
Dilution and administration	**Preferred diluent**: NS, D5% **Concentration**: 1 - 40 mg/ml Infuse over **30 minutes**
Stability after dilution	**Brand specific** **Cefmex:** Refrigerate (2 - 8 ºC) for 48 hours **Vaxcel Cefepime:** Room temperature for 24 hours or Refrigerate (2 - 8 ºC) for 7 days
Incompatibilities	Metronidazole, vancomycin, gentamycin
References	1. Micromedex Paediatrics v4.5.1 v76_2206031830 (Dose) 2. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. Pg 346, 223. 3. Cefmex Product Leaflet (Revised 14.10.2014) 4. Vaxcel Cefepime 1g Injection Product Leaflet (18.6.2021) 5. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. 6. Schull PD. McGraw-Hill's I.V. Drug Handbook, 1st ed. USA: The McGraw-Hill Companies, Inc.; 2009. 7. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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IV Cefoperazone

Drug name & strength	Inj. Cefoperazone 1000 mg/vial
Common Indication and Doses	1. General dose in susceptible infections: • IV 25-60 mg/kg/DOSE **q12H** (Max 2 g/DOSE)
Special dose info	**Dose in obese paediatrics:** use TBW
Storage	Room temperature (<25 ºC)
Reconstitution	1g vial with 3.5 ml of the solution (NS, D5%, D10%, NSD5, WFI), final conc. 250mg/ml
Stability after reconstitution	24 hours at 15-25 °C
Dilution and administration	**Preferred:** **1. Intermittent IV Infusion** **Diluent:** NS, D5% **Conc:** 10-50mg/ml Infuse over **15 - 60 minutes** **2. Slow bolus** **Maximum** 50mg/kg/dose (or 2g/dose); higher doses to be given as IV infusion **Diluent:** NS, D5% **Conc:** 100 mg/ml Given over **3 - 5 minutes** **Lack of data in paediatrics population. Dilution and administration follows adult.**
Stability after dilution	No data
Incompatibilities	Aminoglycosides, pethidine hydrochloride
References	1. Frank Shann, 2017. Drug Doses. 2. National Antibiotic Guideline (2019). MOH Malaysia. 3. Product Leaflet Bicafar 1g Sterile – Duopharma (Revised 16.11.2020)

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IV Cefotaxime

Drug name & strength	Inj. Cefotaxime 500 mg/vial
Common Indication and Doses	1. **General dose in susceptible infections:** • IV 25-50 mg/kg/DOSE q8-6H (Max 2 g/DOSE) 2. **Meningitis / Severe infections:** • IV 50 mg/kg/DOSE q6H (Max 2 g/DOSE)
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose:** • eGFR <5 mL/minute/1.73m^2: 100% initial dose, then subsequently 50% of normal dose
Storage	Room temperature (<25 ºC)
Reconstitution	1 vial with 2ml WFI
Stability after reconstitution	24 hours at RT ≤25 ºC
Dilution and administration	**Preferred:** **1. Slow bolus:** **Preferred diluent**: NS, D5% **Max Conc:** 200 mg/ml Inject over **3-5 mins** (Doses given over <1 min have caused life threatening arrhythmias) **Alternative:** **2. Infusion:** **Preferred diluent**: NS, D5% **Conc.**: 20-60 mg/ml Infuse over **20-60 mins**
Stability after dilution	24H at RT ≤25 ºC
Incompatibilities	Aminoglycosides, metronidazole, aminophylline, fluconazole, lidocaine, filgastrim, sodium bicarbonate
References	1. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Hepatic/renal dose. Pg 342. 2. National Antibiotic Guideline (2019). MOH Malaysia. Pg 178. 3. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. 4. Guy's And St. Thomas', King's College and University Lewisham Hospitals. Paediatric Formulary, 9th ed. Revised Dec 2012. UK: Guy's & St Thomas' NHS Foundation Trust, 2010. 5. Rekaxime Product leaflet (Revised 19.11.2013) 6. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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IV Ceftazidime

Drug name & strength	Inj. Ceftazidime 2000 mg/vial
Common Indication and Doses	1. General dosing in susceptible infections • IV 30-50 mg/kg/DOSE (up to 100 mg/kg/DOSE in severe infections) q8H (Max: 2 g/DOSE; 6 g/DAY) 2. Melioidosis (Intensive/ Induction therapy) • IV 200 mg/kg/DAY in divided q8H
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose:** • eGFR 30-50 mL/minute/1.73m^2 : 100% usual dose q12H • eGFR 10-29 mL/minute/1.73m^2 : 100% usual dose q24H • eGFR <10 mL/minute/1.73m^2 : 100% usual dose q48H
Storage	<30°C. Protect from light.
Reconstitution	1 vial in 10 ml of WFI
Stability after reconstitution	12 hours
Dilution and administration	**Preferred:** **Slow bolus:** **Undiluted** (~170 mg/ml) Inject over **3-5 mins** Inject into **large vein**; **rotate injection sites** **Alternative:** **Infusion:** **Preferred diluent:** NS, D5% **Conc:** 1-40 mg/ml Infuse over **20-30 mins**
Stability after dilution	12 hours
Incompatibilities	Aminoglycosides, Vancomycin, Phenytoin, Amiodarone, Azithromycin, Erythromycin, Fluconazole, Midazolam
References	1. National Antibiotic Guideline (2019). MOH Malaysia. Pg 225. 2. Aronoff GR, Bennett WM, Berns JS, et al. *Drug Prescribing in Renal Failure: Dosing Guidelines for Adults and Children,* 5th Ed. PA: American College of Physicians, 2007. 3. Schull PD. McGraw-Hill's I.V. Drug Handbook, 1st ed. USA: The McGraw-Hill Companies, Inc.; 2009 4. Guy's And St. Thomas', King's College and University Lewisham Hospitals. Paediatric Formulary, 9th ed. Revised Dec 2012. UK: Guy's & St Thomas' NHS Foundation Trust, 2010. 5. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. 6. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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IV/IM Ceftriaxone

Drug name & strength	Inj. Ceftriaxone 1000 mg/vial
Common Indication and Doses	**1. General dose in susceptible infections** • IV 50-100 mg/kg/DAY in divided q12-24H (Max: 2 g/DOSE) **2. Meningitis** • IV 100 mg/kg/DAY in divided q12-24H (Max: 2 g/DOSE, 4 g/DAY) • If IV route not possible, IM 80-100 mg/kg/DAY in 1-2 divided doses (Max: 2 g/DOSE, 4 g/DAY) **3. Moderate-severe Leptospirosis** • IV 100mg/kg/DAY q24H (Max: 2g/DAY) for 7 days **4. Micturating Cystourethrogram MCUG Procedure:** [refer to ***APPENDIX 1: Micturating Cystourethrogram (MCUG) procedure***] For patients who missed oral antibiotic prophylaxis prior MCUG and has raised serum creatinine • IM/IV Ceftriaxone 50 mg/kg/dose STAT • If serum creatinine normal, use Gentamycin
Special dose info	**Dose in obese paediatrics:** use TBW **For IM:** - use lower end of dose range and shortest duration possible. - IM to be administered deep into a large muscle mass. - IM doses >1 g should be divided and into >1 site. - dilute with Lignocaine 1% to reduce pain. If unavailable, dilute Lignocaine 2% with WFI/NS to make into 1% **Renal adjustment dose:** • eGFR <10 mL/minute/1.73m^2 : dose not more than 40 mg/kg/DAY (max 2 g/DAY)
Storage	<30°C. Protect from light.
Reconstitution	**Diluent:** WFI, NS, D5% (IM: 1% lignocaine*) ** If 1% unavailable, dilute Lignocaine 2% with WFI/NS to make into 1% (Ratio 1:1)* **Intravenous: (IV):** 9.6 ml (conc: 100 mg/ml). Stability: 3 days at 25°C, 10 days at 4°C **Intramuscular (IM):** 3.6 ml (conc: 250 mg/ml) or 2.1 ml (conc: 350 mg/ml). Stability: 24 hrs at 25°C, 3 days at 4°C

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<table>
<tr><td>Dilution and administration</td><td>
<table>
<tr><th colspan="2">Intravenous (IV)</th><th>Intramuscular (IM):</th></tr>
<tr><td><u>Preferred:</u>
1. Slow bolus:
Given undiluted (100 mg/ml)
Inject over 5 mins</td><td><u>Alternatives:</u>
2. Infusion:
Diluent: NS, D5%
Conc.: 10-40 mg/ml
Infuse over 30 mins (60 mins for neonates)</td><td>Given undiluted (250 or 350 mg/ml)

Administer deep into a large muscle mass</td></tr>
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</td></tr>
<tr><td>Stability after dilution</td><td>3 days at 25^{o}C, 10 days at 4^{o}C (except for NSD5 & HSD5)</td></tr>
<tr><td>Incompatibilities</td><td>

Aminoglycosides, Beta-lactam antibacterials (penicillins & cephalosporins)
Do not use diluents containing Ca2+, such as Ringer's solution, or Hartmann's solution.
May be infused sequentially (NOT SIMULTANEOUSLY/CONCURRENTLY) with infusion fluids containing calcium if:

Same infusion line: flush with NS in between infusions
Using different infusion lines at different sites

</td></tr>
<tr><td>References</td><td>

1. National Antibiotic Guideline (2019). MOH Malaysia. Pg 178, 217.
2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 343-346.
3. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. Pg 346.
4. Schull PD. McGraw-Hill's I.V. Drug Handbook, 1st ed. USA: The McGraw-Hill Companies, Inc.; 2009
5. Guy's And St. Thomas', King's College and University Lewisham Hospitals. Paediatric Formulary, 9th ed. Revised Dec 2012. UK: Guy's & St Thomas' NHS Foundation Trust, 2010.
6. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015.
7. Unocef Product leaflet (Revised 3.6.2020)
8. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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IV Cefuroxime (Zinacef ®)

Drug name & strength	Inj. Cefuroxime 750 mg/vial
Common Indication and Doses	1. **Pneumonia (2nd line or in partially treated pneumonia) & other susceptible infections:** • IV 25-50 mg/kg/DOSE q8H (Max 1.5 g/DOSE) 2. **Empyema thoracis:** • **Child:** IV 100-200 mg/kg/DAY in divided q8H for 4-6 weeks (in addition to ***IV Cloxacillin*** if *Staphylococcus aureus* is suspected / based on C&S findings)
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose:** • eGFR 30-50 mL/minute/1.73m^2 : no adjustment • eGFR 10-29 mL/minute/1.73m^2 : 100% normal dose q12H • eGFR <10 mL/minute/1.73m^2 : 100% normal dose q24H
Storage	<30°C. Protect from light.
Reconstitution	7 ml WFI (conc.: ~ 100 mg/ml)
Stability after reconstitution	5 hrs at ≤ 25°C, 48 hrs when refrigerated.
Dilution and administration	**Preferred:** **1. Slow bolus:** **Undiluted** (100 mg/ml) Inject over **3-5 mins** **Alternative:** **2. Infusion:** **Diluent:** NS, D5% **Max conc.**: 30 mg/ml Infuse over **15-30 mins** (in fluid restricted patients, max conc.: 137 mg/ml)
Stability after dilution	24 hr at RT 7 days when refrigerated
Incompatibilities	Sodium bicarbonates, aminoglycosides
References	1. National Antibiotic Guideline (2019). MOH Malaysia. Pg 217, 264. 2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 341. 3. Schull PD. McGraw-Hill's I.V. Drug Handbook, 1st ed. USA: The McGraw-Hill Companies, Inc.; 2009. 4. Guy's And St. Thomas', King's College and University Lewisham Hospitals. Paediatric Formulary, 9th ed. Revised Dec 2012. UK: Guy's & St Thomas' NHS Foundation Trust, 2010. 5. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. 6. Anikef Product leaflet (Revised 11.7.2019) 7. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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PO Cefuroxime Axetil (Zinnat®)

Drug name & strength	Syrup Cefuroxime Axetil 125 mg/5 mL Tablet Cefuroxime Axetil 125 mg Tab
Common Indication and Doses	**1. Moderate-severe infections including Pneumonia, Rhinosinusitis, Acute otitis media, Impetigo:** ● PO 10-15 mg/kg/DOSE q12H (max 500 mg/DOSE) **2. Mild infections including Pharyngitis / Tonsillitis, Urinary Tract Infection (UTI):** ● PO 10-15 mg/kg/DOSE q12H (max 250 mg/DOSE) **3. Prophylaxis prior to Micturating Cystourethrogram (MCUG) procedure** (for patients contraindicated/allergy to TMP) [refer to *APPENDIX 1: Micturating Cystourethrogram (MCUG) procedure*] ● PO 15 mg/kg/DOSE q12H for 3 days (1 day before, on the day & 1 day after procedure) **** Caution!*** *Do not get confused with IV Cefuroxime (Zinacef ®), which is given 8hourly.*
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose:** ● eGFR 10-30 mL/minute/1.73m2 : 100% usual dose OD ● eGFR <10 mL/minute/1.73m^2 : 100% of usual dose EOD ● During haemodialysis: a single additional standard individual dose should be given at end of each dialysis
References	1. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 341. 2. Micromedex Paediatrics v4.5.1 v76_2206031830 (Renal dose) 3. Zinnat Tablets and Suspension Leaflet: https://gskpro.com/content/dam/global/hcpportal/en_MU/PI/Zinnat-Oral-Range-GDS23.pdf 4. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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Only for internal circulation. For further enquiries, kindly contact ext 4126.

PO Cephalexin

Drug name & strength	Syrup Cephalexin 250 mg/5 ml
Common Indication and Doses	**1. General dose for susceptible infections** • **Mild – moderate infections :** PO 25 – 50 mg/kg/DAY in 2 – 4 divided doses (max 2000 mg/DAY) • **Severe infections :** PO 75 – 100 mg/kg/DAY in 3 – 4 divided doses (max 4000 mg/DAY) **2. Community acquired pneumonia** • PO 75 – 100 mg/kg/DAY in 3 – 4 divided doses (max 4000 mg/DAY) **3. Skin and soft tissue infections (SSTI)** • **Cellulitis, erysipelas, purulent / fluctuant SSTI :** PO 25 – 100 mg/kg/DAY in 3 – 4 divided doses, (max 500 mg/DOSE) • **Impetigo, ecthyma :** 25 – 50 mg/kg/DAY in 3 – 4 divided doses, max 500 mg/DOSE **4. Urinary Tract Infection (UTI) prophylaxis** • 12.5 mg/kg OD; max 250 mg/DOSE **5. Urinary Tract Infection (UTI) treatment** • Mild – moderate : 25 – 50 mg/kg/DAY in 2 – 4 divided doses, max dose 500 mg/DOSE • Severe : 50 – 100 mg/kg/DAY in 3 – 4 divided doses, max 1000 mg/DOSE **6. Osteoarticular infections (including but not limited to Osteomyelitis, septic arthritis)** • 100 – 150 mg/kg/DAY in 3 – 4 divided doses, max 1000 mg/DOSE
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose (based on doses of 25 – 50 mg/kg/day) :** • eGFR > 50 mL/minute/1.73m^2 : No adjustment • eGFR 30-50 mL/minute/1.73m^2 : 5 – 10 mg/kg/DOSE every 8 hours (max 500 mg/DOSE) • eGFR 10-29 mL/minute/1.73m^2 : 5 – 10 mg/kg/DOSE every 12 hours (max 500 mg/DOSE) • eGFR <10 mL/minute/1.73m^2 : 5 – 10 mg/kg/DOSE every 24 hours (max 500 mg/DOSE) **Hepatic adjustment:** • No dose adjustment
References	1. Micromedex Paediatrics v96_2312291453 2. UpToDate. Cephalexin: Pediatric drug information 3. Aronoff GR, Bennett WM, Berns JS, et al. Drug Prescribing in Renal Failure: Dosing Guidelines for Adults and Children, 5th ed. Philadelphia, PA: American College of Physicians; 2007. 4. Frank Shann, 2017. Drug Doses. 5. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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PO Clarithromycin

Drug name & strength	Syrup Clarithromycin 125 mg/5 ml (Granules) Tablet Clarithromycin 250 mg
Common Indication and Doses	**1. Treatment of susceptible infections:** • **≥ 1 month old:** PO 7.5 mg/kg/DOSE q12H (Max 500 mg/DOSE) • Duration: 5-7 days
Special dose info	**Renal adjustment dose:** • eGFR 30-50 mL/minute/1.73m^2 : Usual dose 7.5 mg/kg q12H • eGFR < 30 mL/minute/1.73m^2 : 4 mg/kg q12H • eGFR < 10 mL/minute/1.73m^2 : 4 mg/kg q24H • Duration should not be continued beyond 14 days **Hepatic Impairment** Avoid use if renal impairment is also present.
References	1. National Antibiotic Guideline (NAG) 2019. Pg 214 & 265. 2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 353. 3. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015.

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IV Cloxacillin

Drug name & strength	Inj. Cloxacillin Sodium 500 mg/vial
Common Indication and Doses	1. **General dose for susceptible *Staphylococcus aureus* infections:** • IV 25-50 mg/kg/DOSE q6H (Max: 2 g/DOSE) 2. **Cellulitis:** • IV 50 mg/kg/DOSE q6H (Max: 2 g/DOSE) for 5-7 days
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose:** <10 ml/min/1.73 m2: 100% usual dose q8h
Storage	<30 °C
Reconstitution	4.8 ml WFI (conc: 100 mg/ml)
Stability after reconstitution	100 mg/ml for slow bolus: Use within 30 mins
Dilution and administration	**Prefered:** 1. **Slow bolus:** **Undiluted** (100 mg/ml) Inject over **2-4 mins** **Alternative:** 2. **Infusion:** **Diluent:** NS, D5% **Max conc:** 1-2 mg/ml Infuse over **30-40 mins**
Stability after dilution	12 hrs at ≤ 25°C (RT) 48 hrs if refrigerated (2-8°C)
Incompatibilities	Administer in separate sites at least 1 hr apart from aminoglycosides
References	1. National Antibiotic Guideline (NAG) 2019 (pg 218) 2. Frank Shann, 2019. Drug Doses. 3. Cloxacillin Sodium BP 500 mg (Cloxabiotic) (MAL08021485AZ) by Karnataka Antibiotics & Pharmaceuticals Limited (12 Feb 2018) 4. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. Pg 346. 5. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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PO Cloxacillin

Drug name & strength	Syrup Cloxacillin 125 mg/5 ml Capsule Cloxacillin 250 mg
Common Indication and Doses	1. **Treatment of susceptible *Staphylococcus aureus* infections eg Cellulitis, Abscess, Impetigo:** • Usual dose: PO 10-15 mg/kg/DOSE q6H (Max 500mg/DOSE) • Severe infections: PO 25mg/kg/DOSE q6H (Max 1g/DOSE) • Duration: for 5-7 days (or longer on a case-to-case basis)
Special dose info	**Dose in obese paediatrics:** use TBW
References	1. National Antibiotic Guideline (NAG) 2019. MOH Malaysia. Pg 218, 219. 2. Frank Shann, 2017. Drug Doses. 3. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. 4. Cloxacillin: https://www.lhsc.on.ca/nicu/cloxacillin

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PO Doxycycline

Drug name & strength	Capsule Doxycycline 100 mg
Common Indication and Doses	**1. Mild Leptospirosis:** • **Child < 8 years old:** Not recommended • **Child ≥ 8 years old:** PO 2 mg/kg/DOSE q12H (Max 100 mg/DOSE) • Duration: 7 days **2. Scrub thyphus (*Ricketsia tsutsugamushi)*:** • Preferred: PO 1-2mg/kg/DOSE q12H (Max 100mg/DOSE) • Duration: 5 – 7 days • Alternative: Refer ***PO Azithromycin (Zithromax®)***
Special dose info	Doxycycline may stain and deform teeth in children younger than 8 years old. However, doxycycline has not been shown to cause tooth staining in the dose and duration safely used to treat rickettsial diseases including Scrub thyphus.
References	1. National Antibiotic Guideline (NAG) 2019. MOH Malaysia. Pg 224 & 225.

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IV Ertapenem

Drug name & strength	Inj. Ertapenem 1 g/vial
Common Indication and Doses	1. General dose for susceptible infections: • **3 months – 12 years :** 15 mg/kg/DOSE twice daily (max 500 mg/DOSE)
Special dose info	**Ensure Albumin level normal.** **Dose in obese paediatrics:** use TBW **Renal adjustment dose:** • GFR <30 ml/min/1.73 m^2: 50% of the recommended dose once daily **Hepatic adjustment dose:** • No adjustment dose
Monitoring	FBC, Hepatic and Renal function should be monitored weekly with prolonged use.
Storage	Room temperature (< 25˚C)
Reconstitution	1 vial with 10 ml WFI / NS
Stability after reconstitution	Use immediately
Dilution and administration	**Diluent :** NS. Do not use Dextrose containing solutions. **Max concentration:** 20 mg/ml Administration : Infuse over 30 mins
Stability after dilution	6 hrs at ≤ 25°C (RT) 24 hrs if refrigerated (5°C), , use within 4 hours after removal from refrigeration
Incompatibilities	Dextrose containing solutions
References	1. Frank Shann, 2017. Drug Doses. 2. Micromedex Paediatrics v96_2312291453 3. UpToDate. Ertapenem : Pediatric drug information 4. Product leaflet Invanz (Fareva Mirabel) (June 2022) 5. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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PO Erythromycin Ethylsuccinate (EES)

Drug name & strength	Syrup Erythromycin Ethylsuccinate 200 mg/5 ml Tablet Erythromycin Ethylsuccinate 400 mg Tab
Common Indication and Doses	**1. Pneumonia:** • PO 20 mg/kg/DOSE q12H (can go up to 50 mg/kg/DAY in divided q12H) Max as per usual adult dose is 400 mg q12H; up to 800 mg q12H in recurrent infections to overcome potential resistance. • Duration: 7-10 days in Mycoplasma pneumonia infection, 14 days in Chlamydia infection. **2. Pertussis:** • **< 6 months old:** use ***PO Azithromycin (Zithromax®)*** in Pertussis • **≥ 6 months old:** PO 20 mg/kg/DOSE q12H (Max 400 mg/DOSE) • Duration: 14 days **3. Prokinetic:** • PO 2 mg/kg/DOSE q8H
Special dose info	**Avoid use in neonates/young infants under 6 weeks; risk of hypertrophic pyloric stenosis**.
References	1. National Antibiotic Guideline (NAG) 2024. MOH Malaysia. 2. Frank Shann, 2017. Drug Doses. 3. Micromedex Paediatrics v76_2206031830 (Duration in Chlamydia and Mycoplasma infection)

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PO Ethambutol (EMB)

Drug name & strength	Syrup Ethambutol 100 mg/ml (Extemp) Tablet Ethambutol 400 mg
Common Indication and Doses	**1. Tuberculosis, treatment in combination with other drugs:** • **Preferred** : PO 15-25 mg/kg/DOSE q24H (Max: 1 g/DOSE)
Special dose info	**Freshly prepared syrup from tablet form is preferred as total antiTB volume of extemporaneous syrup is often not tolerable and reduces compliance.** Caution when used in children <5 years old who cannot understand warnings about visual side-effects and are incapable to report symptomatic visual changes accurately - best to give an alternative drug or if HIV negative/not immunocompromised, to give HRZ (3 drugs) regime in intensive phase. **Dosage adjustment in renal impairment (BNFC)** • Best avoided due to risk of optic nerve damage • In CrCL < 30 mL/minute/1.73m^2, adjust dose to 15-25 mg/kg (max 2.5 g) 3 times a week
References	1. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. Pg 481 2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Hepatic/renal dose. Pg 398. 3. Micromedex Paediatrics v76_2206031830 4. Quick Reference for Healthcare Providers: Management of Tuberculosis 4th Edition 2022, MOH Malaysia

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PO Ethionamide

Drug name & strength	Tablet Ethionamide 250mg
Common Indication and Doses	**1. Tuberculosis / Other mycobacterium infection** • PO 15-20 mg/kg OD (Max: 1 g/day) • Use in <12 years old: indicated only when the infection is resistant to primary therapy and there is systemic dissemination of disease or imminent life-threatening complications of tuberculosis
Special dose info	**Hepatic impairment** Contraindicated in severe impairment **Administration:** • Administering with meal may reduce GI irritation • Take ON if experience adverse effects of dizziness/drowsiness
References	1. Frank Shann, 2017. Drug Doses. 2. National Antibiotic Guideline (2019). MOH Malaysia. Pg 270. 3. Micromedex Paediatrics v4.5.1 v76_2206031830

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IV Fluconazole

Drug name & strength	Inj. Fluconazole 200 mg/100 mL	
Common Indication and Doses	1. General dose for susceptible infection • IV 6-12 mg/kg STAT, then 3-12 mg/kg q24H (Max: 600 mg/DAY) ***Oral bioavailability > 90% (change to oral whenever possible)**	
Special dose info	**Renal adjustment dose:** • eGFR > 50 mL/minute/1.73m^2: no adjustment • eGFR ≤ 50 mL/minute/1.73m^2: 100% loading dose, then 50% subsequent doses	
Storage	<30°C	
Reconstitution	Not required, already in solution form	
Stability after reconstitution	NA	
Dilution and administration	**Preferred:** **1. Infusion:** **Undiluted** (2 mg/ml) Infuse over **1-2 hrs** (not to exceed 200 mg/hr)	**Alternative***BNFC: **2. Infusion:** **Undiluted** (2 mg/ml) Infuse over **10-30 mins** with **max infusion rate of 5-10 ml/min** (10-20 mg/min).
Stability after dilution	Single use only. Discard any remaining solution.	
Incompatibilities	In the absence of compatibility studies, this medicinal product should not be mixed with other medicinal products.	
References	1. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 407. 2. Product Leaflet Diflucan (Pfizer) and Fluconol (Ain Medicare) (Revised 1 Sept 2019) 3. Frank Shann, 2017. Drug Doses. 4. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015.	

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PO Fluconazole

Drug name & strength	Capsule Fluconazole 50mg, 100mg
Common Indication and Doses	**1. General dose for susceptible infection** • 6-12 mg/kg STAT, then 3-12mg/kg q24H • (Max: 400-600 mg/DAY depending on severity)
Special dose info	**Renal adjustment dose:** • eGFR >50 mL/minute/1.73m^2: no adjustment • eGFR ≤50 mL/minute/1.73m^2: 100% loading dose, then 50% subsequent doses
References	1. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 407. 2. Frank Shann, 2017. Drug Doses. 3. Micromedex Paediatrics v4.5.1 v76_2206031830

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IV/IM Gentamicin

Drug name & strength	Inj. Gentamicin 80 mg/ampoule
Common Indication and Doses	**1. Usual dose:** • IV 5 mg/kg/DOSE q24H (Adjust dose based on TDM especially in renal impairment) **2. Micturating Cystourethrogram (MCUG) Procedure:** [refer to ***APPENDIX 1: Micturating Cystourethrogram (MCUG) procedure***] For patients who missed oral antibiotic prophylaxis prior MCUG and has normal serum creatinine • IM/IV Gentamycin 2.5 mg/kg/dose STAT If serum creatinine raised, use ***IV/IM Ceftriaxone***
Special dose info	**Dose in obese paediatrics:** • Use adjusted body weight = IBW + 0.4 (TBW-IBW) **For TDM:** • 30 mins or just before next dose (trough) • Adjust dose based on TDM especially in renal impairment
Storage	<30°C
Reconstitution	Not required, already in solution form
Stability after reconstitution	NA
Dilution and administration	**Infusion:** **Diluent:** D5%, NS **Max conc.:** 2-10 mg/ml Infuse over **30-60 mins** (Max: 120 mins)
Stability after dilution	No data, use immediately
Incompatibilities	Do not mix with other medicinal products for administration
References	1. National Antibiotic Guideline (NAG) 2019. MOH Malaysia. Pg 199, 203, 205. 2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 333. 3. Garasent (Duopharma) (28 May 2019) 4. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. 5. Micromedex Paediatrics v4.5.1 v76_2206031830 6. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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IV Imipenem/Cilastatin

Drug name & strength	Inj. Imipenem 500 mg + 500 mg Cilastatin (500 mg/vial)
Common Indications and Doses	1. **General dose in susceptible infections:** • IV 15-25 mg/kg/DOSE of Imipenem component q6H (Max: 1 g/DOSE of Imipenem) • Use the higher end of dose in Pseudomonas or other less sensitive infections and in febrile neutropenia.
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose:** • eGFR 10-40 mL/minute/1.73m^2 : 75% normal dose q8H • eGFR < 40 mL/minute/1.73m^2 : 15% normal dose q12H • Anuric : 10% normal dose q24H **ALERT! Not for CNS infections due to risk of seizure adverse effects**
Storage	Room temperature (<30 ºC)
Reconstitution	1 vial with 10 ml of NS or D5%
Stability after reconstitution	4 hrs at RT or 24 hrs refrigerated
Dilution and administration	**Infusion:** **Diluents:** NS, D5% **Max conc.:** 5 mg/ml ≤500 mg: infuse over 20-30 mins >500 mg: infuse over 40-60 mins **** Caution!*** Do not give IM or by IV bolus
Stability after dilution	4 hrs at RT or 24 hrs refrigerated
Incompatibilities	Lactate, diluents containing lactate
References	1. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 336. 2. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. Pg 341. 3. Product Leaflet Imipenem/Cilastatin Kabi 500mg/500mg Powder for Infusion (Jan 2020) 4. Frank Shann, 2019. Drug Doses. 5. Micromedex Paediatrics v4.5.1 v76_2206031830

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PO Isoniazid (INH)

Drug name & strength	Syrup Isoniazid 40 mg/ml (Extemp) Tablet Isoniazid 100 mg Tab
Common Indications and Doses	**1. <u>Tuberculosis, in combination with other drugs (in standard 6 months treatment)</u>** • PO 7-15 mg/kg OD (Max: 300 mg/dose) Prescribe with T. Pyridoxine 5-10mg OD from start of treatment for prophylaxis of peripheral neuropathy. **2. <u>Latent TB in susceptible close contacts or tuberculin positive</u> – refer table below for recommendations according to age** • PO 7-15 mg/kg OD (Max: 300 mg/dose) Prescribe with T. Pyridoxine 5-10mg OD from start of treatment for prophylaxis of peripheral neuropathy. **Recommended LTBI Regimen for Children According to Age** (Adapted from *Quick Reference for Healthcare Providers: Management of Tuberculosis 4th Edition 2022, MOH Malaysia)*

Age	Preferred	Alternative
28 days & below	6 months of Isoniazid (6H)	Nil
29 days to 2 years old	4 months of Rifampicin (4R)	3 months of Isoniazid + Rifampicin (3HR) **OR** 6 months of Isoniazid (6H) **OR** 9 months of Isoniazid (9H)
More than 2 years old	4 months of Rifampicin (4R)* **Option of Rifapentine + Isoniazid omitted in view of Rifapentine not available in HSgB*	3 months of Isoniazid + Rifampicin (3HR) **OR** 6 months of Isoniazid (6H) **OR** 9 months of Isoniazid (9H)
These recommendations do not apply to HIV-infected children with LTBI		

Special dose info	**Freshly prepared syrup from tablet form is preferred as total antiTB volume of extemporaneous syrup is often not tolerable and reduces compliance.** **Dose in obese paediatrics (TBW > 20% IBW):** Use IBW or AdjBW = (IBW + [0.4 X (actual weight - IBW)] **Dose adjustment in hepatic impairment** Use with caution **Dose adjustment in renal impairment** Use with caution
References	1. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. Pg 481 2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 399. 3. Micromedex Paediatrics v4.5.1 v76_2206031830 4. Quick Reference for Healthca re Providers: Management of Tuberculosis 4th Edition 2022, MOH Malaysia

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IV Meropenem

Drug name & strength	Inj. Meropenem 500 mg/vial or 1000 mg/vial
Common Indications and Doses	1. <u>Aerobic and anaerobic Gram-positive and Gram-negative infections / Hospital-acquired septicaemia:</u> • **Child:** IV 10-20 mg/kg/DOSE q8H (Max: 2 g/DOSE) 2. <u>Meningitis / Severe aerobic and anaerobic Gram-positive and Gram-negative infections:</u> • **Child:** IV 40 mg/kg/DOSE q8H (Max: 2 g/DOSE)
Special dose info	**Dose in obese paediatrics:** use TBW **Renal adjustment dose:** • eGFR 26–50 mL/minute/1.73m^2 : 100% normal dose q12H • eGFR 10-25mL/minute/1.73m^2 : 50% normal dose q12H • eGFR <10mL/minute/1.73m^2 : 50% normal dose q24H **Monitor liver function due to hepatotoxicity risk**
Storage	Room temperature (<25 ºC)
Reconstitution	500 mg: 10 ml WFI 1000 mg: 20 ml WFI
Stability after reconstitution	<u>**Brand specific:**</u> **Neuronem:** If diluted in NS: 8 hours in room temperature (<25 ºC) and 48 hours at 4 ºC If diluted in D5%: 3 hours in room temperature (<25 ºC) and 14 hours at 4 ºC **Meropenem Kabi:** If diluted in NS: 8 hours in room temperature (<25 ºC) and 24 hours at 4 ºC If diluted in D5%: 3 hours in room temperature (<25 ºC) and 14 hours at 4 ºC
Dilution and administration	<u>**Preferred (> 3 months):**</u> **Infusion**: **Preferred diluent:** NS, D5% Conc.: 1-20 mg/ml <3 months: Infuse over 30 mins ≥3 months: Infuse over 15-30 mins <u>**Alternative:**</u> **Slow bolus:** Given **undiluted** Inject over 5 mins

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IV Meropenem (cont.)

Stability after dilution	**Brand specific:** **Neuronem:** If diluted in NS: 8 hours in room temperature (<25 ºC) and 48 hours at 4 ºC If diluted in D5%: 3 hours in room temperature (<25 ºC) and 14 hours at 4 ºC **Meropenem Kabi:** If diluted in NS: 8 hours in room temperature (<25 ºC) and 24 hours at 4 ºC If diluted in D5%: 3 hours in room temperature (<25 ºC) and 14 hours at 4 ºC
Incompatibilities	Should not be mixed with or added to other medications
References	1. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 337. 2. Frank Shann, 2017. Drug Doses. 3. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. 4. Product Leaflet Nuronem 500mg/1g (May 2016) 5. Product Leaflet Meropenem Kabi (Oct 2019) 6. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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IV Metronidazole (Flagyl)

Drug name & strength	Inj. Metronidazole 500 mg/bottle
Common Indications and Doses	1. **Anaerobic infections:** • **Child:** IV 15 mg/kg/DOSE STAT, then IV 7.5 mg/kg/DOSE q8H (Max: 500 mg/DOSE) Duration: usually for 7 days; or 10-14 days in *Clostridioides difficile* infection)
Special dose info	**Hepatic impairment** Oral use: reduce dose to one-third of the daily dose in hepatic encephalopathy (dose may be given once daily) Intravenous use: consider dose reduction in severe impairment
Storage	< 30 ^{o}C
Reconstitution	**Not required (Already in solution form)**
Stability after reconstitution	**NA**
Dilution and administration	**Infusion:** Given **undiluted** Infuse over 30-60 mins
Stability after dilution	**Single use only**. Discard any remaining solution.
Incompatibilities	No Data
References	1. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 360. 2. Frank Shann, 2017. Drug Doses. 3. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. 4. Product Leaflet Metronol (1 July 2019)

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PO Metronidazole (Flagyl)

Drug name & strength	Syrup Metronidazole 200mg/5ml Tablet Metronidazole 200mg
Common Indication and Doses	**1. Anaerobic infections:** • **1 month old** : PO 7.5 mg/kg/DOSE q12H Duration: Usually for 7 days. Or a longer 10-14 days in *Clostridioides difficile* infection • **2 months old – 11 years old** : PO 7.5 mg/kg/DOSE q8H (Max: 400 mg/DOSE) Duration: Usually for 7 days. Or a longer 10-14 days in *Clostridioides difficile* infection
Special dose info	**Hepatic impairment** Reduce dose to one-third of the daily dose in hepatic encephalopathy (dose may be given once daily)
References	1. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 358. 2. Frank Shann, 2017. Drug Doses.

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PO Nitrofurantoin

Drug name & strength	Tablet Nitrofurantoin 100mg Immediate Release Syrup Nitrofurantoin 100mg/ml (Extemporaneous preparation)
Common Indications and Doses	**1. Lower Urinary Tract Infection, Treatment:** • **Immediate Release Tablet:** 1 month or older: 1 mg/kg/dose q6H (max 100mg/dose) **2. Urinary Tract Infection, Prophylaxis:** • **Immediate Release Tablet:** 1 month or older: 1-2 mg/kg/dose ON (Immediate release tablet, max 100mg/dose)
Special dose info	**High risk** of hemolytic anemia in patients with **G6PD deficiency** Contraindicated in neonates younger than 1 month due to increased risk of hemolytic anemia Contraindicated in patients with anuria, oliguria or significant renal function impairment (CrCL less than 60 ml/min or clinically significant elevated serum creatinine)
References	1. National Antibiotic Guideline 2024, Ministry of Health Malaysia. 2. Micromedex Paediatrics v4.5.1 v76_2206031830

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PO Nystatin

Drug name & strength	Syrup Nystatin 100,000U/ml Suspension
Common Indications and Doses	**3. Antifungal prophylaxis in immunocompromised patients:** • **< 12 months old:** PO 50,000U q8H • **> 12 months old:** PO 250,000U q8H **4. Oral Candidiasis, Treatment:** • **< 12 months old:** PO 100,000U q6H • **> 12 months old:** PO 500,000U q6H Duration: for at least 48H after perioral symptoms disappear and cultures (if any) demonstrate eradication of Candida albicans. Treat for 7-14 days in immunocompromised HIV patients. **ALERT: Dose is NOT per kg**
Special dose info	Shake suspension well before use. Use dropper to place one-half of dose in each side of mouth. In children, retain in mouth as long as possible before swallowing. In infants, avoid feeding for 10 minutes.
References	3. Frank Shann, 2017. Drug Doses. 4. Micromedex Paediatrics v4.5.1 v76_2206031830

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PO Oseltamivir (Tamiflu®)

Drug name & strength	Syrup Oseltamivir 12 mg/mL (Commercial syrup) Syrup Oseltamivir 15mg/ml (X-TEMP Extemporaneous Preparation) – alternative to commercial syrup Capsule Oseltamivir 75 mg
Common Indications and Doses	**1. Treatment of Influenza A & B:** ● **< 9 months old** : PO 3 mg/kg/DOSE q12H for 5 days ● **9-11 months old** : PO 3.5 mg/kg/DOSE q12H for 5 days ● **1-12 years old:** ○ ≤ 15 kg : PO 30 mg q12H for 5 days ○ > 15 -23 kg : PO 45 mg q12H for 5 days ○ > 23-40 kg : PO 60 mg q12H for 5 days ○ > 40 kg : PO 75 mg q12H for 5 days
Special dose info	**Renal adjustment dose:** ● eGFR < 10mL/minute/1.73m^2 : Use not recommended **If the ready-made syrup is unavailable, prepare Syrup Oseltamivir 15mg/mL (X-TEMP Syrup) Preparation:** [Stability: 35 days] by: 1. Put the contents of 12 capsules of Capsule Oseltamivir 75mg into the mortar 2. Crush the contents until smooth 3. Mix with the X-Temp syrup little by little until it becomes a paste 4. Use the excess X-Temp syrup to clean the excess medicine in the mortar and pour it into a plastic amber bottle 5. Pour the X-Temp syrup into the bottle until it reaches the required volume (60 ml) to produce Syr Oseltamivir 900 mg/60 mL (Strength = 15 mg/ml) 6. Shake the bottle and label accordingly
References	1. National Antibiotic Guideline (2019). MOH Malaysia. Pg 216. 2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 463. 3. X-Temp D Oral Suspension System (6th Edition)

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PO Phenoxymethylpenicillin (Pen-V)

Drug name & strength	Syrup Phenoxymethylpenicillin 125 mg/5 ml Tablet Phenoxymethylpenicillin 125 mg
Common Indications and Doses	**1. Treatment of susceptible infections:** • PO 10-15 mg/kg/DOSE q6H (Max: 500 mg/DOSE) • Duration: for 10 days in Group A Streptococcus tonsillitis/pharyngitis **2. Prophylaxis of spontaneous bacterial peritonitis in Nephrotic Syndrome:** (recommended at diagnosis and during relapse, particularly with gross oedema) • **1-5 years old** : PO 125 mg BD • **6-12 years old** : PO 250 mg BD • **> 12 years old** : PO 500 mg BD • Duration: Cease after oedema subsides **3. Treatment of Acute Rheumatic Fever (Anti-streptococcal therapy):** • **< 30 kg:** PO 250 mg q6H for 10 days • **> 30 kg:** PO 500 mg q6H for 10 days **4. Secondary Prophylaxis of Rheumatic Fever:** • PO 250 mg q12H. • Duration: Depends on risk factors **5. Post-splenectomy prophylaxis:** • **≤ 5 years old:** PO 125 mg q12H • **> 5 years old:** PO 250 mg q12H • Duration: Life-long
Special dose info	**Dose in obese paediatrics:** use TBW
References	1. Frank Shann, 2017. Drug Doses. 2. National Antibiotic Guideline (2019). MOH Malaysia (Pg 213 for indication 1 & 5) 3. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. (-g 218, 219, 336 for indications 2-4) 4. Nephrotic Syndrome (Nov 2019). https://www.rch.org.au/clinicalguide/guideline_index/Nephrotic_syndrome/ 5. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds)

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IV Piperacillin/Tazobactam (Tazocin/Zosyn®)

Drug name & strength	Inj. Piperacillin 4000 mg/Tazobactam 500 mg (= 4.5 g/vial)
Common Indications and Doses	1. **General dose in susceptible infections:** • IV 90-112.5 mg/kg of **Pip-Tazo** q6-8H (Max: 4.5g of **Pip-Tazo/DOSE)** 2. **Febrile neutropenia:** • IV 100 mg/kg of **Pip-Tazo** q8H (Max: 4.5g of **Pip-Tazo/DOSE)**
Special dose info	**Renal adjustment dose:** • eGFR > 50 mL/minute/1.73m^2 : No adjustment • eGFR 30-50 mL/minute/1.73m^2 : 40-56 mg/kg of Pip-Tazo Q6H • eGFR < 30mL/minute/1.73m^2 : 40-56 mg/kg of Pip-Tazo Q8H
Storage	<30 °C. Do not refrigerate.
Reconstitution	1 vial with 20 ml of WFI or NS
Stability after reconstitution	Refrigerate (2-8 °C): 24 hours
Dilution and administration	**IV Infusion:** **Preferred diluent:** NS, D5% **Conc.**: 22.5-90 mg/ml of Pip-Tazo (20-80 mg/ml of piperacillin) Infuse over 30 mins (can extend infusion over 3-4 hrs)
Stability after dilution	No data
Incompatibilities	Aminoglycosides, Lactated Ringer's solution, solutions containing only sodium bicarbonate, blood products or albumin hydroysates. Generally, not to be mixed with other drugs as compatibility has not been established.
References	1. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 362. 2. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. 3. AUROTAZ-P Product Leaflet (Aug 2019) 4. National Antibiotic Guideline (2019). MOH Malaysia. 5. Frank Shann, 2017. Drug Doses. 6. Micromedex Paediatrics v4.5.1 v76_2206031830

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PO Pyrazinamide

Drug name & strength	Syrup Pyrazinamide 100 mg/mL (Extemporaneous) Tablet Pyrazinamide 500 mg Tab
Common Indications and Doses	1. **Tuberculosis, treatment in combination with other drugs:** • **Child:** 30-40 mg/kg/dose q24H (Max: 2 g/DOSE)
Special dose info	**Freshly prepared syrup from tablet form is preferred as total antiTB volume of extemporaneous syrup is often not tolerable and reduces compliance.** Take baseline LFT prior to Pyrazinamide initiation **Dose in obese paediatrics (TBW > 20% IBW):** Use IBW or AdjBW = (IBW + [0.4 X (actual weight - IBW)] **Hepatic impairment** Avoid in severe impairment, acute hepatic disease and for up to 6 months after the occurrence of hepatitis **Renal adjustment dose** • If eGFR< 30 mL/minute/1.73m^2 adjust dose to 25–30 mg/kg 3 times a week
References	1. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. Pg 481 2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Hepatic/renal dose. Pg 400. 3. Micromedex Paediatrics v4.5.1 v76_2206031830 (Obese dose) 4. Quick Reference for Healthcare Providers: Management of Tuberculosis 4th Edition 2022, MOH Malaysia

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PO Rifampicin

Drug name & strength

Syrup Rifampicin 25 mg/mL (Extemporaneous)

Capsule Rifampicin 150 mg or 300 mg

Common Indications and Doses

1. **Tuberculosis, in combination with other drugs (in standard 6 months treatment):**
   - PO 10-20 mg/kg/DOSE q24H (Max: 600 mg/DOSE)

2. **Latent TB in susceptible close contacts or tuberculin positive – refer table below for recommendations according to age**
   - PO 10-20 mg/kg/DOSE OD (Max: 600 mg/DOSE)

Recommended LTBI Regimen for Children According to Age (Adapted from *Quick Reference for Healthcare Providers: Management of Tuberculosis 4th Edition 2022, MOH Malaysia)*

Age	Preferred	Alternative
28 days & below	6 months of Isoniazid (6H)	Nil
29 days to 2 years old	4 months of Rifampicin (4R)	3 months of Isoniazid + Rifampicin (3HR) **OR** 6 months of Isoniazid (6H) **OR** 9 months of Isoniazid (9H)
More than 2 years old	4 months of Rifampicin (4R)* **Option of Rifapentine + Isoniazid omitted in view of Rifapentine not available in HSgB*	3 months of Isoniazid + Rifampicin (3HR) **OR** 6 months of Isoniazid (6H) **OR** 9 months of Isoniazid (9H)
These recommendations do not apply to HIV-infected children with LTBI		

Special dose info

Freshly prepared syrup from capsule form is preferred as total antiTB volume of extemporaneous syrup is often not tolerable and reduces compliance.

Take baseline LFT prior to Rifampicin initiation

Dose in obese paediatrics (TBW >20% IBW):

Use IBW or AdjBW = (IBW + [0.4 X (actual weight - IBW)]

Dose adjustment in hepatic impairment

Use with caution. Max dose: 8 mg/kg/day

Dose adjustment in renal impairment

Use with caution in renal impairment with dose > 10 mg/kg/day

References

1. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. Pg 481
2. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Hepatic/renal dose. Pg 396.
3. Micromedex Paediatrics v76_2206031830 (Obese dose)
4. Quick Reference for Healthcare Providers: Management of Tuberculosis 4th Edition 2022, MOH Malaysia

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PO Trimethoprim (TMP)

Drug name & strength	Syrup Trimethoprim 10 mg/mL (Extemporaneous) Tablet Trimethoprim 300 mg Tab
Common Indications and Doses	**1. Urinary Tract Infection, Treatment:** • PO 4 mg/kg/DOSE q12H (Max: 300mg daily) for 1 week **2. Recurrent Urinary Tract Infection, Prophylaxis:** • PO 1-2 mg/kg/DOSE ON **3. Prophylaxis prior to Micturating Cystourethrogram (MCUG) procedure** [refer to *APPENDIX 1: Micturating Cystourethrogram (MCUG) procedure*] • PO 4 mg/kg/DOSE q12H for 3 days (1 day before, on the day & 1 day after procedure) • If contraindicated/allergy to TMP, use *PO Cefuroxime Axetil (Zinnat®)* as alternative.
Special dose info	**Renal adjustment dose** • If eGFR 15-30 mL/minute/1.73m^2 reduce 50% normal dose after 3 days • If eGFR < 15 mL/minute/1.73m^2 reduce 50% normal dose
References	1. Imam H, Muhammad H, Mohd IH, et al. *PAEDIATRIC PROTOCOLS For Malaysian Hospitals*.; 2019. Pg 363. 2. MCUG Procedure, HSgB – Dr Wen 3. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 390

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IV Vancomycin

Drug name & strength	Inj. Vancomycin 500 mg/vial
Common Indications and Doses	1. **General dose in susceptible infections:** • IV 15-20 mg/kg/DOSE q8-12H (Max: 2 g/DOSE)
Special dose info	**Dose in obese paediatrics:** use TBW **TDM** • 30 mins or just before 4th dose (trough) excluding loading dose (if any). • Adjust dose based on TDM especially in renal impairment
Storage	<30°C. Do not refrigerate.
Reconstitution	1 vial in 10 ml WFI (conc.: 50 mg/ml)
Stability after reconstitution	**Brand specific:** **Brand:** Celovan **Stability:** To further dilute immediately after reconstitution **Brand:** Vivocin **Stabilty:** 96 hours
Dilution and administration	**Infusion:** **Diluent:** NS, D5% **Max conc.**: 5 mg/ml Infuse over **60 mins** In fluid restriction: max conc. of 10 mg/ml can be used via central venous line.
Stability after dilution	**Brand specific:** **Brand:** Celovan **Stability:** 48 hours **Brand:** Vivocin **Stabilty:** 96 hours
References	1. National Antibiotic Guideline (NAG) 2019. MOH Malaysia. 2. Frank Shann, 2017. Drug Doses. 3. Taketomo CK, Hodding, JH, Kraus DM. Pediatric & Neonatal Dosage Handbook, 22nd ed. USA: Lexi-Comp, Inc.; 2015. 4. Product Leaflet Vivocin, Gland Pharma Ltd (5 Sept 2019) 5. Product Leaflet Celvolan, Mylan Laboratories Limited (January 2018) 6. Dosing Weight in Paediatric Obese Patient (v01/2019/JKKPaeds) 7. Royal Pharmaceutical Society. *BNF for Children*. September 2020-21. BMJ Group and Pharmaceutical Press; 2021. Pg 349

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APPENDIX 1: Micturating Cystourethrogram (MCUG) procedure

(Paediatric department, Hospital Sungai Buloh)

1. Antibiotic prophylaxis (using treatment dose) prior to MCUG (start 1 day before MCUG and continue until 1 day after MCUG – total 3 days)

    a. Oral Trimethoprim 4 mg/kg BD

    OR

    b. Oral Cefuroxime 15 mg/kg BD (in those with contraindication to Trimethoprim, e.g. allergy)

2. In event patient missed getting oral antibiotic prophylaxis prior to MCUG, to give:

    a. Normal serum creatinine – IM/IV Gentamycin 2.5 mg/kg stat

    b. High serum creatinine – IM/IV Ceftriaxone 50 mg/kg stat

References:

1. NICE guideline urinary tract infection, treatment and long-term management of UTI in children 2007, updated 2017
2. National Antimicrobial Guideline 2019, 3rd edition

Updated on 28/5/2020

* Provided by Dr Wen (Paediatrics Specialist)

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