Children's Resuscitation Emergency Drug Dosage (CREDD)

3rd Edition

Sponsored by the Queensland Emergency Department
Strategic Advisory Panel (QEDSAP)

Clinical Excellence Queensland
Queensland Government

Acknowledgement of Country

We pay our respects to the Aboriginal and Torres Strait Islander ancestors and custodians of this land, their spirits and their legacy. The foundations laid by these ancestors—First Nations peoples—gives strength, inspiration and courage to current and future generations. We are committed to working towards a stronger and healthier Queensland community for Aboriginal and Torres Strait Islander and non-Aboriginal and Torres Strait Islander people.

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The online version is the controlled copy of CREDD. Downloaded and hardcopies are uncontrolled. Users are responsible for accessing the controlled copy and regularly checking for updates.

Cover artwork produced for Queensland Health by Gilimbaa. The motifs used represent the important network of people from Queensland communities and how they work together to empower Aboriginal and Torres Strait Islander Queenslanders to have long, healthy, productive lives.

For content enquiries or feedback email the CREDD team at CREDD@health.qld.gov.au

For distribution enquiries email the Simulation Training Optimising Resuscitation for Kids (STORK) at STORK@health.qld.gov.au

Purpose

This book is a weight-based equipment and medication guide intended for use by clinicians managing critically unwell children during the initial stages of resuscitation. It contains information on the recommended dosing, preparation and delivery of drugs administered in a wide range of paediatric emergencies.

The aim of providing this information by weight is to reduce the cognitive burden at the time of resuscitation thereby limiting the potential for error and improving the speed of medication delivery.

The CREDD book has been developed by a multidisciplinary team of clinicians and pharmacists with emergency, paediatric, paediatric intensive care and retrieval expertise.

The preparation methods contained in this book use standardised concentrations to align with the international safety standards of drug preparation.

Considerations

The CREDD book is not a substitute for clinically appropriate, carefully checked medication orders. It is designed to be used in conjunction with state and/or local resources which contain information on drug interactions, compatibilities, precautions and possible side effects.

The dosing information contained in this book reflects the latest evidence at the time of print and is subject to change. Refer to *references* and the *rationale for consensus decisions* at the back of this book for further information.

The infusion recommendations align with the Queensland Children's Hospital, Paediatric Intensive Care medication safety drug profiles. We recommend using drug error reduction software (DERS) on all pumps. For sites without DERS software we have included mL/hr relating to dosing recommendations for that particular medication when prepared as instructed. If you require information regarding the preparation of infusions not listed in CREDD, please refer to Children's Intensive Care Drug Directory (CIDD).

For online paediatric emergency resources including a digital version of CREDD and further paediatric resuscitation education by Simulation Training Optimising Resuscitation for Kids (STORK) visit the Queensland Paediatric Emergency Care page on the Children's Health Queensland website. Search "CHQ emergency care" or scan the code on the front cover with your phone's camera.

Third edition changes

In response to valuable feedback and review of new evidence we have made the following changes to the 3rd edition.

Addition of Antimicrobials section
The aim is to improve timely antimicrobial administration in critically unwell children. All medication doses are consistent with the Queensland Paediatric Sepsis Program. Preparation of the medications are in line with CREDD principles. We acknowledge this may be a change in current practice and recommend users familiarise themselves via the training resources. QR code and hyperlinks to the latest version of the Queensland sepsis program are at the beginning of the antimicrobial section.

Endotracheal Tubes (ETT)
Only one size of ETT will be recommended for each weight. Please prepare the recommended ETT and one size above and one size below. The CREDD team recommend using a microcuff ETT, these tubes are designed to seal at a lower cuff pressure with a more anatomically favourable design for paediatric patients.

Anaphylaxis
Adrenaline IM as per ASCIA guidelines and expert immunology opinion will be dose banded according to age:

Under 1 year (all weights) = 100 microg (0.1 mL of 1: 1000)
1–2 years (10 kg–12 kg) = 100 microg (0.1 mL of 1:1000)
2–3 years (13–15 kg) = 150 microg (0.15 mL of 1:1000)
4–6 years (16–20 kg) = 200 microg (0.2 mL of 1:1000)
7–10 years (22–30 kg) = 300 microg (0.3 mL of 1:1000)
11–12 years (35–45 kg) = 400 microg (0.4 mL of 1:1000)
Over 12 years (greater than 50 kg) = 500 microg (0.5 mL of 1:1000)

Respiratory
Hydrocortisone:
Maxiumum dose reduction to 100 mg.

Salbutamol:
- Lowering of intravenous doses due to emerging evidence and risk of Salbutamol toxicity with high doses.
- IV Salbutamol Loading/Bolus 15 microg/kg over 10 mins. Maximum 300 microg.
- IV Salbutamol Infusion dose 0.5 microg/kg/min to 1 microg/kg/minute. Maximum dose of 40 microg per minute.

Electrolytes
Glucose and Insulin – addition of a PUSH dose which can be given in management of a Hyperkalaemia causing cardiac arrest.

Acute behavioural disturbance
Medication dosing tables have been removed from all weights under 20 kg. It is recognised that use of these medications in an emergency is rare under the age of 6 years.

When caring for critically unwell children call for HELP early

If no paediatric critical care facility onsite, contact **Retrieval Services Queensland (RSQ) on 1300 799 127**.
If required, Paediatric Critical Care specialists can check dosing and guide clinicians through drug preparation.

How to use CREDD

Determine the weight of the child and find the respective pages for that weight in the book. If the exact weight is not known, it can be estimated (see *Table 1*).

Medications are grouped according to the condition in which they are used. Weights range from 2 to 70 kg in predefined increments. When the actual body weight is between a weight range, we recommend rounding up to the nearest kilogram.

Clinical judgement is needed for dose selection at the extremes of body weight for a given age.

Depending on the medication there is variability in the weight at which an adult medication dose is reached. Once adult dosing is reached all weights above this will reflect the adult dose.

Equipment selection

Equipment sizing is determined by age.

As this book is a weight based guide, the listed size is based on the expected weight for each age. See *Table 1*.

When using a cuffed Endotracheal tube (ETT) we recommend the use of an ETT with a microcuff. These tubes are designed to seal at a lower cuff pressure with a more anatomically favourable design for paediatric patients.

When choosing an Intercostal Catheter (ICC) size we have given a range of sizes according to weight. Simple calculation of 4x the ETT size is accepted as a good guide for size selection.

Age	Weight	Height	ETT microcuff size
Birth (term)	3.5 kg	50 cm	3.5
1 month	4 kg	55 cm	3.5
2 months	5 kg	58 cm	3.5
3 months	6 kg	61 cm	3.5
4 months	7 kg	63 cm	3.5
6 months	8 kg	67 cm	3.5
9 months	9 kg	72 cm	4.0
1 year	10 kg	75 cm	4.0
2 years	12 kg	87 cm	4.5
3 years	14 kg	96 cm	4.5
4 years	16 kg	103 cm	5.0
5 years	18 kg	110 cm	5.0
6 years	20 kg	115 cm	5.5
7 years	22 kg	122 cm	5.5
8 years	25 kg	127 cm	6.0
9 years	28 kg	134 cm	6.0
10 years	30 kg	139 cm	6.5
11 years	35 kg	144 cm	6.5
12 years	40 kg	150 cm	7.0
13 years	45 kg	156 cm	7.0
14 years	50 kg	162 cm	7.0

Table 1. Average weight and height for age with ETT microcuff sizes

Medication recommendations

Medication doses are expressed as the **recommended dose/kg** and the **dose** reflects the calculated dose for each weight.

Where a dosing range is displayed, the lower dose is provided in the dose column. Certain medications should be titrated to the desired effect. Careful judgement is needed when managing critically unwell children. A shocked child is particularly sensitive to the respiratory and cardio depressant effects of induction agents and analgesics. Titration of these drugs to effect with careful attention to correcting hypovolaemia and using vasoactive agents such as push dose pressor Adrenaline is recommended.

We have aimed to simplify medication administration, and comply with international medication safety standards, by guiding the user to prepare medications as standard concentrations, referred to as **final concentration**. This is familiar practice in most emergency departments. Where practical, and to minimise error the recommended practice is to draw up the entire volume of specific vials/ampoules and dilute according to the **preparation/dilution** instructions.

Unless otherwise indicated, the recommended diluent is Sodium Chloride 0.9%. The user is guided in preparing a **final concentration** of the drug and the **final volume to administer** the calculated dose.

Maximum volume of IM injections (vastus lateralis):

Less than 6 months 0.5 mL
Over 6 months up to 3 years 1 mL
Over 3 years up to 6 years 1.5 mL
Over 6 years 1.5–2 mL

Some medications do not require dilution; the preparation instructions for these state “Undiluted”.

When the recommended dose exceeds the contents of one vial, multiple vials may need to be draw into the syringe to give the dose and **final volume to administer**.

The wording “consult” replaces the dose when a medication would not be recommended due to the age of the child.

The **administration** column provides guidance on medication delivery. Medications to be administered as a “push” should be given as rapidly as the vein and volume allows unless a time frame is specified. IV refers to both intravenous and intraosseous routes of administration.

When the dose of IV/IO medication to be administered has a volume of less than 1 mL and is required to be given over any time period between 30 seconds to 5 minutes. The exact dose can be drawn up in a 1 mL syringe then diluted to a total volume of 1 mL with a compatible fluid. This enables an exact dose to be given as specified.

Medications given over longer than five minutes should preferably be given as a short infusion. However, where this is not possible, the medication can be pushed by a staff member over the specified time frame.

It is acknowledged that there is a variance in the average volume of the 100 mL and 250 mL infusion fluid bags. A consensus decision was made to NOT include this overage volume when diluting up to final volumes of 100 mL or greater. It was agreed that the faster time to medication administration by reducing the complexity of preparation outweighed a slightly decreased final concentration.

Rounding rules

Final volume to administer is calculated according to the following rules:

- the volume has been rounded to two decimal places for medication doses which are below 1 mL (accurately draw up into a 1 mL syringe)
  e.g. Adenosine dose 0.4 mg = final volume of 0.13 mL
- single decimal place used for medication doses with volumes between 1–20 mL
  e.g. Levetiracetam 440 mg = final volume of 8.8 mL
- dosing rounded to the nearest mL for medication doses with a volume above 20 mL

“The underlying principle of CREDD is to provide a safe and practical guide for medication administration in pressured situations. For this reason, doses are rounded to a volume that is easy to draw up and administer. Ideally, we would like to apply a blanket rule for rounding doses however this is not always appropriate. In most cases, medications with volumes less than 1 mL are rounded to two decimal places and volumes over 1 mL to one decimal place. In some medications, the dose is reflected as the actual calculated dose and the final volume is rounded to a practical and safe volume to administer.”

Administration

Push and titratable medications

The recommended procedure for medications to be administered as a push is as follows:

1. Prepare the **final concentration** (Mothership) syringe **(A)**. Ensure it is clearly labelled as per institutional labelling standards.
2. Attach a fluid dispensing connector **(B)** or 3-way tap **(C)** to an appropriate sized **dose** syringe **(D)** that is clearly labelled.
3. Draw the exact dose **final volume to administer (D)** into the dosing syringe.

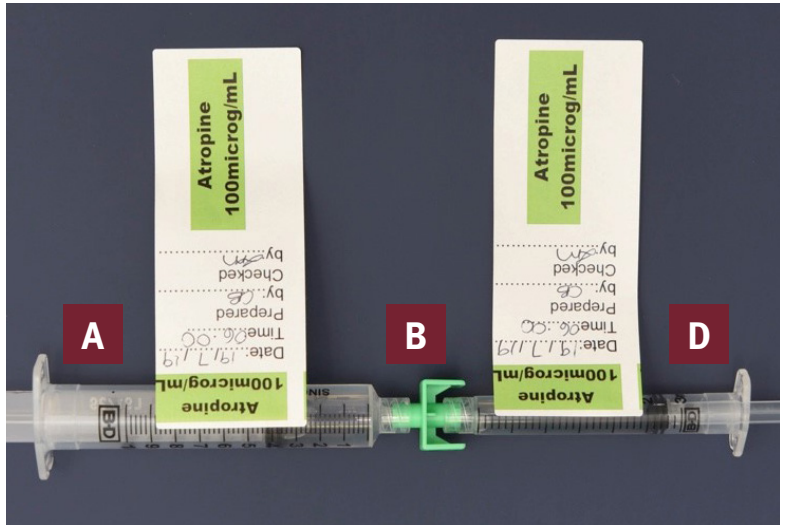


Fig 1. Final concentration syringe connected to the dose syringe using a fluid dispensing connector.

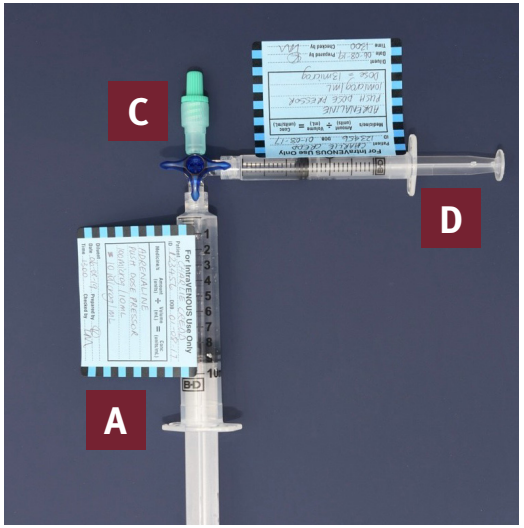


Fig 2. Final concentration syringe connected to the dose syringe using a 3-way tap.

Short infusions and loading doses

Having prepared the final concentration, ensure only the exact volume to be infused is attached to the syringe pump by either:

- Drawing up the **final volume to administer** into a different syringe of appropriate size.
- if **final volume to administer** less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.
- or, if using the **final concentration** (Mothership) syringe, discard all excess solution so that the volume contained in the final concentration syringe is limited to the **final volume to administer**.

Administer the exact dose via an infusion pump over the specified time.

Infusions (page 7 of each weight)

All infusion preparations are prepared to produce a standardised concentration in line with the Children's Health Queensland and CHQ Retrieval Service and international drug safety standards. Unless specified, all infusions are made up to a concentration which can be safely administered via a peripheral vein. Where a central vein is advised, this may be achieved by using a central vein or intraosseous access.

Infusions are grouped according to the purpose of use. The user is guided in **preparation** instructions to produce a standardised **final concentration** of drug made up in a 50 mL syringe. The **recommended dose/kg** range is stated in appropriate units (e.g. units/kg/min or units/kg/hr). The final rate range reflecting this dose range is given in millilitres (mL) per hour. This is to assist sites without smart pumps and drug error reduction software.

Some infusions have small volumes and low rates which can result in delays in the medication reaching the patient. We recommend the infusion line is connected as close as possible to the patient IV and commenced at a rate which ensures the medication reaches the patient quickly. The patient should be observed continuously, and the infusion titrated to effect.

Higher concentration solutions options are offered in larger children, to minimise the need for infusion changes.

Antimicrobials

Having prepared the final concentration, ensure only the exact volume to be infused is attached to the syringe pump by either:

- Drawing up the **final volume to administer** into a different syringe of appropriate size.
- if **final volume to administer** less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.
- or, if using the **final concentration** (Mothership) syringe, discard all excess solution so that the volume contained in the final concentration syringe is limited to the **final volume to administer**.

Administer the exact dose via an infusion pump over the specified time.


2kg

2 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – mm	3 mm	NG tube	5 Fr
Laryngoscope blade	0/1	ICC tube	8 Fr
ETT at lips – cm	7 cm	LMA	1
ETT at nose – cm	9 cm	IDC	5 Fr

ANAPHYLAXIS	
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)	
Dose	Volume
100 microg	**0.1 mL**

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**20 microg**	0.2 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**8 Joule**		Use infant or paediatric pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**10 mg**	1 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			20 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			40 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		4 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**0.2 mg**	0.07 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**0.4 mg**	0.13 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**0.6 mg**	0.2 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**2 Joule**		Use infant or paediatric pads
		2 Joule/kg			**4 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**40 microg**	0.4 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**2 microg**	0.2 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**4 microg**	0.4 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**2 mg**	0.2 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**4 mg**	0.4 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.2 mg**	0.2 mL	Push over 2 - 3 mins

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**2.4 mg**	0.24 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**4 mg**	0.4 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**0.2 mg**	0.2 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**32 mg**	0.32 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**10 microg**	0.1 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**20 microg**	0.05 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**0.6 mg**	0.15 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**Consult**	Consult	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**8 mg**	0.16 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**Consult**	Consult	Push over 5 mins sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**Consult**	Consult	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**Consult**	Consult	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.3 mg**	0.3 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**0.4 mg**	0.08 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**0.6 mg**	0.12 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**40 mg**	4 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 1 mL (200 mg) to 10 mL	20 mg/mL	**40 mg**	2 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 5 mL (500 mg) to 10 mL	50 mg/mL	**120 mg**	2.4 mL	Push over 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**1 g**	5 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**6 mL**	6 mL	Infuse over 10 mins via central/large vein

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**0.6 mmol**	6 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.22 mmol**	1 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**2 mg**	2 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions . An infusion is preferred method to lower potassium. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**10 mL**	10 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**0.2 units**	0.2 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Dilute 10 mL (10 mmol) to 20 mL	0.5 mmol/mL	**2 mmol**	4 mL	Large vein push over 5 mins. DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**0.5 g**	2 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.22 mmol**	1 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**0.4 mmol**	2 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**20 mL**	20 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**30 mg**	3 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

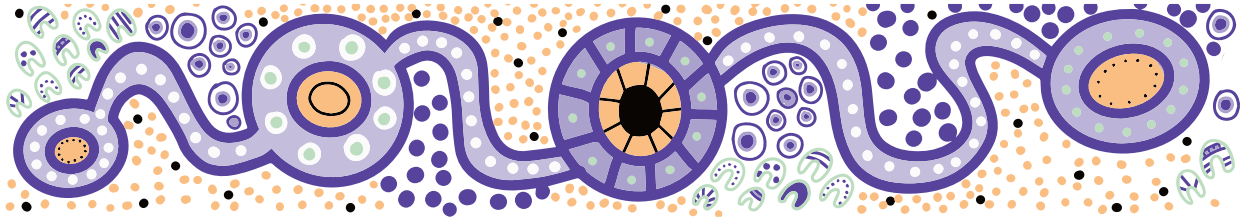
Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**3 microg**	0.06 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**1 microg**	0.1 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.1 mg**	0.1 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**1 mg**	0.1 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 minute. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**Consult**	**Consult**	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**Consult**	**Consult**	Infuse over 5 - 10 mins

Queensland Paediatric Sepsis Program

Reducing the burden of sepsis on Queensland Children and families
childrens.health.qld.gov.au/sepsis



2kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**40 mg**	8 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**100 mg**	2 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**100 mg**	1 mL	PUSH over 3 - 5 min. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**120 mg**	2 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**100 mg**	1 mL	PUSH over 3 - 5 mins. NEONATE - seek ID/specialist advice
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**100 mg**	1 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL of WFI	330 mg/mL	**100 mg**	0.3 mL	**IM:** Max 0.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**100 mg**	1 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**100 mg**	2.5 mL	PUSH over 5 mins. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**100 mg**	0.29 mL	**IM:** Max 0.5 mL per IM injection site. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

2kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**20 mg**	10 mL	Infuse over 60 mins. NEONATE - seek ID/specialist advice
Clindamycin (600 mg/4 mL) - **NEONATE**	150 mg/mL	7 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**14 mg**	1.4 mL	Infuse over 30 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**20 mg**	2 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**100 mg**	2 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL) - **NEONATE**	40 mg/mL	5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**10 mg**	1 mL	Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**15 mg**	1.5 mL	Infuse over 30 mins
linCOMYCIN - **NEONATE**	No neonatal dosing recommendation for linCOMYCIN - use Clindamycin IV						
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**80 mg**	1.6 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL) - **NEONATE**	5 mg/mL	15 mg/kg	Undiluted	5 mg/mL	**30 mg**	6 mL	NEONATAL LOADING DOSE - Infuse over 20 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**15 mg**	3 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**200 mg**	2.5 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**30 mg**	6 mL	Infuse over 60 - 120 mins

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

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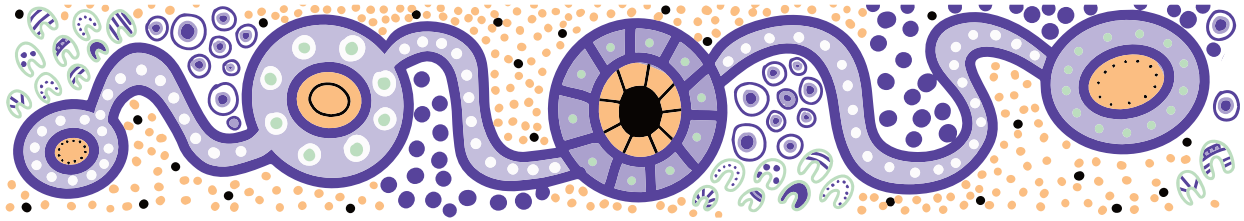

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Open Ductus Arteriosus						
Alprostadil (Prostaglandin/PGE1)	500 microg/mL	**50 to 100 nanogram/kg/min**	Dilute **0.2 mL (100 microg)** to 50 mL	2 microg/mL (2000 nanogram/mL)	**3 to 6 mL/hr**	IV
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.3 to 6 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.2 to 1.6 mL/hr**	IV
Dopamine	200 mg/5 mL	**2 to 20 microg/kg/min**	Dilute **1.5 mL (60 mg)** to 50 mL	1.2 mg/mL	**0.2 to 2 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.3 to 6 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODARONe *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **12 mg (6 mL)** infuse at **1.5 mL/hr**	IV
AmiODARONe [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**0.3 to 0.9 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**0.6 to 2.4 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**0.2 to 2 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**0.3 to 1.2 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.1 to 1.6 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.1 to 0.4 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**10 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**0.2 mL/hr**	

2kg

2.5kg

2.5 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – mm	3 mm	NG tube	5 Fr
Laryngoscope blade	0/1	ICC tube	8 Fr
ETT at lips – cm	8 cm	LMA	1
ETT at nose – cm	10 cm	IDC	5 Fr

ANAPHYLAXIS	
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)	
Dose	Volume
100 microg	**0.1 mL**

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**25 microg**	0.25 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**10 Joule**		Use infant or paediatric pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**12.5 mg**	1.25 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			25 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			50 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		5 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**0.25 mg**	0.08 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**0.5 mg**	0.17 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**0.75 mg**	0.25 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**3 Joule**		Use infant or paediatric pads
		2 Joule/kg			**5 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**50 microg**	0.5 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**2.5 microg**	0.25 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**5 microg**	0.5 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**2.5 mg**	0.25 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**5 mg**	0.5 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.25 mg**	0.25 mL	Push over 2 - 3 mins

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**3 mg**	0.3 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**5 mg**	0.5 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**0.25 mg**	0.25 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**40 mg**	0.4 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**12.5 microg**	0.13 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**25 microg**	0.06 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**0.75 mg**	0.19 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**Consult**	Consult	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**10 mg**	0.25 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**Consult**	Consult	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**Consult**	Consult	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**Consult**	Consult	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.38 mg**	0.38 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**0.5 mg**	0.1 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**0.75 mg**	0.15 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**50 mg**	5 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 1 mL (200 mg) to 10 mL	20 mg/mL	**50 mg**	2.5 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 5 mL (500 mg) to 10 mL	50 mg/mL	**150 mg**	3 mL	Push over 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**1.25 g**	6.3 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**7.5 mL**	7.5 mL	Infuse over 10 mins via central/large vein

2.5kg

2.5kg

2.5kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**0.75 mmol**	7.5 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.28 mmol**	1.3 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**2.5 mg**	2.5 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions . An infusion is preferred method to lower potassium. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**12.5 mL**	12.5 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**0.25 units**	0.25 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Dilute 10 mL (10 mmol) to 20 mL	0.5 mmol/mL	**2.5 mmol**	5 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**0.63 g**	2.5 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.28 mmol**	1.3 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**0.5 mmol**	2.5 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**25 mL**	25 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**37.5 mg**	3.8 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

2.5kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**3.75 microg**	0.08 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**1.25 microg**	0.13 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.13 mg**	0.13 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**1.25 mg**	0.13 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 minutes. Allow to dwell for 1 minute. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**Consult**	**Consult**	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**Consult**	**Consult**	Infuse over 5 - 10 mins

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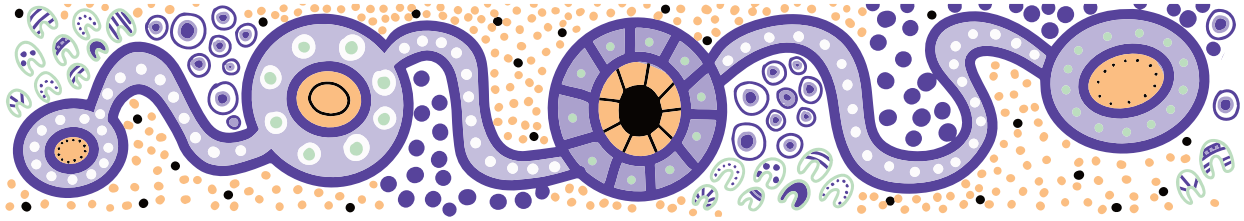

2.5kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**50 mg**	10 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**125 mg**	2.5 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**125 mg**	1.3 mL	PUSH over 3 - 5 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**150 mg**	2.5 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**125 mg**	1.3 mL	PUSH over 3 - 5 mins. NEONATE - seek ID/specialist advice
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**125 mg**	1.3 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL of WFI	330 mg/mL	**125 mg**	0.38 mL	**IM:** Max 0.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**125 mg**	1.3 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**125 mg**	3.1 mL	PUSH over 5 mins. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**125 mg**	0.36 mL	**IM:** Max 0.5 mL per IM injection site. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME

2.5kg

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

2.5kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**25 mg**	12.5 mL	Infuse over 60 mins. NEONATE - seek ID/specialist advice
Clindamycin (600 mg/4 mL) - **NEONATE**	150 mg/mL	7 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**17.5 mg**	1.8 mL	Infuse over 30 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**25 mg**	2.5 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**125 mg**	2.5 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL) - **NEONATE**	40 mg/mL	5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**12.5 mg**	1.3 mL	Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**18.7 mg**	1.9 mL	Infuse over 30 mins
linCOMYCIN - **NEONATE**	No neonatal dosing recommendation for linCOMYCIN - use Clindamycin IV						
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**100 mg**	2 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL) - **NEONATE**	5 mg/mL	15 mg/kg	Undiluted	5 mg/mL	**37.5 mg**	7.5 mL	NEONATAL LOADING DOSE - Infuse over 20 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**18.7 mg**	3.8 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**250 mg**	3.1 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**37.5 mg**	7.5 mL	Infuse over 60 - 120 mins

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

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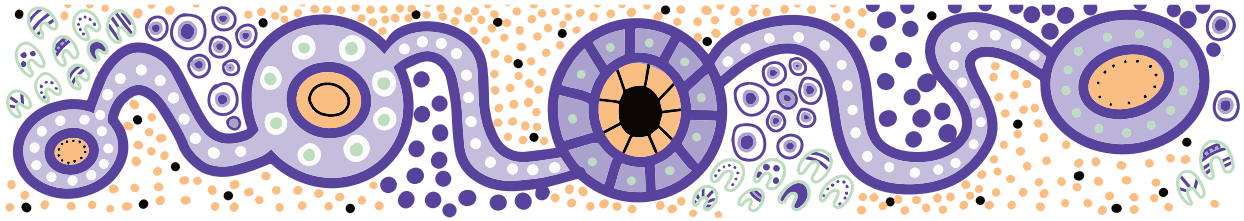

2.5kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Open Ductus Arteriosus						
Alprostadil (Prostaglandin/PGE1)	500 microg/mL	**50 to 100 nanogram/kg/min**	Dilute **0.2 mL (100 microg)** to 50 mL	2 microg/mL (2000 nanogram/mL)	**3.8 to 7.5 mL/hr**	IV
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.4 to 7.5 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.2 to 2 mL/hr**	IV
Dopamine	200 mg/5 mL	**2 to 20 microg/kg/min**	Dilute **1.5 mL (60 mg)** to 50 mL	1.2 mg/mL	**0.3 to 2.5 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.4 to 7.5 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODARONe *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **15 mg (7.5 mL)** infuse at **1.9 mL/hr**	IV
AmiODARONe [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**0.4 to 1.1 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**0.8 to 3 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**0.3 to 2.5 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**0.4 to 1.5 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.1 to 2 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.2 to 0.5 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**12.5 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**0.3 mL/hr**	


3kg

3kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	3.5 mm	NG tube	6 Fr
Laryngoscope blade	0/1	ICC tube	8 - 12 Fr
ETT at lips – cm	9 cm	LMA	1
ETT at nose – cm	11 cm	IDC	6 Fr

ANAPHYLAXIS	
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)	
Dose	Volume
100 microg	**0.1 mL**

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**30 microg**	0.3 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**12 Joule**		Use infant or paediatric pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**15 mg**	1.5 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			30 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			60 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		6 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**0.3 mg**	0.1 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**0.6 mg**	0.2 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**0.9 mg**	0.3 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**3 Joule**		Use infant or paediatric pads
		2 Joule/kg			**6 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**60 microg**	0.6 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**3 microg**	0.3 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**6 microg**	0.6 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**3 mg**	0.3 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**6 mg**	0.6 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.3 mg**	0.3 mL	Push over 2 - 3 mins

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**3.6 mg**	0.36 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**6 mg**	0.6 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**0.3 mg**	0.3 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**48 mg**	0.48 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**15 microg**	0.15 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**30 microg**	0.08 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**0.9 mg**	0.23 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**Consult**	Consult	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**12 mg**	0.24 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**Consult**	Consult	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**Consult**	Consult	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**Consult**	Consult	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.45 mg**	0.45 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**0.6 mg**	0.12 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**0.9 mg**	0.18 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**60 mg**	6 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 1 mL (200 mg) to 10 mL	20 mg/mL	**60 mg**	3 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 5 mL (500 mg) to 10 mL	50 mg/mL	**180 mg**	3.6 mL	Push over 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**1.5 g**	7.5 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**9 mL**	9 mL	Infuse over 10 mins via central/ large vein

3kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**0.9 mmol**	9 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.33 mmol**	1.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**3 mg**	3 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions . An infusion is preferred method to lower potassium. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**15 mL**	15 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**0.3 units**	0.3 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Dilute 10 mL (10 mmol) to 20 mL	0.5 mmol/mL	**3 mmol**	6 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**0.75 g**	3 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.33 mmol**	1.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**0.6 mmol**	3 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**30 mL**	30 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**45 mg**	4.5 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

3kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**4.5 microg**	0.09 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**1.5 microg**	0.15 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.15 mg**	0.15 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**1.5 mg**	0.15 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 minutes. Allow to dwell for 1 minute. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**Consult**	**Consult**	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**Consult**	**Consult**	Infuse over 5 - 10 mins

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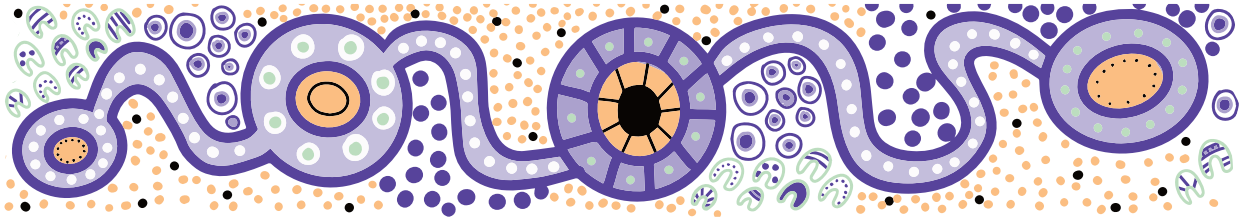

3kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute to 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**60 mg**	12 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**150 mg**	3 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**150 mg**	1.5 mL	PUSH over 3 - 5 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**180 mg**	3 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**150 mg**	1.5 mL	PUSH over 3 - 5 mins. NEONATE - seek ID/specialist advice
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**150 mg**	1.5 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL of WFI	330 mg/mL	**150 mg**	0.45 mL	**IM:** Max 0.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**150 mg**	1.5 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**150 mg**	3.8 mL	PUSH over 5 mins. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**150 mg**	0.43 mL	**IM:** Max 0.5 mL per IM injection site. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME

3kg

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

3kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**30 mg**	15 mL	Infuse over 60 mins. NEONATE - seek ID/specialist advice
Clindamycin (600 mg/4 mL) - **NEONATE**	150 mg/mL	7 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**21 mg**	2.1 mL	Infuse over 30 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**30 mg**	3 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**150 mg**	3 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL) - **NEONATE**	40 mg/mL	5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**15 mg**	1.5 mL	Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**22.5 mg**	2.3 mL	Infuse over 30 mins
linCOMYCIN - **NEONATE**	No neonatal dosing recommendation for linCOMYCIN - use Clindamycin IV						
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**120 mg**	2.4 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL) - **NEONATE**	5 mg/mL	15 mg/kg	Undiluted	5 mg/mL	**45 mg**	9 mL	NEONATAL LOADING DOSE - Infuse over 20 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**22.5 mg**	4.5 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**300 mg**	3.8 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**45 mg**	9 mL	Infuse over 60 - 120 mins

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

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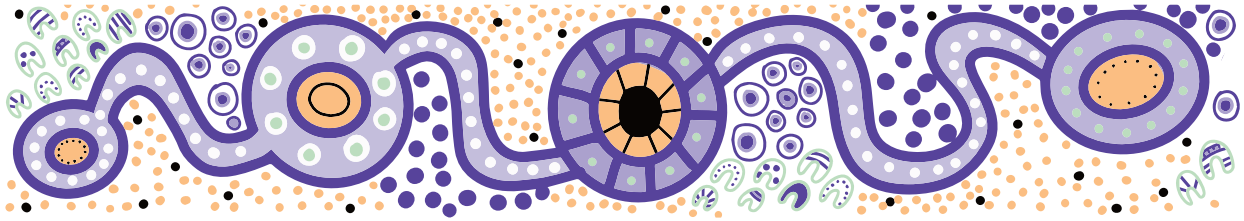

3kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Open Ductus Arteriosus						
Alprostadil (Prostaglandin/PGE1)	500 microg/mL	**50 to 100 nanogram/kg/min**	Dilute **0.2 mL (100 microg)** to 50 mL	2 microg/mL (2000 nanogram/mL)	**4.5 to 9 mL/hr**	IV
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.5 to 9 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.2 to 2.4 mL/hr**	IV
Dopamine	200 mg/5 mL	**2 to 20 microg/kg/min**	Dilute **1.5 mL (60 mg)** to 50 mL	1.2 mg/mL	**0.3 to 3 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.5 to 9 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **18 mg (9 mL)** infuse at **2.3 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**0.5 to 1.4 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**0.9 to 3.6 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**0.3 to 3 mL/hr**	IV
Midazolam	Various strengths	**30-120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**0.5 to 1.8 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.2 to 2.4 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.2 to 0.5 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**15 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**0.3 mL/hr**	

3.5kg

3.5kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	3.5 mm	NG tube	6 Fr
Laryngoscope blade	0/1	ICC tube	8 - 12 Fr
ETT at lips – cm	9 cm	LMA	1
ETT at nose – cm	11 cm	IDC	6 Fr

ANAPHYLAXIS	
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)	
Dose	Volume
100 microg	**0.1 mL**

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**35 microg**	0.35 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**14 Joule**		Use infant or paediatric pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**17.5 mg**	1.8 mL	Push over 3 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			35 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			70 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		7 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**0.35 mg**	0.12 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**0.7 mg**	0.23 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**1.05 mg**	0.35 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**4 Joule**		Use infant or paediatric pads
		2 Joule/kg			**7 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**70 microg**	0.7 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**3.5 microg**	0.35 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**7 microg**	0.7 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**3.5 mg**	0.35 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**7 mg**	0.7 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.35 mg**	0.35 mL	Push over 2 - 3 mins

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**4.2 mg**	0.42 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**7 mg**	0.7 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**0.35 mg**	0.35 mL	Push

3.5kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**56 mg**	0.56 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**17.5 microg**	0.18 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**35 microg**	0.09 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**1.05 mg**	0.26 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**Consult**	Consult	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**14 mg**	0.28 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**Consult**	Consult	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**Consult**	Consult	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**Consult**	Consult	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.53 mg**	0.53 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**0.7 mg**	0.14 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**1.1 mg**	0.22 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**70 mg**	7 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 1 mL (200 mg) to 10 mL	20 mg/mL	**70 mg**	3.5 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 5 mL (500 mg) to 10 mL	50 mg/mL	**210 mg**	4.2 mL	Push over 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**1.75 g**	8.8 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**10.5 mL**	10.5 mL	Infuse over 10 mins via central/ large vein

3.5kg

3.5kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**1.05 mmol**	10.5 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.39 mmol**	1.8 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**3.5 mg**	3.5 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**17.5 mL**	17.5 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**0.35 units**	0.35 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Dilute 10 mL (10 mmol) to 20 mL	0.5 mmol/mL	**3.5 mmol**	7 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**0.88 g**	3.5 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.39 mmol**	1.8 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**0.7 mmol**	3.5 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**35 mL**	35 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**52.5 mg**	5.3 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

3.5kg

3.5kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**5.25 microg**	0.11 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**1.75 microg**	0.18 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.18 mg**	0.18 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**1.75 mg**	0.18 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 minutes. Allow to dwell for 1 minute. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**Consult**	**Consult**	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**Consult**	**Consult**	Infuse over 5 - 10 mins

3.5kg

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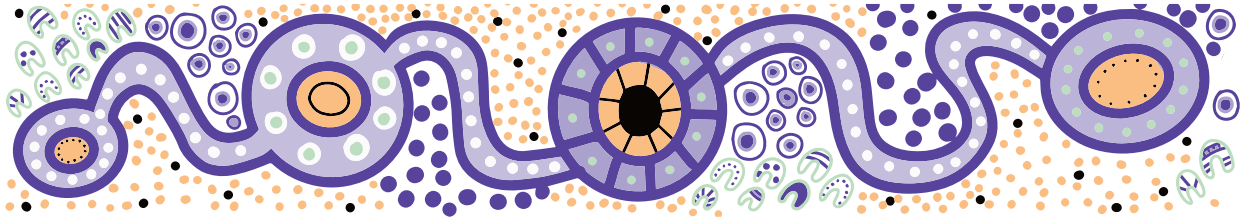

3.5kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**70 mg**	14 mL	Infuse over 60 mins.
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**175 mg**	3.5 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**175 mg**	1.8 mL	PUSH over 3 - 5 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**210 mg**	3.5 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**175 mg**	1.8 mL	PUSH over 3 - 5 mins. NEONATE - seek ID/specialist advice
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**175 mg**	1.8 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL of WFI	330 mg/mL	**175 mg**	0.5 mL	**IM:** Max 0.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**175 mg**	1.8 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**175 mg**	4.4 mL	PUSH over 5 mins. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**175 mg**	0.5 mL	**IM:** Max 0.5 mL per IM injection site. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

3.5kg

3.5kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**35 mg**	17.5 mL	Infuse over 60 mins. NEONATE - seek ID/specialist advice
Clindamycin (600 mg/4 mL) - **NEONATE**	150 mg/mL	7 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**24.5 mg**	2.5 mL	Infuse over 30 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**35 mg**	3.5 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**175 mg**	3.5 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL) - **NEONATE**	40 mg/mL	5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**18 mg**	1.8 mL	Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**26.3 mg**	2.6 mL	Infuse over 30 mins
linCOMYCIN - **NEONATE**	No neonatal dosing recommendation for linCOMYCIN - use Clindamycin IV						
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**140 mg**	2.8 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL) - **NEONATE**	5 mg/mL	15 mg/kg	Undiluted	5 mg/mL	**52.5 mg**	10.5 mL	NEONATAL LOADING DOSE - Infuse over 20 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**26.3 mg**	5.3 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**350 mg**	4.4 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**52.5 mg**	10.5 mL	Infuse over 60 - 120 mins

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

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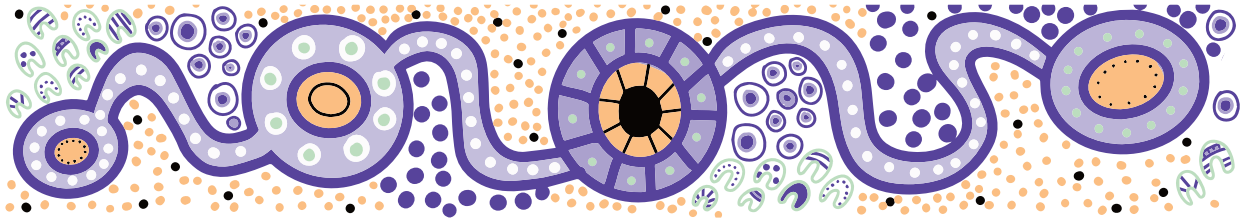

3.5kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Open Ductus Arteriosus						
Alprostadil (Prostaglandin/PGE1)	500 microg/mL	**50 to 100 nanogram/kg/min**	Dilute **0.2 mL (100 microg)** to 50 mL	2 microg/mL (2000 nanogram/mL)	**5.3 to 10.5 mL/hr**	IV
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.5 to 10.5 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.3 to 2.8 mL/hr**	IV
Dopamine	200 mg/5 mL	**2 to 20 microg/kg/min**	Dilute **1.5 mL (60 mg)** to 50 mL	1.2 mg/mL	**0.4 to 3.5 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.5 to 10.5 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **21 mg (10.5 mL)** infuse at **2.6 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**0.5 to 1.6 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**1.1 to 4.2 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**0.4 to 3.5 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**0.5 to 2.1 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.2 to 2.8 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.2 to 0.6 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**17.5 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**0.4 mL/hr**	


4kg

4 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	3.5 mm	NG tube	6 Fr
Laryngoscope blade	0/1	ICC tube	8 - 12 Fr
ETT at lips – cm	9 cm	LMA	1
ETT at nose – cm	11 cm	IDC	6 Fr

ANAPHYLAXIS	
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)	
Dose	Volume
100 microg	**0.1 mL**

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**40 microg**	0.4 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**16 Joule**		Use infant or paediatric pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**20 mg**	2 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			40 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			80 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		8 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**0.4 mg**	0.13 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**0.8 mg**	0.27 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**1.2 mg**	0.4 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**4 Joule**		Use infant or paediatric pads
		2 Joule/kg			**8 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**80 microg**	0.8 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**4 microg**	0.4 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**8 microg**	0.8 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**4 mg**	0.4 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**8 mg**	0.8 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.4 mg**	0.4 mL	Push over 2 - 3 mins

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**4.8 mg**	0.48 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**8 mg**	0.8 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**0.4 mg**	0.4 mL	Push

4kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**64 mg**	0.64 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**20 microg**	0.2 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**40 microg**	0.1 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**1.2 mg**	0.3 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**Consult**	Consult	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**16 mg**	0.32 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**Consult**	Consult	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**Consult**	Consult	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**Consult**	Consult	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.6 mg**	0.6 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**0.8 mg**	0.16 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**1.2 mg**	0.24 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**80 mg**	8 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 1 mL (200 mg) to 10 mL	20 mg/mL	**80 mg**	4 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 5 mL (500 mg) to 10 mL	50 mg/mL	**240 mg**	4.8 mL	Push over 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**2 g**	10 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**12 mL**	12 mL	Infuse over 10 mins via central/large vein

4kg

4kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**1.2 mmol**	12 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.44 mmol**	2 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**4 mg**	4 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**20 mL**	20 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**0.4 units**	0.4 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Dilute 10 mL (10 mmol) to 20 mL	0.5 mmol/mL	**4 mmol**	8 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**1 g**	4 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.44 mmol**	2 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**0.8 mmol**	4 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**40 mL**	40 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**60 mg**	6 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

4kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**6 microg**	0.12 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**2 microg**	0.2 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.2 mg**	0.2 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**2 mg**	0.2 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 minutes. Allow to dwell for 1 minute. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**1 mg**	0.1 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**Consult**	**Consult**	Infuse over 5 - 10 mins

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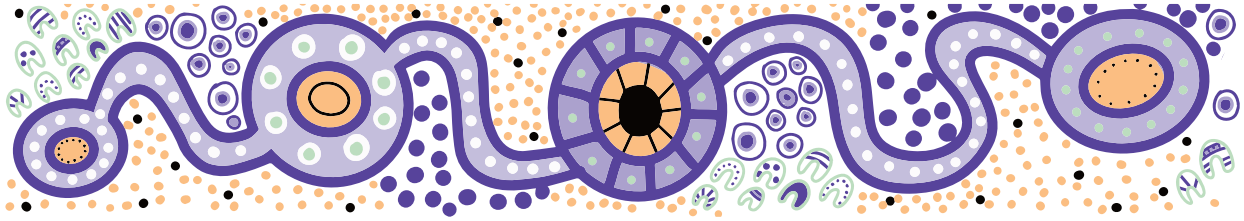

4kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**80 mg**	16 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**200 mg**	4 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**200 mg**	2 mL	PUSH over 3 - 5 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**240 mg**	4 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**200 mg**	2 mL	PUSH over 3 - 5 mins. NEONATE - seek ID/specialist advice
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**200 mg**	2 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL of WFI	330 mg/mL	**200 mg**	0.61 mL	**IM:** Max 0.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 g	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**200 mg**	2 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**200 mg**	5 mL	PUSH over 5 mins. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**200 mg**	0.57 mL	**IM:** Max 0.5 mL per IM injection site. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

4kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**40 mg**	20 mL	Infuse over 60 mins. NEONATE - seek ID/specialist advice
Clindamycin (600 mg/4 mL) - **NEONATE**	150 mg/mL	7 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**28 mg**	2.8 mL	Infuse over 30 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**40 mg**	4mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**200 mg**	4 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL) - **NEONATE**	40 mg/mL	5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**20 mg**	2 mL	Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**30 mg**	3 mL	Infuse over 30 mins
linCOMYCIN - **NEONATE**	No neonatal dosing recommendation for linCOMYCIN - use Clindamycin IV						
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**160 mg**	3.2 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL) - **NEONATE**	5 mg/mL	15 mg/kg	Undiluted	5 mg/mL	**60 mg**	12 mL	NEONATAL LOADING DOSE - Infuse over 20 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**30 mg**	6 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**400 mg**	5 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**60 mg**	12 mL	Infuse over 60 - 120 mins

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

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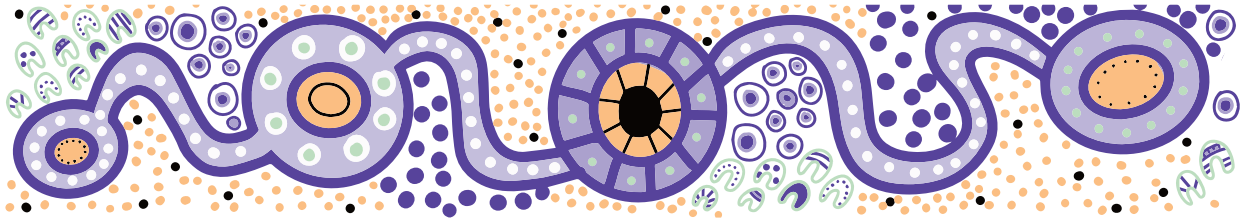

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Open Ductus Arteriosus						
Alprostadil (Prostaglandin/PGE1)	500 microg/mL	**50 to 100 nanogram/kg/min**	Dilute **0.2 mL (100 microg)** to 50 mL	2 microg/mL (2000 nanogram/mL)	**6 to 12 mL/hr**	IV
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.6 to 12 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.3 to 3.2 mL/hr**	IV
Dopamine	200 mg/5 mL	**2 to 20 microg/kg/min**	Dilute **1.5 mL (60 mg)** to 50 mL	1.2 mg/mL	**0.4 to 4 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.6 to 12 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **24 mg (12 mL)** infuse at **3 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**0.6 to 1.8 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**1.2 to 4.8 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**0.4 to 4 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**0.6 to 2.4 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.2 to 3.2 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.2 to 0.7 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**20 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**0.4 mL/hr**	

4.5kg

4.5 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	3.5 mm	NG tube	6 Fr
Laryngoscope blade	0/1	ICC tube	8 - 12 Fr
ETT at lips – cm	9 cm	LMA	1
ETT at nose – cm	11 cm	IDC	6 Fr

ANAPHYLAXIS	
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)	
Dose	Volume
100 microg	**0.1 mL**

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**45 microg**	0.45 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**18 Joule**		Use infant or paediatric pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**22.5 mg**	2.3 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			45 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			90 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		9 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**0.45 mg**	0.15 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**0.9 mg**	0.3 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**1.35 mg**	0.45 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**5 Joule**		Use infant or paediatric pads
		2 Joule/kg			**9 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**90 microg**	0.9 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**4.5 microg**	0.45 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**9 microg**	0.9 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**4.5 mg**	0.45 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**9 mg**	0.9 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.45 mg**	0.45 mL	Push over 2 - 3 mins

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**5.4 mg**	0.54 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**9 mg**	0.9 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**0.45 mg**	0.45 mL	Push

4.5kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**72 mg**	0.72 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**22.5 microg**	0.23 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**45 microg**	0.11 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**1.35 mg**	0.34 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**Consult**	Consult	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**18 mg**	0.36 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**Consult**	Consult	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**Consult**	Consult	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**Consult**	Consult	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.68 mg**	0.68 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**0.9 mg**	0.18 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**1.4 mg**	0.28 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**90 mg**	9 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 1 mL (200 mg) to 10 mL	20 mg/mL	**90 mg**	4.5 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 5 mL (500 mg) to 10 mL	50 mg/mL	**270 mg**	5.4 mL	Push over 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**2.25 g**	11.3 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**13.5 mL**	13.5 mL	Infuse over 10 mins via central/large vein

4.5kg

4.5kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**1.35 mmol**	13.5 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.5 mmol**	2.3 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**4.5 mg**	4.5 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**22.5 mL**	22.5 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**0.45 units**	0.45 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Dilute 10 mL (10 mmol) to 20 mL	0.5 mmol/mL	**4.5 mmol**	9 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**1.13 g**	4.5 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.5 mmol**	2.3 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**0.9 mmol**	4.5 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**45 mL**	45 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**67.5 mg**	6.8 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

4.5kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**6.75 microg**	0.14 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**2.25 microg**	0.23 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.23 mg**	0.23 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**2.25 mg**	0.23 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**1.1 mg**	0.11 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**Consult**	**Consult**	Infuse over 5 - 10 mins

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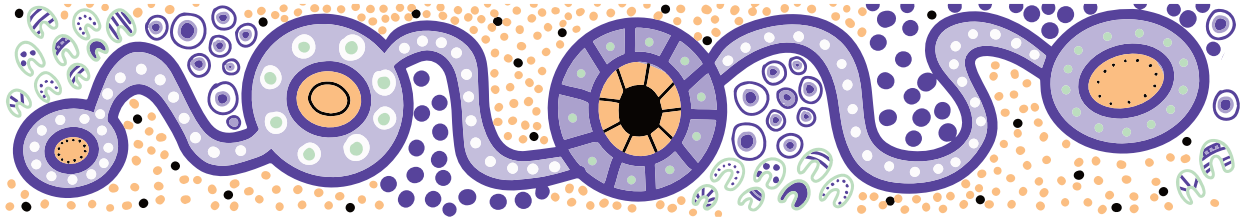

4.5kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**90 mg**	18 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**225 mg**	4.5 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**225 mg**	2.3 mL	PUSH over 3 - 5 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**270 mg**	4.5 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**225 mg**	2.3 mL	PUSH over 3 - 5 mins. NEONATE - seek ID/specialist advice
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**225 mg**	2.3 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL of WFI	330 mg/mL	**225 mg**	0.68 mL	**IM:** Max 0.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**225 mg**	2.3 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**225 mg**	5.6 mL	PUSH over 5 mins. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**225 mg**	0.64 mL	**IM:** Max 0.5 mL per IM injection site. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

4.5kg

4.5kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**45 mg**	22.5 mL	Infuse over 60 mins. NEONATE - seek ID/specialist advice
Clindamycin (600 mg/4 mL) - **NEONATE**	150 mg/mL	7 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**31.5 mg**	3.2 mL	Infuse over 30 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**45 mg**	4.5 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**225 mg**	4.5 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL) - **NEONATE**	40 mg/mL	5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**22.5 mg**	2.3 mL	Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**33.8 mg**	3.4 mL	Infuse over 30 mins
linCOMYCIN - **NEONATE**	No neonatal dosing recommendation for linCOMYCIN - use Clindamycin IV						
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**180 mg**	3.6 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL) - **NEONATE**	5 mg/mL	15 mg/kg	Undiluted	5 mg/mL	**67.5 mg**	13.5 mL	NEONATAL LOADING DOSE - Infuse over 20 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**33.8 mg**	6.8 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**450 mg**	5.6 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further to a final volume of 100 mL	5 mg/mL	**67.5 mg**	13.5 mL	Infuse over 60 - 120 mins

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

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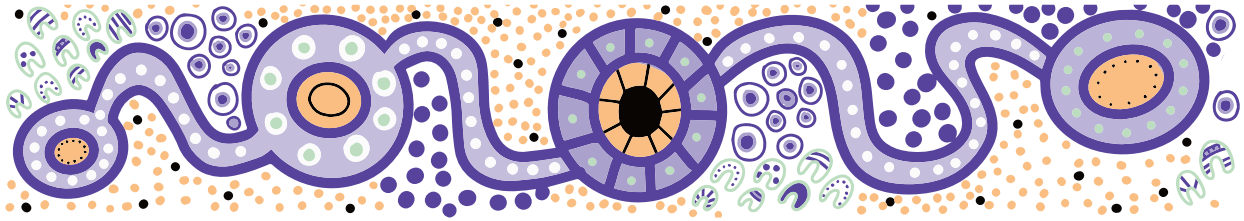

4.5kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Open Ductus Arteriosus						
Alprostadil (Prostaglandin/PGE1)	500 microg/mL	**50 to 100 nanogram/kg/min**	Dilute **0.2 mL (100 microg)** to 50 mL	2 microg/mL (2000 nanogram/mL)	**6.8 to 13.5 mL/hr**	IV
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.7 to 13.5 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.4 to 3.6 mL/hr**	IV
Dopamine	200 mg/5 mL	**2 to 20 microg/kg/min**	Dilute **1.5 mL (60 mg)** to 50 mL	1.2 mg/mL	**0.5 to 4.5 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.7 to 13.5 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODARONe *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **27 mg (13.5 mL)** infuse at **3.4 mL/hr**	IV
AmiODARONe [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**0.7 to 2 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**1.4 to 5.4 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**0.5 to 4.5 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**0.7 to 2.7 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.2 to 3.6 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.3 to 0.8 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**22.5 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**0.5 mL/hr**	


5kg

5 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	3.5 mm	NG tube	6 Fr
Laryngoscope blade	1	ICC tube	8 - 12 Fr
ETT at lips – cm	10 cm	LMA	1
ETT at nose – cm	12 cm	IDC	6 Fr

ANAPHYLAXIS	
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)	
Dose	Volume
100 microg	**0.1 mL**

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**50 microg**	0.5 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**20 Joule**		Use infant or paediatric pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**25 mg**	2.5 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			50 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			100 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		10 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**0.5 mg**	0.17 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**1 mg**	0.33 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**1.5 mg**	0.5 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**5 Joule**		Use infant or paediatric pads
		2 Joule/kg			**10 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**100 microg**	1 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**5 microg**	0.5 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**10 microg**	1 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**5 mg**	0.5 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**10 mg**	1 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.5 mg**	0.5 mL	Push over 2 - 3 mins

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**6 mg**	0.6 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**10 mg**	1 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**0.5 mg**	0.5 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**80 mg**	0.8 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**25 microg**	0.25 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**50 microg**	0.13 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**1.5 mg**	0.38 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**Consult**	Consult	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**20 mg**	0.4 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**Consult**	Consult	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**Consult**	Consult	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**Consult**	Consult	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.75 mg**	0.75 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**1 mg**	0.2 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**1.5 mg**	0.3 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**100 mg**	10 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 1 mL (200 mg) to 10 mL	20 mg/mL	**100 mg**	5 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 5 mL (500 mg) to 10 mL	50 mg/mL	**300 mg**	6 mL	Push over 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**2.5 g**	12.5 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**15 mL**	15 mL	Infuse over 10 mins via central/large vein

5kg

5kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**1.5 mmol**	15 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.55 mmol**	2.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**5 mg**	5 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**25 mL**	25 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**0.5 units**	0.5 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Dilute 10 mL (10 mmol) to 20 mL	0.5 mmol/mL	**5 mmol**	10 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**1.25 g**	5 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.55 mmol**	2.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**1 mmol**	5 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**50 mL**	50 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**75 mg**	7.5 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacemen							

5kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**7.5 microg**	0.15 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**2.5 microg**	0.25 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.25 mg**	0.25 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**2.5 mg**	0.25 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**1.3 mg**	0.13 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**Consult**	**Consult**	Infuse over 5 - 10 mins

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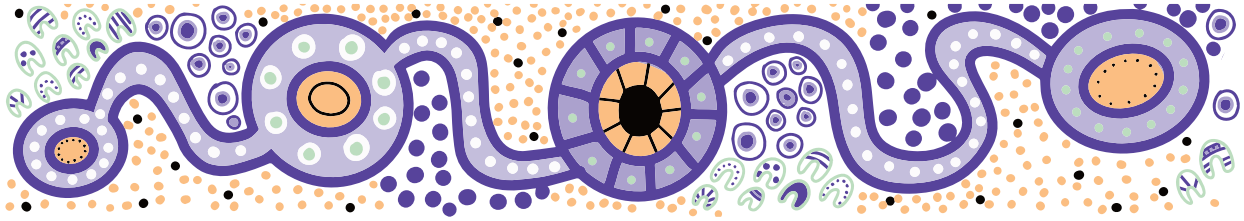

5kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**100 mg**	20 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**250 mg**	5 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**250 mg**	2.5 mL	PUSH over 3 - 5 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**300 mg**	5 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**250 mg**	2.5 mL	PUSH over 3 - 5 mins. NEONATE - seek ID/specialist advice
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**250 mg**	2.5 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL of WFI	330 mg/mL	**250 mg**	0.75 mL	**IM:** Max 0.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**250 mg**	2.5 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**250 mg**	6.3 mL	PUSH over 5 mins. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**250 mg**	0.7 mL	**IM:** Max 0.5 mL per IM injection site. NEONATE - contraindicated (risk of kerniceterus) USE cefOTAXIME

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

5kg

5kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**50 mg**	25 mL	Infuse over 60 mins. NEONATE - seek ID/specialist advice
Clindamycin (600 mg/4 mL) - **NEONATE**	150 mg/mL	7 mg/kg	Dilute 4 mL (600 mg) vial to a final volume of 60 mL	10 mg/mL	**35 mg**	3.5 mL	Infuse over 30 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) vial to a final volume of 60 mL	10 mg/mL	**50 mg**	5 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**250 mg**	5 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL) - **NEONATE**	40 mg/mL	5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**25 mg**	2.5 mL	Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**37.5 mg**	3.8 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**75 mg**	7.5 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**200 mg**	4 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL) - **NEONATE**	5 mg/mL	15 mg/kg	Undiluted	5 mg/mL	**75 mg**	15 mL	Infuse over 20 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**37.5 mg**	7.5 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**500 mg**	6.3 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**75 mg**	15 mL	Infuse over 60 - 120 mins

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

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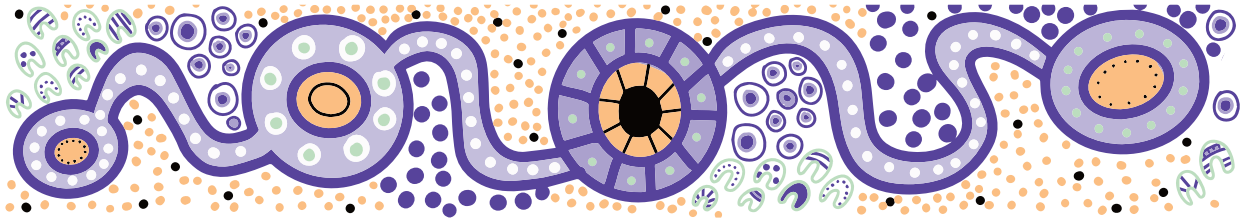

5kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Open Ductus Arteriosus						
Alprostadil (Prostaglandin/PGE1)	500 microg/mL	**50 to 100 nanogram/kg/min**	Dilute **0.2 mL (100 microg)** to 50 mL	2 microg/mL (2000 nanogram/mL)	**7.5 to 15 mL/hr**	IV
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.8 to 15 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.4 to 4 mL/hr**	IV
Dopamine	200 mg/5 mL	**2 to 20 microg/kg/min**	Dilute **1.5mL (60 mg)** to 50mL	1.2 mg/mL	**0.5 to 5 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.8 to 15 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODARONe *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **30 mg (15 mL)** infuse at **3.8 mL/hr**	IV
AmiODARONe [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**0.8 to 2.3 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**1.5 to 6 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**0.5 to 5 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**0.8 to 3 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.3 to 4 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.3 to 0.9 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag - Undiluted *Administer with Actrapid infusion*	10%	**25 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**0.5 mL/hr**	


6 kg

6 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	3.5 mm	NG tube	6 - 8 Fr
Laryngoscope blade	1	ICC tube	8 - 12 Fr
ETT at lips – cm	10 cm	LMA	1.5
ETT at nose – cm	12 cm	IDC	6 Fr

ANAPHYLAXIS	
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)	
Dose	Volume
100 microg	**0.1 mL**

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**60 microg**	0.6 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**24 Joule**		Use infant or paediatric pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**30 mg**	3 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			60 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			120 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		12 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**0.6 mg**	0.2 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**1.2 mg**	0.4 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**1.8 mg**	0.6 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**6 Joule**		Use infant or paediatric pads
		2 Joule/kg			**12 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**120 microg**	1.2 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**6 microg**	0.6 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**12 microg**	1.2 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**6 mg**	0.6 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**12 mg**	1.2 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.6 mg**	0.6 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**7.2 mg**	0.72 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**12 mg**	1.2 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**0.6 mg**	0.6 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**96 mg**	0.96 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**30 microg**	0.3 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**60 microg**	0.15 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial Cconcentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted		**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**1.8 mg**	0.45 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**Consult**	Consult	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**24 mg**	0.48 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**Consult**	Consult	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**Consult**	Consult	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**Consult**	Consult	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.9 mg**	0.9 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**1.2 mg**	0.24 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**1.8 mg**	0.36 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 5 mL (250 mg) to 25 mL	10 mg/mL	**120 mg**	12 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 1 mL (200 mg) to 10 mL	20 mg/mL	**120 mg**	6 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 5 mL (500 mg) to 10 mL	50 mg/mL	**360 mg**	7.2 mL	Push over 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**3 g**	15 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**18 mL**	18 mL	Infuse over 10 mins via central/large vein

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**1.8 mmol**	18 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.66 mmol**	3 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**6 mg**	6 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**30 mL**	30 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**0.6 units**	0.6 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Dilute 10 mL (10 mmol) to 20 mL	0.5 mmol/mL	**6 mmol**	12 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**1.5 g**	6 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.66 mmol**	3 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**1.2 mmol**	6 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present–** Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**60 mL**	60 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**90 mg**	9 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**9 microg**	0.18 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**3 microg**	0.3 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.3 mg**	0.3 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**3 mg**	0.3 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**1.5 mg**	0.15 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**Consult**	**Consult**	Infuse over 5 - 10 mins

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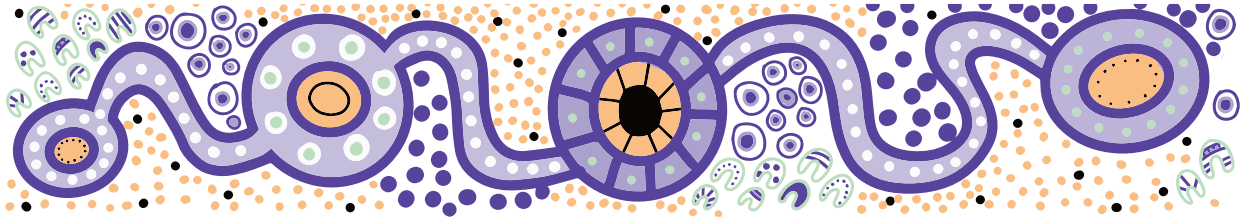

6kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**120 mg**	24 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**300 mg**	6 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**300 mg**	3 mL	PUSH over 3 - 5 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**360 mg**	6 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**300 mg**	3 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**300 mg**	3 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL of WFI	330 mg/mL	**300 mg**	0.91 mL	**IM:** Max 0.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**300 mg**	3 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**300 mg**	7.5 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**300 mg**	0.86mL	**IM:** Max 0.5 mL per IM injection site

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

6kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution - Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**60 mg**	30 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**60 mg**	6 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**300 mg**	6 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**45 mg**	4.5 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**90 mg**	9 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**240 mg**	4.8 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**45 mg**	9 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**600 mg**	7.5 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**90 mg**	18 mL	Infuse over 60 - 120 mins

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

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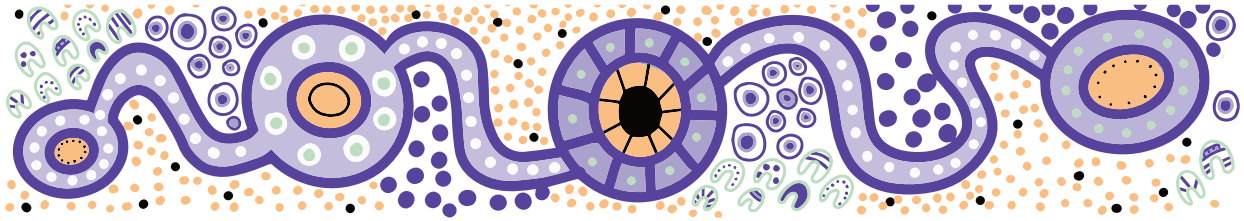
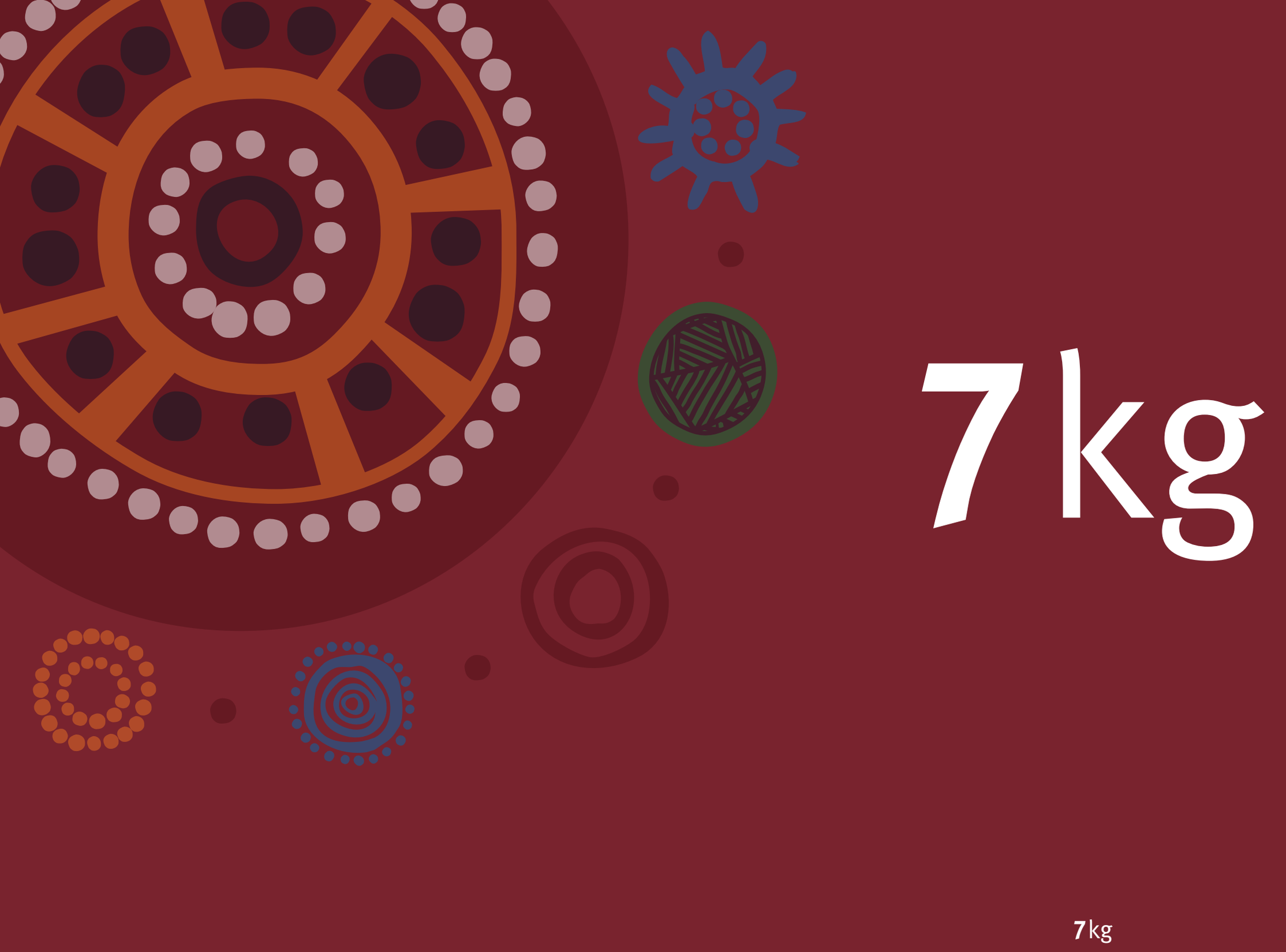


Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Open Ductus Arteriosus						
Alprostadil (Prostaglandin/PGE1)	500 microg/mL	**50 to 100 nanogram/kg/min**	Dilute **0.2 mL (100 microg)** to 50 mL	2 microg/mL (2000 nanogram/mL)	**9 to 18 mL/hr**	IV
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.9 to 18 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.5 to 4.8 mL/hr**	IV
Dopamine	200 mg/5 mL	**2 to 20 microg/kg/min**	Dilute **1.5 mL (60 mg)** to 50 mL	1.2 mg/mL	**0.6 to 6 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**0.9 to 18 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **36 mg (18 mL)** infuse at **4.5 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**0.9 to 2.7 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**1.8 to 7.2 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**0.6 to 6 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**0.9 to 3.6 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.3 to 4.8 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.4 to 1.1 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**30 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**0.6 mL/hr**	


7kg

7 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	3.5 mm	NG tube	6 - 8 Fr
Laryngoscope blade	1	ICC tube	8 - 12 Fr
ETT at lips – cm	10 cm	LMA	1.5
ETT at nose – cm	12 cm	IDC	6 - 8 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
100 microg	**0.1 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**70 microg**	0.7 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**28 Joule**		Use infant or paediatric pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**35 mg**	3.5 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			70 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			140 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		14 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**0.7 mg**	0.23 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**1.4 mg**	0.47 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**2.1 mg**	0.7 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**7 Joule**		Use infant or paediatric pads
		2 Joule/kg			**14 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**140 microg**	1.4 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**7 microg**	0.7 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**14 microg**	1.4 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**7 mg**	0.7 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**14 mg**	1.4 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.7 mg**	0.7 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**8.4 mg**	0.84 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**14 mg**	1.4 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**0.7 mg**	0.7 mL	Push

7kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**112 mg**	1.1 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**35 microg**	0.35 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**70 microg**	0.18 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**2.1 mg**	0.53 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**Consult**	Consult	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**28 mg**	0.56 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**Consult**	Consult	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**Consult**	Consult	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**Consult**	Consult	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.1 mg**	1.1 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**1.4 mg**	0.28 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**2.1 mg**	0.42 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 5 mL (250 mg) to 25 mL	10 mg/mL	**140 mg**	14 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 1 mL (200 mg) to 10 mL	20 mg/mL	**140 mg**	7 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 5 mL (500 mg) to 10 mL	50 mg/mL	**420 mg**	8.4 mL	Push over 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**3.5 g**	17.5 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**21 mL**	21 mL	Infuse over 10 mins via central/large vein

7kg

7kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**2.1 mmol**	21 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.77 mmol**	3.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**7 mg**	7 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**35 mL**	35 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**0.7 units**	0.7 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Dilute 10 mL (10 mmol) to 20 mL	0.5 mmol/mL	**7 mmol**	14 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**1.75 g**	7 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.77 mmol**	3.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**1.4 mmol**	7 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**70 mL**	70 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**105 mg**	10.5 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

7kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**10.5 microg**	0.21 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5-1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**3.5 microg**	0.35 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.35 mg**	0.35 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**3.5 mg**	0.35 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**1.8 mg**	0.18 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**Consult**	**Consult**	Infuse over 5 - 10 mins

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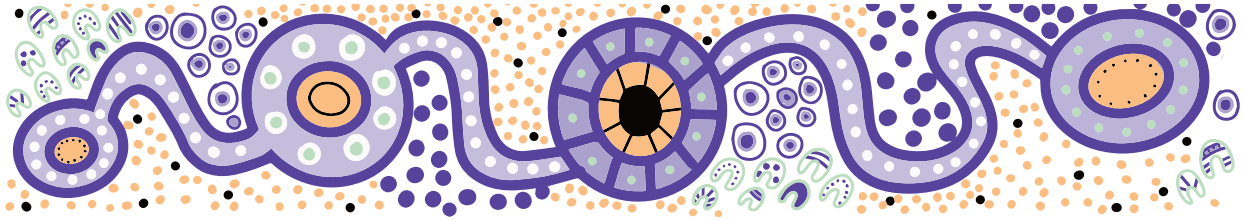

7kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**140 mg**	28 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**350 mg**	7 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**350 mg**	3.5 mL	PUSH over 3 - 5 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**420 mg**	7 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**350 mg**	3.5 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**350 mg**	3.5 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL of WFI	330 mg/mL	**350 mg**	1.1 mL	**IM:** Max 0.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**350 mg**	3.5 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**350 mg**	8.8 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**350 mg**	1 mL	**IM:** Max 0.5 mL per IM injection site

7kg

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

7kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**70 mg**	35 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**70 mg**	7 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**350 mg**	7 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**52.5 mg**	5.3 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**105 mg**	10.5 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**280 mg**	5.6 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**52.5 mg**	10.5 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**700 mg**	8.8 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**105 mg**	21 mL	Infuse over 60 - 120 mins

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

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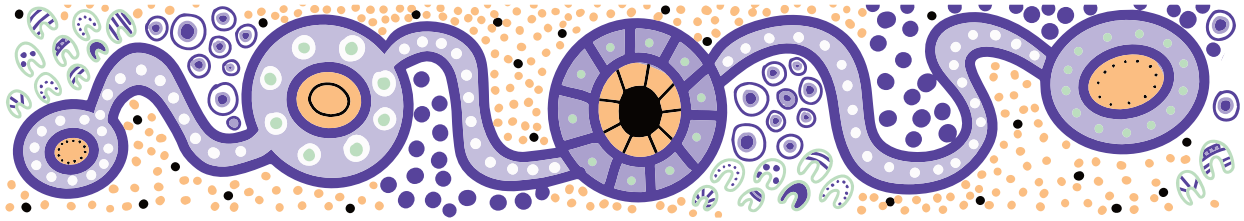

7kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**1.1 to 21 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.6 to 5.6 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**1.1 to 21 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **42 mg (21 mL)** infuse at **5.3 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**1.1 to 3.2 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**2.1 to 8.4 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**0.7 to 7 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**1.1 to 4.2 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.4 to 5.6 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**0.4 to 0.7 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.4 to 1.3 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**35 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**0.7 mL/hr**	


8 kg

8 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	3.5 mm	NG tube	6 - 8 Fr
Laryngoscope blade	1	ICC tube	8 - 12 Fr
ETT at lips – cm	10 cm	LMA	1.5
ETT at nose – cm	12 cm	IDC	6 - 8 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
100 microg	**0.1 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**80 microg**	0.8 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**32 Joule**		Use infant or paediatric pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**40 mg**	4 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			80 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			160 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		16 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**0.8 mg**	0.27 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**1.6 mg**	0.53 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**2.4 mg**	0.8 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**8 Joule**		Use infant or paediatric pads
		2 Joule/kg			**16 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**160 microg**	1.6 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**8 microg**	0.8 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**16 microg**	1.6 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**8 mg**	0.8 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**16 mg**	1.6 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.8 mg**	0.8 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**9.6 mg**	0.96 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**16 mg**	1.6 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**0.8 mg**	0.8 mL	Push

8kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**128 mg**	1.3 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**40 microg**	0.4 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**80 microg**	0.2 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**2.4 mg**	0.6 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**Consult**	Consult	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**32 mg**	0.64 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**Consult**	Consult	Push over 5 mins sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**Consult**	Consult	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**Consult**	Consult	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.2 mg**	1.2 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**1.6 mg**	0.32 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**2.4 mg**	0.48 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 5 mL (250 mg) to 25 mL	10 mg/mL	**160 mg**	16 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 1 mL (200 mg) to 10 mL	20 mg/mL	**160 mg**	8 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 5 mL (500 mg) to 10 mL	50 mg/mL	**480 mg**	9.6 mL	Push over 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**4 g**	20 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**24 mL**	24 mL	Infuse over 10 mins via central/large vein

8kg

8kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**2.4 mmol**	24 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.88 mmol**	4 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**8 mg**	8 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**40 mL**	40 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**0.8 units**	0.8 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Dilute 10 mL (10 mmol) to 20 mL	0.5 mmol/mL	**8 mmol**	16 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**2 g**	8 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.88 mmol**	4 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**1.6 mmol**	8 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**80 mL**	80 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**120 mg**	12 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

8kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**12 microg**	0.24 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**4 microg**	0.4 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.4 mg**	0.4 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**4 mg**	0.4 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**2 mg**	0.2 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**Consult**	**Consult**	Infuse over 5 - 10 mins

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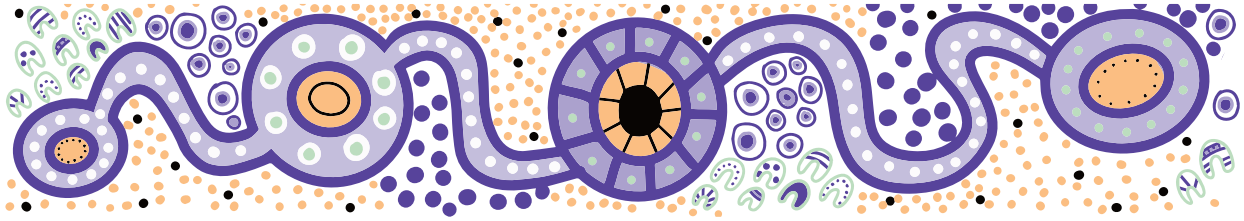

8kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**160 mg**	32 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**400 mg**	8 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**400 mg**	4 mL	PUSH over 3 - 5 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**480 mg**	8 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**400 mg**	4 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**400 mg**	4 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL of WFI	330 mg/mL	**400 mg**	1.2 mL	**IM:** Max 1 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**400 mg**	4 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**400 mg**	10 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**400 mg**	1.1 mL	**IM:** Max 1 mL per IM injection site

8kg

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

8kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**80 mg**	40 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**80 mg**	8 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**400 mg**	8 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**60 mg**	6 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**120 mg**	12 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**320 mg**	6.4 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**60 mg**	12 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**800 mg**	10 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**120 mg**	24 mL	Infuse over 60 - 120 mins

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

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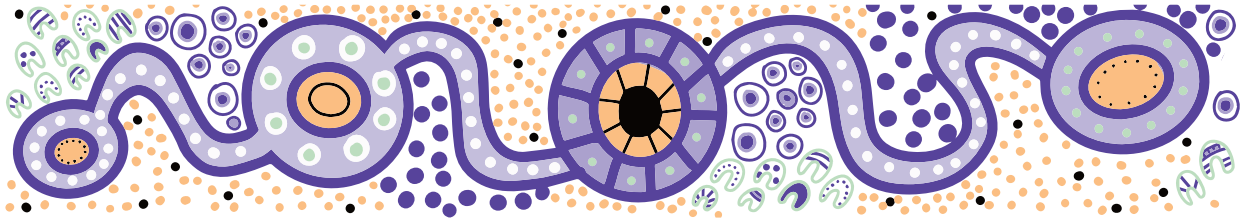

8kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**1.2 to 24 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.6 to 6.4 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**1.2 to 24 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODARONe *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **48 mg (24 mL)** infuse at **6 mL/hr**	IV
AmiODARONe [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**1.2 to 3.6 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**2.4 to 9.6 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**0.8 to 8 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**1.2 to 4.8 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.4 to 6.4 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**0.4 to 0.8 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.5 to 1.4 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**40 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**0.8 mL/hr**	

8kg


9kg

9 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	4 mm	NG tube	8 Fr
Laryngoscope blade	1	ICC tube	12-16 Fr
ETT at lips – cm	11 cm	LMA	1.5
ETT at nose – cm	13 cm	IDC	8 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
100 microg	**0.1 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**90 microg**	0.9 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**36 Joule**		Use infant or paediatric pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**45 mg**	4.5 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			90 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			180 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		18 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**0.9 mg**	0.3 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**1.8 mg**	0.6 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**2.7 mg**	0.9 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**9 Joule**		Use infant or paediatric pads
		2 Joule/kg			**18 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**180 microg**	1.8 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**9 microg**	0.9 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**18 microg**	1.8 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**9 mg**	0.9 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**18 mg**	1.8 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**0.9 mg**	0.9 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**10.8 mg**	1.1 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**18 mg**	1.8 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**0.9 mg**	0.9 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**144 mg**	1.4 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**45 microg**	0.45 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**90 microg**	0.23 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**2.7 mg**	0.68 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**1.8 mmol**	9 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**36 mg**	0.72 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**9 mg**	0.9 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**135 microg**	2.7 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**45 mg**	9 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.4 mg**	1.4 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**1.8 mg**	0.36 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**2.7 mg**	0.54 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 5 mL (250 mg) to 25 mL	10 mg/mL	**180 mg**	18 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 1 mL (200 mg) to 10 mL	20 mg/mL	**180 mg**	9 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 10 mL (1000 mg) to 20 mL	50 mg/mL	**540 mg**	10.8 mL	Push over 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**4.5 g**	23 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**27 mL**	27 mL	Infuse over 10 mins via central/large vein

9kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**2.7 mmol**	27 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.99 mmol**	4.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**9 mg**	9 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**45 mL**	45 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**0.9 units**	0.9 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Dilute 10 mL (10 mmol) to 20 mL	0.5 mmol/mL	**9 mmol**	18 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**2.25 g**	9 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**0.99 mmol**	4.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**1.8 mmol**	9 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**90 mL**	90 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**135 mg**	13.5 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

9kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**13.5 microg**	0.27 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**4.5 microg**	0.45 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.45 mg**	0.45 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**4.5 mg**	0.45 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**2.3 mg**	0.23 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**Consult**	**Consult**	Infuse over 5 - 10 mins

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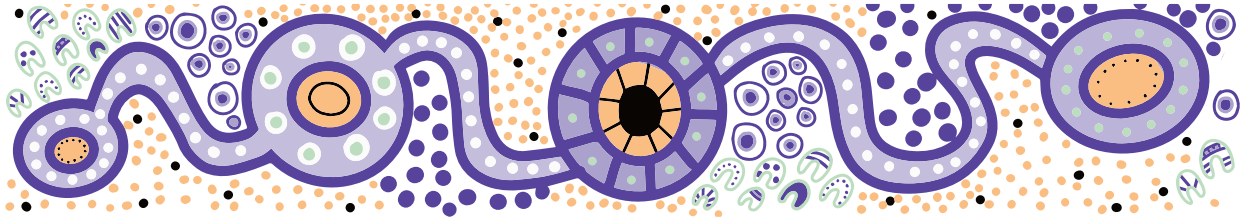

9kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**180 mg**	36 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**450 mg**	9 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**450 mg**	4.5 mL	PUSH over 3 - 5 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**540 mg**	9 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**450 mg**	4.5 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**450 mg**	4.5 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL of WFI	330 mg/mL	**450 mg**	1.4 mL	**IM:** Max 1 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**450 mg**	4 .5 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**450 mg**	11.3 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**450 mg**	1.3 mL	**IM:** Max 1 mL per IM injection site

9kg

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**90 mg**	45 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**90 mg**	9 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**450 mg**	9 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**67.5 mg**	6.8 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**135 mg**	13.5 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**360 mg**	7.2 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**67.5 mg**	13.5 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**900 mg**	11.3 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**135 mg**	27 mL	Infuse over 60 - 120 mins

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

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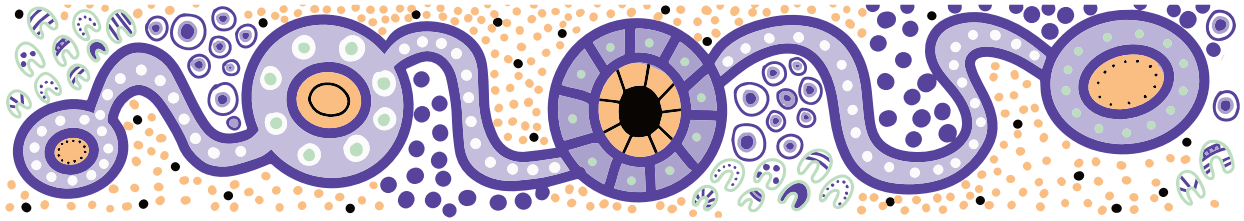

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**1.4 to 27 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.7 to 7.2 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**1.4 to 27 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **54 mg (27 mL)** infuse at **6.8 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**1.4 to 4.1 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**2.7 to 10.8 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**0.9 to 9 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**1.4 to 5.4 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.5 to 7.2 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**0.5 to 0.9 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.5 to 1.6 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**45 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**0.9 mL/hr**	

9kg

10 kg

10 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	4 mm	NG tube	8 - 10 Fr
Laryngoscope blade	1/2	ICC tube	12 - 16 Fr
ETT at lips – cm	11 cm	LMA	1.5
ETT at nose – cm	13 cm	IDC	8 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
100 microg	**0.1 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**100 microg**	1 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**40 Joule**		Use infant or paediatric pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**50 mg**	5 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			100 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			200 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		20 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**1 mg**	0.33 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**2 mg**	0.67 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**3 mg**	1 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**10 Joule**		Use infant or paediatric pads
		2 Joule/kg			**20 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**200 microg**	2 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**10 microg**	1 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**20 microg**	2 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**10 mg**	1 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**20 mg**	2 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1 mg**	1 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**12 mg**	1.2 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**20 mg**	2 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**1 mg**	1 mL	Push

10kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**160 mg**	1.6 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**50 microg**	0.5 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**100 microg**	0.25 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**3 mg**	0.75 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**2 mmol**	10 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**40 mg**	0.8 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**10 mg**	1 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**150 microg**	3 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**50 mg**	10 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.5 mg**	1.5 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**2 mg**	0.4 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**3 mg**	0.6 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 5 mL (250 mg) to 25 mL	10 mg/mL	**200 mg**	20 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 1 mL (200 mg) to 10 mL	20 mg/mL	**200 mg**	10 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 10 mL (1000 mg) to 20 mL	50 mg/mL	**600 mg**	12 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 4 mL (400 mg) to 10 mL	40 mg/mL	**400 mg**	10 mL	Infuse over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**5 g**	25 mL	Infuse over 10 mins*use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**30 mL**	30 mL	Infuse over 10 mins via central/large vein

10kg

10kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**3 mmol**	30 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.1 mmol**	5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**10 mg**	10 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**50 mL**	50 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**1 unit**	1 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Dilute 10 mL (10 mmol) to 20 mL	0.5 mmol/mL	**10 mmol**	20 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**2.5 g**	10 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/ mL	**1.1 mmol**	5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**2 mmol**	10 mL	**Pulse absent –** Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**100 mL**	100 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**150 mg**	15 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

10kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**15 microg**	0.3 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 -1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**5 microg**	0.5 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.5 mg**	0.5 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**5 mg**	0.5 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**2.5 mg**	0.25 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**Consult**	**Consult**	Infuse over 5 - 10 mins

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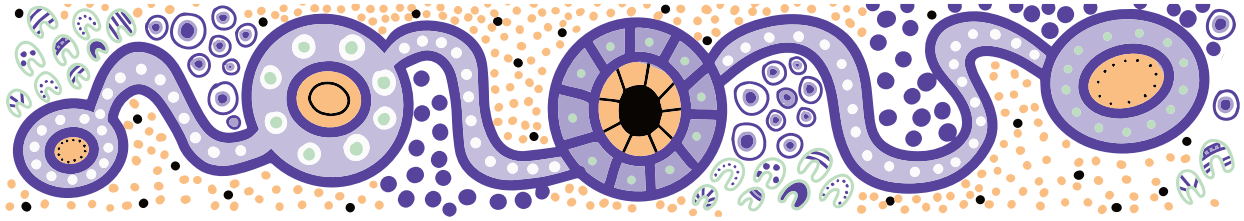

10kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**200 mg**	40 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**500 mg**	10 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**500 mg**	5 mL	PUSH over 3 - 5 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**600 mg**	10 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**500 mg**	5 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**500 mg**	5 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL of WFI	330 mg/mL	**500 mg**	1.5 mL	**IM:** Max 1 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**500 mg**	5 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**500 mg**	12.5 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**500 mg**	1.4 mL	**IM:** Max 1 mL per IM injection site

10kg

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

10kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**100 mg**	50 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**100 mg**	10 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**500 mg**	10 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 2 mL (80 mg) to a final volume of 8 mL	10 mg/mL	**75 mg**	7.5 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**150 mg**	15 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**400 mg**	8 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**75 mg**	15 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**1000 mg**	12.5 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**150 mg**	30 mL	Infuse over 60 - 120 mins

If final volume to administer less than 5 mL it is reasonable to dilute the dose up to a practical volume for the pump to infuse.

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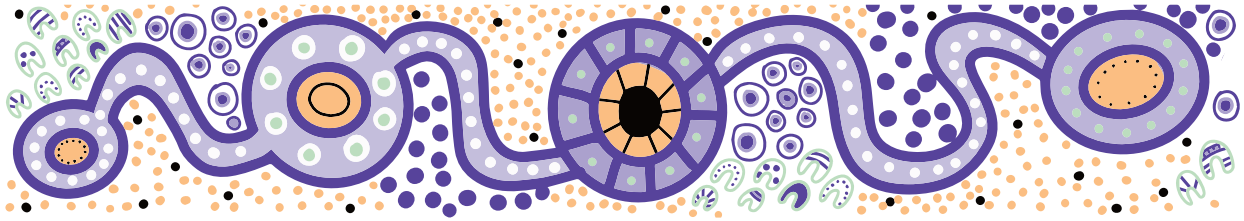

10kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**1.5 to 30 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.8 to 8 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**1.5 to 30 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODARONe *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **60 mg (30 mL)** infuse at **7.5 mL/hr**	IV
AmiODARONe [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**1.5 to 4.5 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**3 to 12 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**1 to 10 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**0.8 to 3 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**1.5 to 6 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.5 to 8 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**0.5 to 1 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**2 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted - draw up **50 mL (50 mg)**	1 mg/mL	**0.3 to 0.6 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.6 to 1.8 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**50 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**1 mL/hr**	

11kg

11 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	4 mm	NG tube	8 - 10 Fr
Laryngoscope blade	1/2	ICC tube	12 - 16 Fr
ETT at lips – cm	11 cm	LMA	2
ETT at nose – cm	13 cm	IDC	8 - 10 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
100 microg	**0.1 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**110 microg**	1.1 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**44 Joule**		Use paediatric or adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**55 mg**	5.5 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			110 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			220 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		22 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**1.1 mg**	0.37 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**2.2 mg**	0.73 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**3.3 mg**	1.1 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**11 Joule**		Use paediatric or adult pads
		2 Joule/kg			**22 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**220 microg**	2.2 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**11 microg**	1.1 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**22 microg**	2.2 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**11 mg**	1.1 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**22 mg**	2.2 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.1 mg**	1.1 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**13.2 mg**	1.3 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**22 mg**	2.2 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**1.1 mg**	1.1 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**176 mg**	1.8 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**55 microg**	0.55 mL	Push– Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**110 microg**	0.28 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**3.3 mg**	0.83 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**2.2 mmol**	11 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**44 mg**	0.88 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**11 mg**	1.1 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**165 microg**	3.3 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**55 mg**	11 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.7 mg**	1.7 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**2.2 mg**	0.44 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**3.3 mg**	0.66 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 5 mL (250 mg) to 25 mL	10 mg/mL	**220 mg**	22 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 2 mL (400 mg) to 20 mL	20 mg/mL	**220 mg**	11 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 10 mL (1000 mg) to 20 mL	50 mg/mL	**660 mg**	13.2 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 8 mL (800 mg) to 20 mL	40 mg/mL	**440 mg**	11 mL	Infuse over 3 -5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**5.5 g**	28 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**33 mL**	33 mL	Infuse over 10 mins via central/large vein

11kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**3.3 mmol**	33 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.21 mmol**	5.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**11 mg**	11 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**55 mL**	55 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**1.1 units**	1.1 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**11 mmol**	11 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**2.75 g**	11 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.21 mmol**	5.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**2.2 mmol**	11 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**110 mL**	110 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**165 mg**	16.5 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

11kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**16.5 microg**	0.33 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**5.5 microg**	0.55 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.55 mg**	0.55 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% IO	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**5.5 mg**	0.55 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**2.8 mg**	0.28 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**1.1 mg**	2.2 mL	Infuse over 5 - 10 mins

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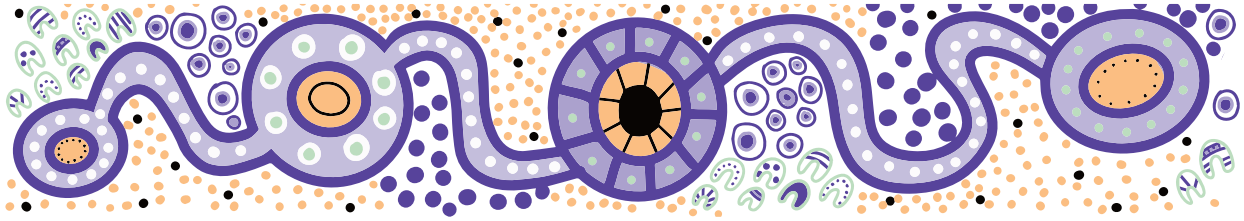

11kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**220 mg**	44 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**550 mg**	11 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	20 mg/mL	**550 mg**	27.5 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**660 mg**	11 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**550 mg**	5.5 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**550 mg**	5.5 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL WFI	330 mg/mL	**550 mg**	1.7 mL	**IM:** Max 1 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**550 mg**	5.5 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**550 mg**	13.8 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**550 mg**	1.6 mL	**IM:** Max 1 mL per IM injection site

11kg

11kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**110 mg**	55 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**110 mg**	11 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**550 mg**	11 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 4 mL (160 mg) to a final volume of 16 mL	10 mg/mL	**82.5 mg**	8.3 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**165 mg**	16.5 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**440 mg**	8.8 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**82.5 mg**	16.5 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**1100 mg**	13.8 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**165 mg**	33 mL	Infuse over 60 - 120 mins

11kg

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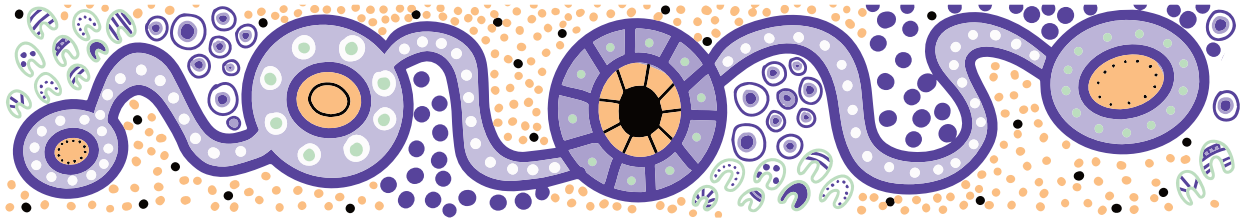

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**1.7 to 33 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**0.9 to 8.8 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**1.7 to 33 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **66 mg (33 mL)** infuse at **8.3 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**1.7 to 5 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**3.3 to 13.2 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**1.1 to 11 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**0.8 to 3.3 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**1.7 to 6.6 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.6 to 8.8 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**0.6 to 1.1 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**2.2 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.3 to 0.6 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.7 to 2 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**55 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**1.1 mL/hr**	

12 kg

12 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	4.5 mm	NG tube	8 - 10 Fr
Laryngoscope blade	2	ICC tube	12 - 16 Fr
ETT at lips – cm	12 cm	LMA	2
ETT at nose – cm	15 cm	IDC	8 - 10 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
100 microg	**0.1 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**120 microg**	1.2 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**48 Joule**		Use paediatric or adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**60 mg**	6 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			120 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			240 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		24 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**1.2 mg**	0.4 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**2.4 mg**	0.8 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**3.6 mg**	1.2 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**12 Joule**		Use paediatric or adult pads
		2 Joule/kg			**24 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**240 microg**	2.4mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**12 microg**	1.2 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**24 microg**	2.4 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**12 mg**	1.2 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**24 mg**	2.4 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.2 mg**	1.2 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**14.4 mg**	1.4 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**24 mg**	2.4 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**1.2 mg**	1.2 mL	Push

12kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**192 mg**	1.9 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**60 microg**	0.6 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**120 microg**	0.3 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**3.6 mg**	0.9 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**2.4 mmol**	12 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**48 mg**	0.96 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**12 mg**	1.2 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**180 microg**	3.6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**60 mg**	12 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.8 mg**	1.8 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**2.4 mg**	0.48 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**3.6 mg**	0.72 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 5 mL (250 mg) to 25 mL	10 mg/mL	**240 mg**	24 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 2 mL (400 mg) to 20 mL	20 mg/mL	**240 mg**	12 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 10 mL (1000 mg) to 20 mL	50 mg/mL	**720 mg**	14.4 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 8 mL (800 mg) to 20 mL	40 mg/mL	**480 mg**	12 mL	Infuse over 3 -5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**6 g**	30 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**36 mL**	36 mL	Infuse over 10 mins via central/large vein

12kg

12kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**3.6 mmol**	36 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.32 mmol**	6 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**12 mg**	12 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**60 mL**	60 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**1.2 units**	1.2 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**12 mmol**	12 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**3 g**	12 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.32 mmol**	6 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**2.4 mmol**	12 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**120 mL**	120 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**180 mg**	18 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

12kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**18 microg**	0.36 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**6 microg**	0.6 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.6 mg**	0.6 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**6 mg**	0.6 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**3 mg**	0.3 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**1.2 mg**	2.4 mL	Infuse over 5 - 10 mins

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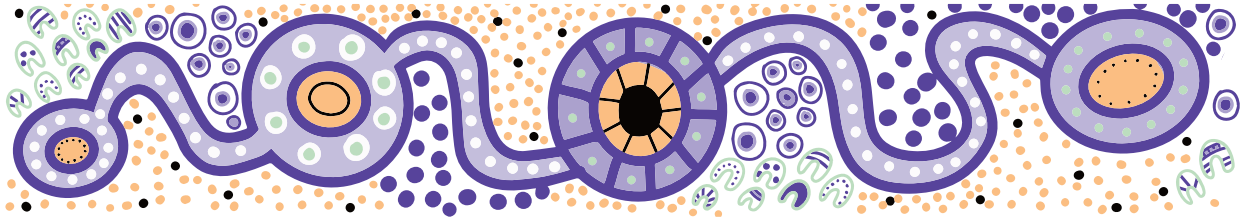

12kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 10 mL (250 mg) to a final volume of 50 mL	5 mg/mL	**240 mg**	48 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**600 mg**	12 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	20 mg/mL	**600 mg**	30 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**720 mg**	12 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**600 mg**	6 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**600 mg**	6 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL WFI	330 mg/mL	**600 mg**	1.8 mL	**IM:** Max 1 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**600 mg**	6 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**600 mg**	15 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**600 mg**	1.7 mL	**IM:** Max 1 mL per IM injection site

12kg

12kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**120 mg**	60 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) vial to a final volume of 60 mL	10 mg/mL	**120 mg**	12 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**600 mg**	12 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 4 mL (160 mg) to a final volume of 16 mL	10 mg/mL	**90 mg**	9 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**180 mg**	18 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**480 mg**	9.6 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**90 mg**	18 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**1200 mg**	15 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**180 mg**	36 mL	Infuse over 60 - 120 mins

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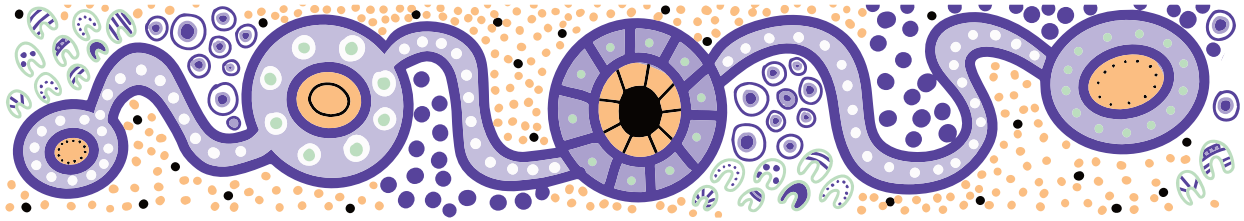

12kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**1.8 to 36 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**1 to 9.6 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**1.8 to 36 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **72 mg (36 mL)** infuse at **9 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**1.8 to 5.4 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**3.6 to 14.4 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**1.2 to 12 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**0.9 to 3.6 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**1.8 to 7.2 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.6 to 9.6 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**0.6 to 1.2 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**2.4 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.4 to 0.8 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.7 to 2.2 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**60 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**1.2 mL/hr**	


13 kg

13 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	4.5 mm	NG tube	8 - 10 Fr
Laryngoscope blade	2	ICC tube	16 - 24 Fr
ETT at lips – cm	13 cm	LMA	2
ETT at nose – cm	16 cm	IDC	8 - 10 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
150 microg	**0.15 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**130 microg**	1.3 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**52 Joule**		Use paediatric or adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**65 mg**	6.5 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			130 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			260 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		26 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**1.3 mg**	0.43 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**2.6 mg**	0.87 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**3.9 mg**	1.3 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**13 Joule**		Use paediatric or adult pads
		2 Joule/kg			**26 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**260 microg**	2.6 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**13 microg**	1.3 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**26 microg**	2.6 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**13 mg**	1.3 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**26 mg**	2.6mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.3 mg**	1.3 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**15.6 mg**	1.6 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**26 mg**	2.6 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**1.3 mg**	1.3 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**208 mg**	2.1 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**65 microg**	0.65 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**130 microg**	0.33 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**3.9 mg**	0.98 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**2.6 mmol**	13 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**52 mg**	1 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**13 mg**	1.3 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**195 microg**	3.9 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**65 mg**	13 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**2 mg**	2 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**2.6 mg**	0.52 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**3.9 mg**	0.78 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 10 mL (500 mg) to 50 mL	10 mg/mL	**260 mg**	26 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 2 mL (400 mg) to 20 mL	20 mg/mL	**260 mg**	13 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 10 mL (1000 mg) to 20 mL	50 mg/mL	**780 mg**	15.6 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 8 mL (800 mg) to 20 mL	40 mg/mL	**520 mg**	13 mL	Infuse over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**6.5 g**	33 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**39 mL**	39 mL	Infuse over 10 mins via central/large vein

13kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**3.9 mmol**	39 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.43 mmol**	6.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**13 mg**	13 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**65 mL**	65 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**1.3 units**	1.3 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**13 mmol**	13 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**3.25 g**	13 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.43 mmol**	6.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**2.6 mmol**	13 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**130 mL**	130 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**195 mg**	19.5 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

13kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**19.5 microg**	0.39 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**6.5 microg**	0.65 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.65 mg**	0.65 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**6.5 mg**	0.65 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**3.3 mg**	0.33 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**1.3 mg**	2.6 mL	Infuse over 5 - 10 mins

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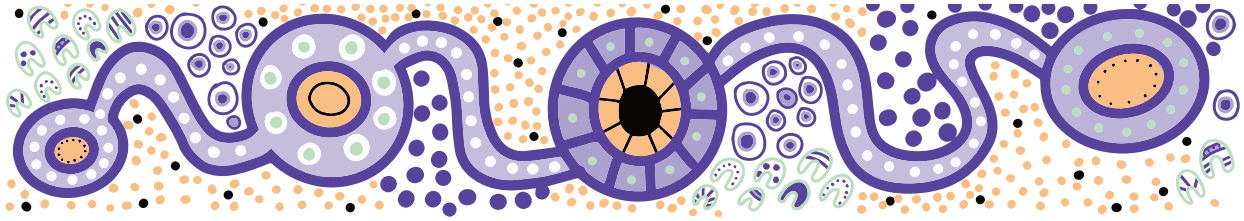

13kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**260 mg**	52 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**650 mg**	13 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	20 mg/mL	**650 mg**	33 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**780 mg**	13 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**650 mg**	6.5 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**650 mg**	6.5 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL WFI	330 mg/mL	**650 mg**	2 mL	**IM:** Max 1 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**650 mg**	6.5 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**650 mg**	16.3 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**650 mg**	1.9 mL	**IM:** Max 1 mL per IM injection site

13kg

13kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**130 mg**	65 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**130 mg**	13 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**650 mg**	13 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 4 mL (160 mg) to a final volume of 16 mL	10 mg/mL	**97.5 mg**	9.8 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**195 mg**	19.5 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**520 mg**	10.4 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**97.5 mg**	19.5 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**1300 mg**	16.3 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**195 mg**	39 mL	Infuse over 60 - 120 mins

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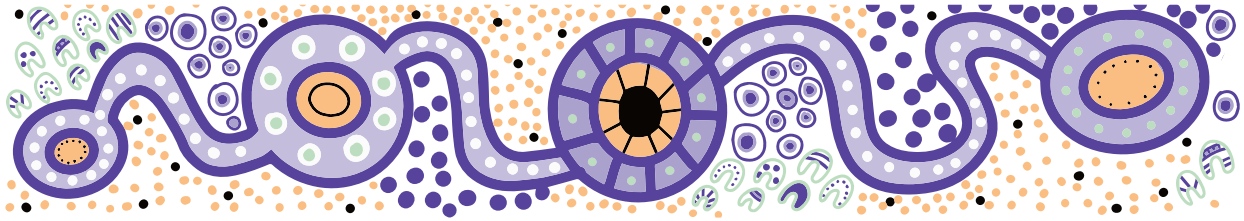

13kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2 to 39 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**1 to 10.4 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2 to 39 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **78 mg (39 mL)** infuse at **9.8 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**2 to 5.9 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**3.9 to 15.6 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**1.3 to 13 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**1 to 3.9 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**2 to 7.8 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.7 to 10.4 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**0.7 to 1.3 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**2.6 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.4 to 0.8 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.8 to 2.3 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**65 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**1.3 mL/hr**	


14 kg

14 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	4.5 mm	NG tube	8 - 10 Fr
Laryngoscope blade	2	ICC tube	16 - 24 Fr
ETT at lips – cm	13 cm	LMA	2
ETT at nose – cm	16 cm	IDC	8 - 10 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
150 microg	**0.15 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**140 microg**	1.4 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**56 Joule**		Use paediatric or adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**70 mg**	7 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			140 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			280 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		28 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**1.4 mg**	0.47 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**2.8 mg**	0.93 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**4.2 mg**	1.4 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**14 Joule**		Use paediatric or adult pads
		2 Joule/kg			**28 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**280 microg**	2.8 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**14 microg**	1.4 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**28 microg**	2.8 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**14 mg**	1.4 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**28 mg**	2.8 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.4 mg**	1.4 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**16.8 mg**	1.7 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**28 mg**	2.8 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**1.4 mg**	1.4 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**224 mg**	2.2 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**70 microg**	0.7 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**140 microg**	0.35 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**4.2 mg**	1.1 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**2.8 mmol**	14 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**56 mg**	1.1 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**14 mg**	1.4 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**210 microg**	4.2 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**70 mg**	14 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**2.1 mg**	2.1 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**2.8 mg**	0.56 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**4.2 mg**	0.84 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 10 mL (500 mg) to 50 mL	10 mg/mL	**280 mg**	28 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 2 mL (400 mg) to 20 mL	20 mg/mL	**280 mg**	14 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 10 mL (1000 mg) to 20 mL	50 mg/mL	**840 mg**	16.8 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 8 mL (800 mg) to 20 mL	40 mg/mL	**560 mg**	14 mL	Infuse over 3 -5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**7 g**	35 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**42 mL**	42 mL	Infuse over 10 mins via central/large vein

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**4.2 mmol**	42 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.54 mmol**	7 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**14 mg**	14 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**70 mL**	70 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**1.4 units**	1.4 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**14 mmol**	14 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**3.5 g**	14 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.54 mmol**	7 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**2.8 mmol**	14 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**140 mL**	140 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**210 mg**	21 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**21 microg**	0.42 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IVI** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**7 microg**	0.7 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.7 mg**	0.7 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**7 mg**	0.7 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**3.5 mg**	0.35 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**1.4 mg**	2.8 mL	Infuse over 5 - 10 mins

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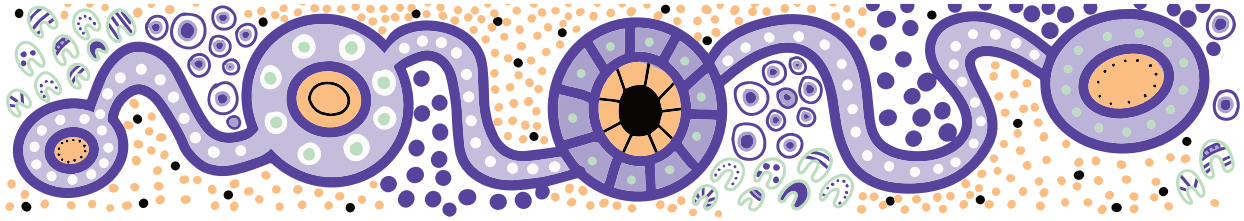

14kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**280 mg**	56 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**700 mg**	14 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	20 mg/mL	**700 mg**	35 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**840 mg**	14 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**700 mg**	7 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**700 mg**	7 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL WFI	330 mg/mL	**700 mg**	2.1 mL	**IM:** Max 1.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**700 mg**	7 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**700 mg**	17.5 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**700 mg**	2 mL	**IM:** Max 1.5 mL per IM injection site

14kg

14kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**140 mg**	70 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**140 mg**	14 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**700 mg**	14 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 4 mL (160 mg) to a final volume of 16 mL	10 mg/mL	**105 mg**	10.5 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**210 mg**	21 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**560 mg**	11.2 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**105 mg**	21 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**1400 mg**	17.5 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**210 mg**	42 mL	Infuse over 60 - 120 mins

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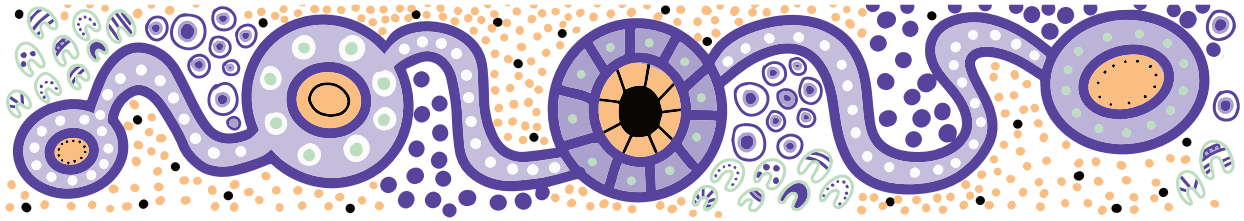

14kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2.1 to 42 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**1.1 to 11.2 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2.1 to 42 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **84 mg (42 mL)** infuse at **10.5 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**2.1 to 6.3 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**4.2 to 16.8 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**1.4 to 14 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**1.1 to 4.2 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**2.1 to 8.4 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.7 to 11.2 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**0.7 to 1.4 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**2.8 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.4 to 0.8 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.8 to 2.5 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**70 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**1.4 mL/hr**	


15 kg

15 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	4.5 mm	NG tube	10 Fr
Laryngoscope blade	2	ICC tube	16 - 24 Fr
ETT at lips – cm	14 cm	LMA	2
ETT at nose – cm	17 cm	IDC	10 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
150 microg	**0.15 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**150 microg**	1.5 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**60 Joule**		Use paediatric or adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**75 mg**	7.5 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			150 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			300 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		30 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**1.5 mg**	0.5 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**3 mg**	1 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**4.5 mg**	1.5 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**15 Joule**		Use paediatric or adult pads
		2 Joule/kg			**30 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**300 microg**	3 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**15 microg**	1.5 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**30 microg**	3 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**15 mg**	1.5 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**30 mg**	3 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.5 mg**	1.5 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**18 mg**	1.8 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**30 mg**	3 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**1.5 mg**	1.5 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**240 mg**	2.4 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**75 microg**	0.75 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**150 microg**	0.38 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**4.5 mg**	1.1 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**3 mmol**	15 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**60 mg**	1.2 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**15 mg**	1.5 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**225 microg**	4.5 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**75 mg**	15 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**2.3 mg**	2.3 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**3 mg**	0.6 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**4.5 mg**	0.9 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 10 mL (500 mg) to 50 mL	10 mg/mL	**300 mg**	30 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 2 mL (400 mg) to 20 mL	20 mg/mL	**300 mg**	15 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 10 mL (1000 mg) to 20 mL	50 mg/mL	**900 mg**	18 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 8 mL (800 mg) to 20 mL	40 mg/mL	**600 mg**	15 mL	Infuse over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**7.5 g**	38 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**45 mL**	45 mL	Infuse over 10 mins via central/large vein

15kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**4.5 mmol**	45 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.65 mmol**	7.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**15 mg**	15 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**75 mL**	75 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**1.5 units**	1.5 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**15 mmol**	15 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**3.75 g**	15 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.65 mmol**	7.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**3 mmol**	15 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**150 mL**	150 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**225 mg**	23 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

15kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**22.5 microg**	0.45 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**7.5 microg**	0.75 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.75 mg**	0.75 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**7.5 mg**	0.75 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**3.8 mg**	0.38 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**1.5 mg**	3 mL	Infuse over 5 - 10 mins

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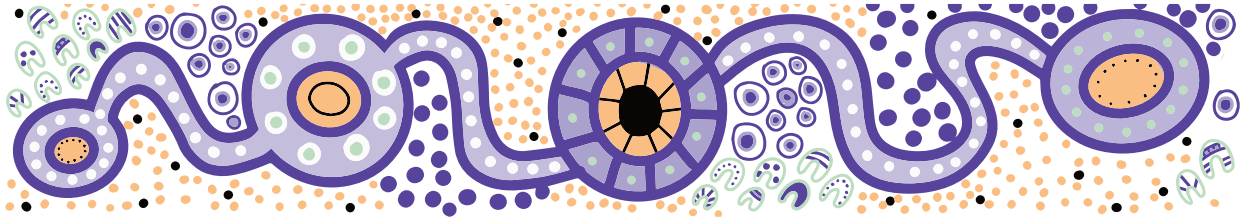

15kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**300 mg**	60 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**750 mg**	15 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	20 mg/mL	**750 mg**	38 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**900 mg**	15 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**750 mg**	7.5 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**750 mg**	7.5 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL WFI	330 mg/mL	**750 mg**	2.3 mL	**IM:** Max 1.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**750 mg**	7.5 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**750 mg**	18.8 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**750 mg**	2.1 mL	**IM:** Max 1.5 mL per IM injection site

15kg

15kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**150 mg**	75 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**150 mg**	15 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**750 mg**	15 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 4 mL (160 mg) to a final volume of 16 mL	10 mg/mL	**112.5 mg**	11.3 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**225 mg**	23 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**600 mg**	12 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**112.5 mg**	23 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**1500 mg**	18.8 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**225 mg**	45 mL	Infuse over 60 - 120 mins

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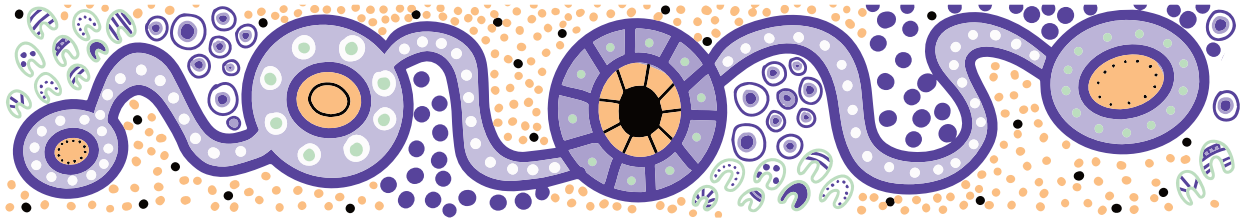

15kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2.3 to 45 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**1.2 to 12 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2.3 to 45 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **90 mg (45 mL)** infuse at **11.3 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**2.3 to 6.8 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**4.5 to 18 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 10 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**1.5 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**1.1 to 4.5 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**2.3 to 9 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.8 to 12 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**0.5 to 6 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**0.8 to 1.5 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**3 mL/hr**	IV
Salbutamol]	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.5 to 1 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**0.9 to 2.7 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**75 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**1.5 mL/hr**	


16 kg

16 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	5 mm	NG tube	10 Fr
Laryngoscope blade	2	ICC tube	16 - 24 Fr
ETT at lips – cm	14 cm	LMA	2
ETT at nose – cm	17 cm	IDC	10 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
200 microg	**0.2 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**160 microg**	1.6 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**64 Joule**		Use paediatric or adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**80 mg**	8 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			160 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			320 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		32 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**1.6 mg**	0.53 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**3.2 mg**	1.1 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**4.8 mg**	1.6 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**16 Joule**		Use paediatric or adult pads
		2 Joule/kg			**32 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**320 microg**	3.2 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**16 microg**	1.6 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**32 microg**	3.2 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**16 mg**	1.6 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**32 mg**	3.2 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.6 mg**	1.6 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**19.2 mg**	1.9 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**32 mg**	3.2 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**1.6 mg**	1.6 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**256 mg**	2.6 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**80 microg**	0.8 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**160 microg**	0.4 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**4.8 mg**	1.2 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**3.2 mmol**	16 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**64 mg**	1.3 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**16 mg**	1.6 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**240 microg**	4.8 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**80 mg**	16 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**2.4 mg**	2.4 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**3.2 mg**	0.64 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**4.8 mg**	0.96 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 10 mL (500 mg) to 50 mL	10 mg/mL	**320 mg**	32 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 2 mL (400 mg) to 20 mL	20 mg/mL	**320 mg**	16 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 10 mL (1000 mg) to 20 mL	50 mg/mL	**960 mg**	19.2 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 8 mL (800 mg) to 20 mL	40 mg/mL	**640 mg**	16 mL	Infuse over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**8 g**	40 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**48 mL**	48 mL	Infuse over 10 mins via central/large vein

16kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**4.8 mmol**	48 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.76 mmol**	8 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**16 mg**	16 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**80 mL**	80 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**1.6 units**	1.6 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**16 mmol**	16 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**4 g**	16 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.76 mmol**	8 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**3.2 mmol**	16 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**160 mL**	160 mL	
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**240 mg**	24 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

16kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**24 microg**	0.48 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IVI** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**8 microg**	0.8 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.8 mg**	0.8 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**8 mg**	0.8 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**4 mg**	0.4 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**1.6 mg**	3.2 mL	Infuse over 5 - 10 mins

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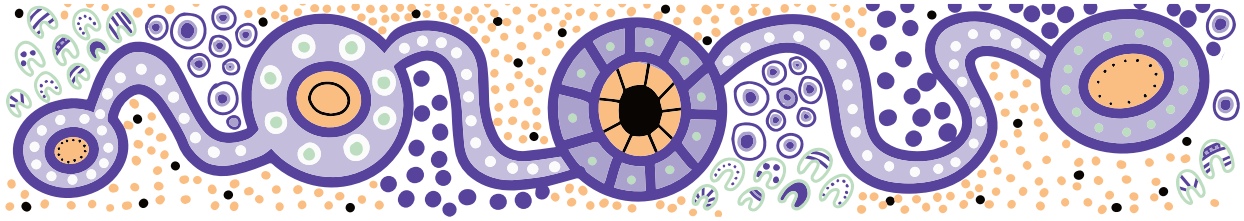

16kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**320 mg**	64 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**800 mg**	16 mL	Infuse over 30 mins Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	20 mg/mL	**800 mg**	40 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**960 mg**	16 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**800 mg**	8 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**800 mg**	8 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL WFI	330 mg/mL	**800 mg**	2.4 mL	**IM:** Max 1.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**800 mg**	8 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**800 mg**	20 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**800 mg**	2.3 mL	**IM:** Max 1.5 mL per IM injection site

16kg

16kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**160 mg**	80 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**160 mg**	16 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**800 mg**	16 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 4 mL (160 mg) to a final volume of 16 mL	10 mg/mL	**120 mg**	12 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**240 mg**	24 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**640 mg**	12.8 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**120 mg**	24 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**1600 mg**	20 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**240 mg**	48 mL	Infuse over 60 - 120 mins

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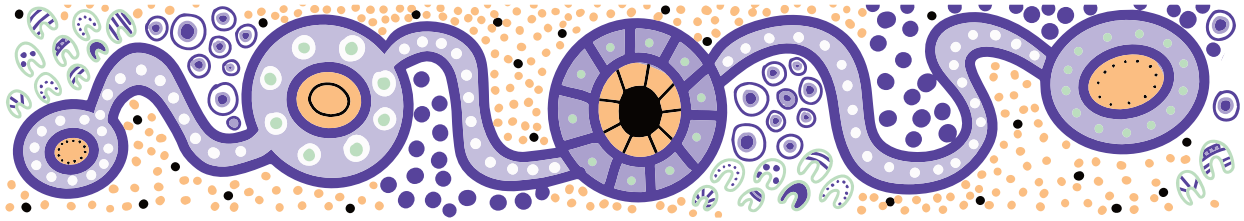

16kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2.4 to 48 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**1.3 to 12.8 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2.4 to 48 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **96 mg (48 mL)** infuse at **12 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**2.4 to 7.2 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**4.8 to 19.2 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 9.5 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**1.6 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**1.2 to 4.8 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**2.4 to 9.6 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.8 to 12.8 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**0.5 to 6.4 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**0.8 to 1.6 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**3.2 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.5 to 1 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**1 to 2.9 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**80 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**1.6 mL/hr**	


17 kg

17 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	5 mm	NG tube	10 Fr
Laryngoscope blade	2	ICC tube	16 - 24 Fr
ETT at lips – cm	14 cm	LMA	2
ETT at nose – cm	17 cm	IDC	10 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
200 microg	**0.2 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**170 microg**	1.7 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**68 Joule**		Use paediatric or adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**85 mg**	8.5 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			170 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			340 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		34 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**1.7 mg**	0.57 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**3.4 mg**	1.1 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**5.1 mg**	1.7 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**17 Joule**		Use paediatric or adult pads
		2 Joule/kg			**34 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**340 microg**	3.4 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**17 microg**	1.7 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**34 microg**	3.4 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**17 mg**	1.7 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**34 mg**	3.4 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.7 mg**	1.7 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**20.4 mg**	2 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**34 mg**	3.4 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**1.7 mg**	1.7 mL	Push

17kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**272 mg**	2.7 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**85 microg**	0.85 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**170 microg**	0.43 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**5.1 mg**	1.3 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**3.4 mmol**	17 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**68 mg**	1.4 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**17 mg**	1.7 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**255 microg**	5.1 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**85 mg**	17 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**2.6 mg**	2.6 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**3.4 mg**	0.68 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**5.1 mg**	1 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 10 mL (500 mg) to 50 mL	10 mg/mL	**340 mg**	34 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 2 mL (400 mg) to 20 mL	20 mg/mL	**340 mg**	17 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 15 mL (1500 mg) to 30 mL	50 mg/mL	**1020 mg**	20 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 8 mL (800 mg) to 20 mL	40 mg/mL	**680 mg**	17 mL	Infuse over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**8.5 g**	43 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**51 mL**	51 mL	Infuse over 10 mins via central/large vein

17kg

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Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**5.1 mmol**	51 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.87 mmol**	8.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**17 mg**	17 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**85 mL**	85 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**1.7 units**	1.7 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**17 mmol**	17 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**4.25 g**	17 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.87 mmol**	8.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**3.4 mmol**	17 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**170 mL**	170 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**255 mg**	26 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

17kg

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**25.5 microg**	0.51 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**8.5 microg**	0.85 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.85 mg**	0.85 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**8.5 mg**	0.85 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**4.3 mg**	0.43 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**1.7 mg**	3.4 mL	Infuse over 5 - 10 mins

Queensland Paediatric Sepsis Program

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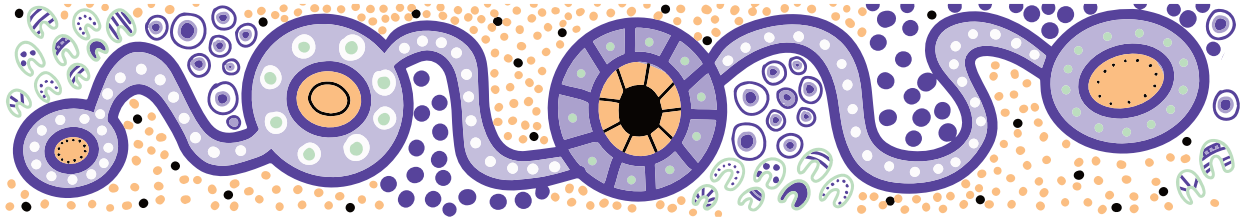

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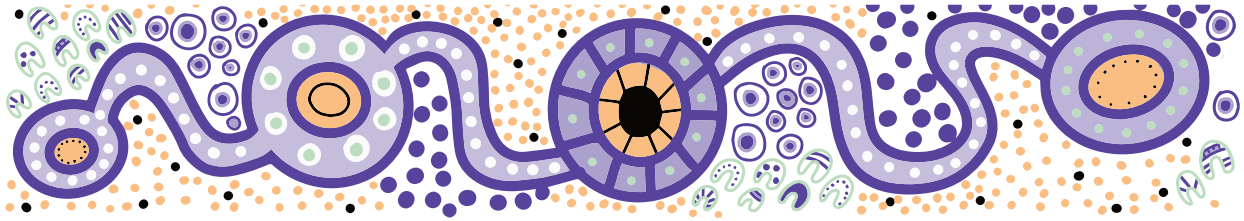
Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**340 mg**	68 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**850 mg**	17 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	20 mg/mL	**850 mg**	43 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**1020 mg**	17 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**850 mg**	8.5 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**850 mg**	8.5 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL WFI	330 mg/mL	**850 mg**	2.6 mL	**IM:** Max 1.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**850 mg**	8.5 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**850 mg**	21 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**850 mg**	2.4 mL	**IM:** Max 1.5 mL per IM injection site

17kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**170 mg**	85 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**170 mg**	17 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**850 mg**	17 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 4 mL (160 mg) to a final volume of 16 mL	10 mg/mL	**127.5 mg**	12.8 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**255 mg**	26 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**680 mg**	13.6 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**127.5 mg**	26 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**1700 mg**	21 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**255 mg**	51 mL	Infuse over 60 - 120 mins



17kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2.6 to 51 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**1.4 to 13.6 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2.6 to 51 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **102 mg (51 mL)** infuse at **12.8 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**2.6 to 7.7 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**5.1 to 20.4 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 9 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**1.7 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**1.3 to 5.1 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**2.6 to 10.2 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.9 to 13.6 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**0.5 to 6.8 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**0.9 to 1.7 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**3.4 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.5 to 1 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**1 to 3.1 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**85 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**1.7 mL/hr**	

18 kg

18 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	5 mm	NG tube	10 Fr
Laryngoscope blade	2	ICC tube	16 - 24 Fr
ETT at lips – cm	14 cm	LMA	2
ETT at nose – cm	17 cm	IDC	10 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
200 microg	**0.2 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**180 microg**	1.8 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**72 Joule**		Use paediatric or adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**90 mg**	9 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			180 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			360 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		36 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**1.8 mg**	0.6 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**3.6 mg**	1.2 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**5.4 mg**	1.8 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**18 Joule**		Use paediatric or adult pads
		2 Joule/kg			**36 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**360 microg**	3.6 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**18 microg**	1.8 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**36 microg**	3.6 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**18 mg**	1.8 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**36 mg**	3.6 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.8 mg**	1.8 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**21.6 mg**	2.2 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**36 mg**	3.6 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**1.8 mg**	1.8 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**288 mg**	2.9 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**90 microg**	0.9 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**180 microg**	0.45 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**5.4 mg**	1.4 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**3.6 mmol**	18 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**72 mg**	1.4 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**18 mg**	1.8 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**270 microg**	5.4 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**90 mg**	18 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**2.7 mg**	2.7 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**3.6 mg**	0.72 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**5.4 mg**	1.1 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 10 mL (500 mg) to 50 mL	10 mg/mL	**360 mg**	36 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 2 mL (400 mg) to 20 mL	20 mg/mL	**360 mg**	18 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 15 mL (1500 mg) to 30 mL	50 mg/mL	**1080 mg**	22 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 8 mL (800 mg) to 20 mL	40 mg/mL	**720 mg**	18 mL	Infuse over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**9 g**	45 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**54 mL**	54 mL	Infuse over 10 mins via central/large vein

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**5.4 mmol**	54 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.98 mmol**	9 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**18 mg**	18 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**90 mL**	90 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**1.8 units**	1.8 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**18 mmol**	18 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**4.5 g**	18 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**1.98 mmol**	9 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**3.6 mmol**	18 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**180 mL**	180 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**270 mg**	27 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**27 microg**	0.54 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**9 microg**	0.9 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.9 mg**	0.9 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**9 mg**	0.9 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**4.5 mg**	0.45 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**1.8 mg**	3.6 mL	Infuse over 5 - 10 mins

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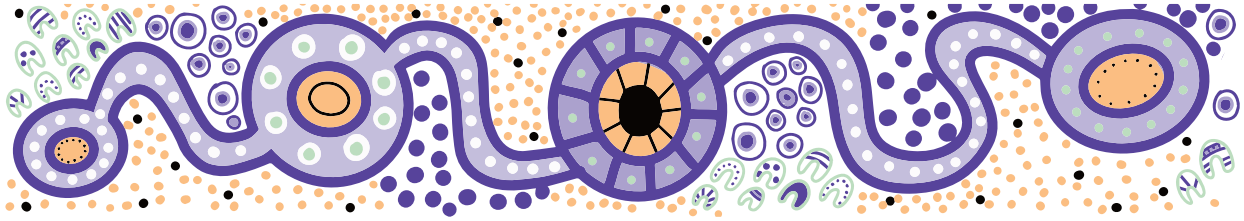

18kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**360 mg**	72 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**900 mg**	18 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	20 mg/mL	**900 mg**	45 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**1080 mg**	18 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**900 mg**	9 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**900 mg**	9 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL WFI	330 mg/mL	**900 mg**	2.7 mL	**IM:** Max 1.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**900 mg**	9 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**900 mg**	23 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**900 mg**	2.6 mL	**IM:** Max 1.5 mL per IM injection site

18kg

18kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**180 mg**	90 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**180 mg**	18 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**900 mg**	18 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 4 mL (160 mg) to a final volume of 16 mL	10 mg/mL	**135 mg**	13.5 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**270 mg**	27 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**720 mg**	14.4 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**135 mg**	27 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**1800 mg**	23 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**270 mg**	54 mL	Infuse over 60 - 120 mins

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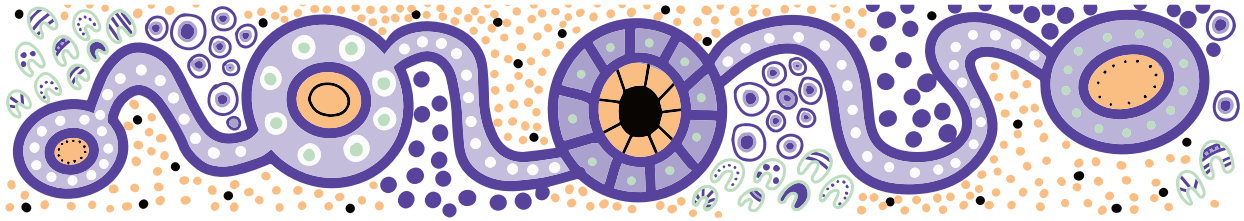


18kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2.7 to 54 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**1.4 to 14.4 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2.7 to 54 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **108 mg (54 mL)** infuse at **13.5 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**2.7 to 8.1 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**5.4 to 21.6 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 8.5 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**1.8 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**1.4 to 5.4 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**2.7 to 10.8 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**0.9 to 14.4 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**0.5 to 7.2 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**0.9 to 1.8 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**3.6 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.6 to 1.2 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**1.1 to 3.2 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**90 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**1.8 mL/hr**	


19 kg

19 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	5 mm	NG tube	10 Fr
Laryngoscope blade	2	ICC tube	16 - 24 Fr
ETT at lips – cm	14 cm	LMA	2
ETT at nose – cm	17 cm	IDC	10 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
200 microg	**0.2 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**190 microg**	1.9 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**76 Joule**		Use paediatric or adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**95 mg**	9.5 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			190 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			380 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		38 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**1.9 mg**	0.63 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**3.8 mg**	1.3 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**5.7 mg**	1.9 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**19 Joule**		Use paediatric or adult pads
		2 Joule/kg			**38 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**380 microg**	3.8 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**19 microg**	1.9 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**38 microg**	3.8 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**19 mg**	1.9 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**38 mg**	3.8 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**1.9 mg**	1.9 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**22.8 mg**	2.3 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**38 mg**	3.8 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**1.9 mg**	1.9 mL	Push

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**304 mg**	3 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**95 microg**	0.95 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**190 microg**	0.48 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**5.7 mg**	1.4 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**3.8 mmol**	19 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**76 mg**	1.5 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**19 mg**	1.9 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**285 microg**	5.7 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**95 mg**	19 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**2.9 mg**	2.9 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**3.8 mg**	0.76 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**5.7 mg**	1.1 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 10 mL (500 mg) to 50 mL	10 mg/mL	**380 mg**	38 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 2 mL (400 mg) to 20 mL	20 mg/mL	**380 mg**	19 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 15 mL (1500 mg) to 30 mL	50 mg/mL	**1140 mg**	23 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 8 mL (800 mg) to 20 mL	40 mg/mL	**760 mg**	19 mL	Infuse over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**9.5 g**	48 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**57 mL**	57 mL	Infuse over 10 mins via central/large vein

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**5.7 mmol**	57 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**2.09 mmol**	9.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	2.5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**2.5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**19 mg**	19 mL	Push over 5 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**95 mL**	95 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**1.9 units**	1.9 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**19 mmol**	19 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**4.75 g**	19 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**2.09 mmol**	9.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**3.8 mmol**	19 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**190 mL**	190 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**285 mg**	29 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

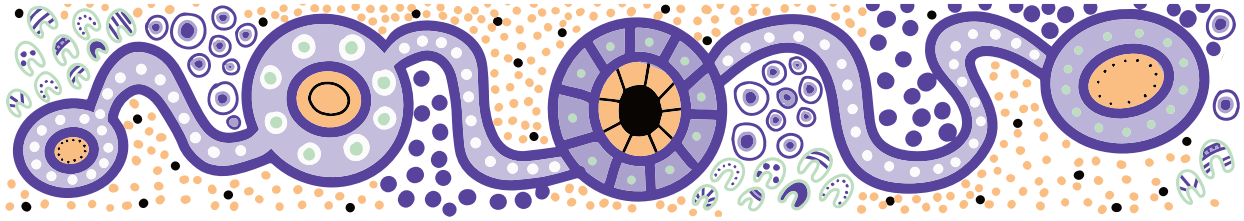
Analgesia	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**28.5 microg**	0.57 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**9.5 microg**	0.95 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**0.95 mg**	0.95 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**9.5 mg**	0.95 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**4.8 mg**	0.48 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**1.9 mg**	3.8 mL	Infuse over 5 - 10 mins

Queensland Paediatric Sepsis Program

Reducing the burden of sepsis on Queensland Children and families
childrens.health.qld.gov.au/sepsis

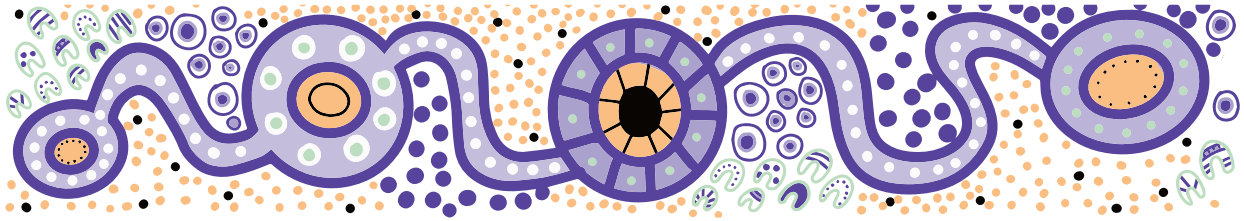


19kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**380 mg**	76 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**950 mg**	19 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	20 mg/mL	**950 mg**	48 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**1140 mg**	19 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**950 mg**	9.5 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**950 mg**	9.5 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL WFI	330 mg/mL	**950 mg**	2.9 mL	**IM:** Max 1.5 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**950 mg**	9.5 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**950 mg**	24 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**950 mg**	2.7 mL	**IM:** Max 1.5 mL per IM injection site

19kg

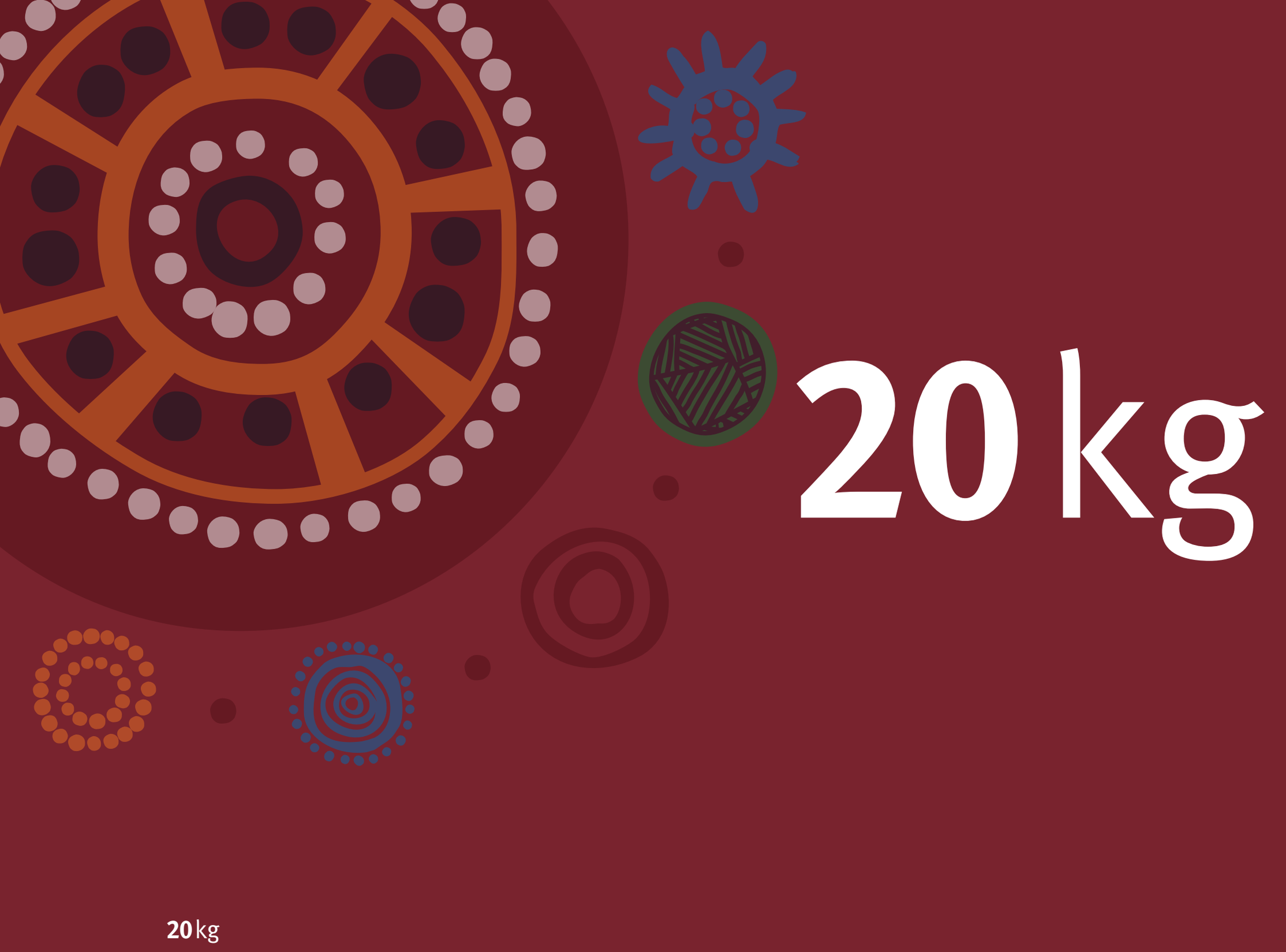
Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**190 mg**	95 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**190 mg**	19 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**950 mg**	19 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 4 mL (160 mg) to a final volume of 16 mL	10 mg/mL	**142.5 mg**	14.3 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**285 mg**	29 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**760 mg**	15.2 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**142.5 mg**	29 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**1900 mg**	24 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**285 mg**	57 mL	Infuse over 60 - 120 mins



19kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2.9 to 57 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**1.5 to 15.2 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**2.9 to 57 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **114 mg (57 mL)** infuse at **14.3 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**2.9 to 8.6 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**5.7 to 22.8 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 8 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**1.9 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**1.4 to 5.7 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**2.9 to 11.4 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**1 to 15.2 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**0.6 to 7.6 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**1 to 1.9 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**3.8 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.6 to 1.2 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**1.1 to 3.4 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**95 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**1.9 mL/hr**	

19kg



20 kg

20 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	5.5 mm	NG tube	10 - 12 Fr
Laryngoscope blade	2	ICC tube	16 - 24 Fr
ETT at lips – cm	15 cm	LMA	2
ETT at nose – cm	18 cm	IDC	10 - 12 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
200 microg	**0.2 mL**	**150 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**200 microg**	2 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**80 Joule**		Use paediatric or adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**100 mg**	10 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			200 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			400 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		40 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**2 mg**	0.67 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**4 mg**	1.3 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**6 mg**	2 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**20 Joule**		Use paediatric or adult pads
		2 Joule/kg			**40 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**400 microg**	4 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**20 microg**	2 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**40 microg**	4 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**20 mg**	2 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**40 mg**	4 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**2 mg**	2 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**24 mg**	2.4 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**40 mg**	4 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**2 mg**	2 mL	Push

20kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**320 mg**	3.2 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**100 microg**	1 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**200 microg**	0.5 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**6 mg**	1.5 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**4 mmol**	20 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**80 mg**	1.6 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**20 mg**	2 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**300 microg**	6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**100 mg**	20 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**3 mg**	3 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**4 mg**	0.8 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**6 mg**	1.2 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 10 mL (500 mg) to 50 mL	10 mg/mL	**400 mg**	40 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 2 mL (400 mg) to 20 mL	20 mg/mL	**400 mg**	20 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 15 mL (1500 mg) to 30 mL	50 mg/mL	**1200 mg**	24 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 8 mL (800 mg) to 20 mL	40 mg/mL	**800 mg**	20 mL	Infuse over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**10 g**	50 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**60 mL**	60 mL	Infuse over 10 mins via central/large vein

20kg

20kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**6 mmol**	60 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**2.2 mmol**	10 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 2 mL (20 mg) to 20 mL	1 mg/mL	**20 mg**	20 mL	Infuse over 10 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**100 mL**	100 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**2 units**	2 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**20 mmol**	20 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**5 g**	20 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**2.2 mmol**	10 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**4 mmol**	20 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**200 mL**	200 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**300 mg**	30 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**30 microg**	0.6 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**10 microg**	1 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**1 mg**	1 mL	Dose may be repeated after 5 mins if required

20kg

20kg

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**10 mg**	1 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**5 mg**	0.5 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**2 mg**	4 mL	Infuse over 5 - 10 mins

Acute behavioural disturbance **Oral**	Medication preparation	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Diazepam	Liquid 1 mg/mL 5 mg tablet	0.2 mg/kg	If liquid unavailable dissolve 5 mg tablet in 5 mL of water	1 mg/mL	**4 mg**	4 mL	If tablet preferred round dose to nearest half or full tablet
Lorazepam	1 mg tablet	0.5 - 1 mg	Tablet may be dissolved in small volume of water		**0.5 - 1 mg**		
Olanzapine	2.5 - 5 mg wafer	2.5 - 5 mg	Place wafer on top of tongue		**2.5 - 5 mg**		Max daily dose not to exceed 20 mg
Risperidone	1 mg/mL liquid or tablets	0.02 - 0.04 mg/kg	If liquid unavailable tablets may be dissolved to make 1 mg/mL solution	1 mg/mL	**0.5 mg**	0.5 mL	Dose has been rounded

Acute behavioural disturbance **IM**	Vial concentration	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Droperidol	2.5 mg/mL	0.1 - 0.2 mg/kg	Undiluted	2.5 mg/mL	**2 mg**	0.8 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg
Olanzapine	10 mg/mL	2.5 - 5 mg	Reconstitute vial with 2.1 mL WFI	5 mg/mL	**2.5 - 5 mg**	0.5 - 1 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg

Reversal dystonia	Vial concentration	Recommended dose/kg	Preparation	Final concentration	Dose	Final volume	Administration
Benztropine (Benzatropine) **IV or IM** 2 mg/2 mL	1 mg/mL	0.02 mg/kg	Undiluted	1 mg/mL	**0.4 mg**	0.4 mL	IV or IM

20kg

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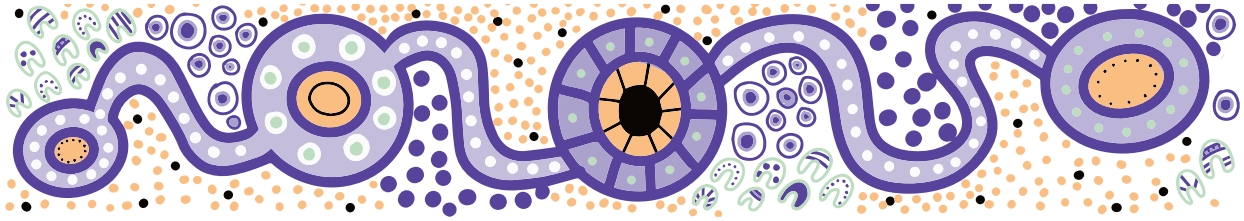

20kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**400 mg**	80 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**1000 mg**	20 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	20 mg/mL	**1000 mg**	50 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 1.2 g vial with 6 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	60 mg/mL	**1200 mg**	20 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**1000 mg**	10 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**1000 mg**	10 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.6 mL WFI	330 mg/mL	**1000 mg**	3 mL	**IM:** Max 2 mL per IM injection site
cefTAZIDIME (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 10 mL	100 mg/mL	**1000 mg**	10 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 25 mL	40 mg/mL	**1000 mg**	25 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 2.3 mL Lidocaine 1%	350 mg/mL	**1000 mg**	2.9 mL	**IM:** Max 2 mL per IM injection site

20kg

20kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**200 mg**	100 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**200 mg**	20 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**1000 mg**	20 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 4 mL (160 mg) to a final volume of 16 mL	10 mg/mL	**150 mg**	15 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**300 mg**	30 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**800 mg**	16 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**150 mg**	30 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**2000 mg**	25 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**300 mg**	60 mL	Infuse over 60 - 120 mins

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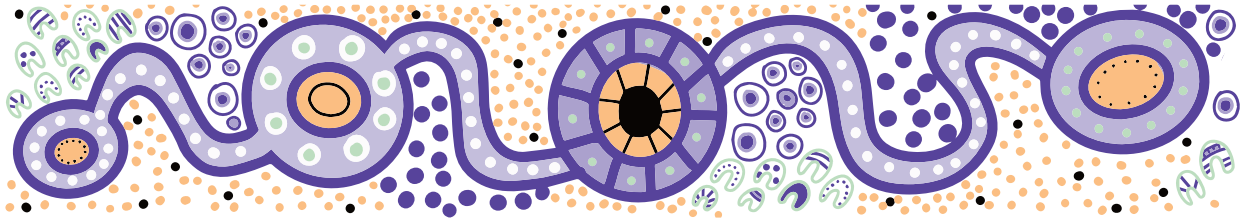

20kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**3 to 60 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**1.6 to 16 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 1 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**3 to 60 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **120 mg (60 mL)** infuse at **15 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**3 to 9 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**6 to 24 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 7.5 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**2 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**1.5 to 6 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**3 to 12 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**1 to 16 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**0.6 to 8 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**1 to 2 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**4 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.6 to 1.2 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**1.2 to 3.6 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**100 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**2 mL/hr**	

22kg

22 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	5.5 mm	NG tube	10 - 12 Fr
Laryngoscope blade	2	ICC tube	16 - 24 Fr
ETT at lips – cm	15 cm	LMA	2.5
ETT at nose – cm	18 cm	IDC	10 - 12 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
300 microg	**0.3 mL**	**300 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**220 microg**	2.2 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**88 Joule**		Use paediatric or adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**110 mg**	11 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			220 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			440 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		44 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**2.2 mg**	0.73 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**4.4 mg**	1.5 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**6.6 mg**	2.2 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**22 Joule**		Use paediatric or adult pads
		2 Joule/kg			**44 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**440 microg**	4.4 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**22 microg**	2.2 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**44 microg**	4.4 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**22 mg**	2.2 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**44 mg**	4.4 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**2.2 mg**	2.2 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**26.4 mg**	2.6 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**44 mg**	4.4 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**2.2 mg**	2.2 mL	Push

22kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**352 mg**	3.5 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**110 microg**	1.1 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**220 microg**	0.55 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**6.6 mg**	1.7 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**4.4 mmol**	22 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**88 mg**	1.8 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**22 mg**	2.2 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**300 microg**	6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**110 mg**	22 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**3.3 mg**	3.3 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**4.4 mg**	0.88 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**6.6 mg**	1.3 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 10 mL (500 mg) to 50 mL	10 mg/mL	**440 mg**	44 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 3 mL (600 mg) to 30 mL	20 mg/mL	**440 mg**	22 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 15 mL (1500 mg) to 30 mL	50 mg/mL	**1320 mg**	26 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 12 mL (1200 mg) to 30 mL	40 mg/mL	**880 mg**	22 mL	Push over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**11 g**	55 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**66 mL**	66 mL	Infuse over 10 mins via central/large vein

22kg

22kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**6.6 mmol**	66 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**2.42 mmol**	11 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 4 mL (40 mg) to 40 mL	1 mg/mL	**22 mg**	22 mL	Infuse over 10 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**110 mL**	110 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**2.2 units**	2.2 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**22 mmol**	22 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**5.5 g**	22 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**2.42 mmol**	11 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**4.4 mmol**	22 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**220 mL**	220 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**330 mg**	33 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**33 microg**	0.66 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**11 microg**	1.1 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**1.1 mg**	1.1 mL	Dose may be repeated after 5 mins if required

22kg

22kg

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**11 mg**	1.1 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**5.5 mg**	0.55 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**2.2 mg**	4.4 mL	Infuse over 5 - 10 mins

Acute behavioural disturbance **Oral**	Medication preparation	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Diazepam	Liquid 1 mg/mL 5 mg tablet	0.2 mg/kg	If liquid unavailable dissolve 5 mg tablet in 5 mL of water	1 mg/mL	**4.4 mg**	4.4 mL	If tablet preferred round dose to nearest half or full tablet
Lorazepam	1 mg tablet	0.5 - 1 mg	Tablet may be dissolved in small volume of water		**0.5 - 1 mg**		
Olanzapine	2.5 - 5 mg wafer	2.5 - 5 mg	Place wafer on top of tongue		**2.5 - 5 mg**		Max daily dose not to exceed 20 mg
Risperidone	1 mg/mL liquid or tablets	0.02 - 0.04 mg/kg	If liquid unavailable tablets may be dissolved to make 1 mg/mL solution	1 mg/mL	**0.5 mg**	0.5 mL	Dose has been rounded

Acute behavioural disturbance **IM**	Vial concentration	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Droperidol	2.5 mg/mL	0.1 - 0.2 mg/kg	Undiluted	2.5 mg/mL	**2.2 mg**	0.9 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg
Olanzapine	10 mg/mL	2.5 - 5 mg	Reconstitute vial with 2.1 mL WFI	5 mg/mL	**2.5 - 5 mg**	0.5 - 1 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg

Reversal dystonia	Vial concentration	Recommended dose/kg	Preparation	Final concentration	Dose	Final volume	Administration
Benztropine (Benzatropine) **IV or IM** 2 mg/2 mL	1 mg/mL	0.02 mg/kg	Undiluted	1 mg/mL	**0.44 mg**	0.44 mL	IV or IM

22kg

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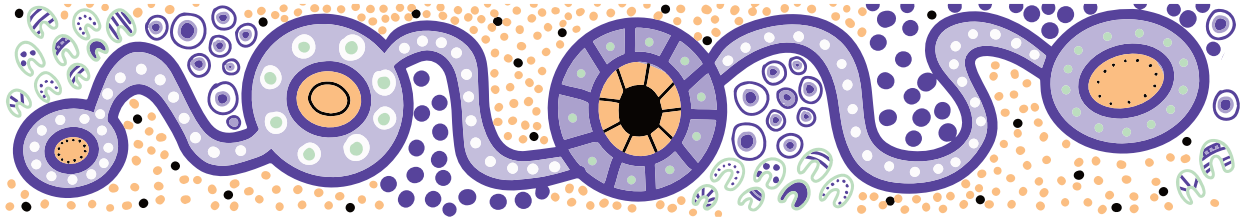

22kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**440 mg**	88 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1100 mg**	22 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 100 mL	20 mg/mL	**1100 mg**	55 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 2 x 1.2 g vials with 6 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	60 mg/mL	**1320 mg**	22 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1100 mg**	11 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1100 mg**	11 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.6 mL WFI in EACH vial	330 mg/mL	**1100 mg**	3.3 mL	**IM:** Max 2 mL per IM injection site
cefTAZIDIME (2 g)	2000 mg	50 mg/kg	Reconstitute 2 g vial with 10 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1100 mg**	11 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 50 mL	40 mg/mL	**1100 mg**	28 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.3 mL Lidocaine 1% in EACH vial	350 mg/mL	**1100 mg**	3.1 mL	**IM:** Max 2 mL per IM injection site

22kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**220 mg**	110 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**220 mg**	22 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1100 mg**	22 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 6 mL (240 mg) to a final volume of 24 mL	10 mg/mL	**165 mg**	16.5 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**330 mg**	33 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**880 mg**	17.6 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**165 mg**	33 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**2200 mg**	28 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**330 mg**	66 mL	Infuse over 60 - 120 mins

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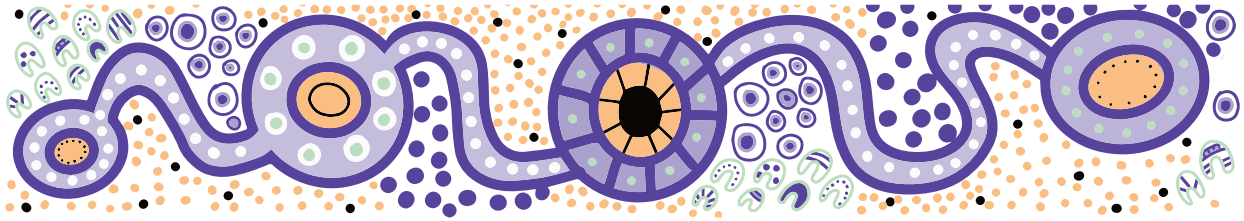


22kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 0.9 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**3.3 to 60 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**1.8 to 17.6 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 0.9 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**3.3 to 60 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **132 mg (66 mL)** infuse at **16.5 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**3.3 to 9.9 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**6.6 to 26.4 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 7 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**2.2 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**1.7 to 6.6 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**3.3 to 13.2 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**1.1 to 17.6 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**0.7 to 8.8 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**1.1 to 2.2 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**4.4 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.7 to 1.4 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**1.3 to 4 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**110 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**2.2 mL/hr**	

24kg

24 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	6 mm	NG tube	10 - 12 Fr
Laryngoscope blade	2	ICC tube	16 - 24 Fr
ETT at lips – cm	15 cm	LMA	2.5
ETT at nose – cm	18 cm	IDC	10 - 12 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
300 microg	**0.3 mL**	**300 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**240 microg**	2.4 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**96 Joule**		Use paediatric or adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**120 mg**	12 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			240 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			480 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		48 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**2.4 mg**	0.8 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**4.8 mg**	1.6 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**7.2 mg**	2.4 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**24 Joule**		Use paediatric or adult pads
		2 Joule/kg			**48 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**480 microg**	4.8 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**24 microg**	2.4 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**48 microg**	4.8 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**24 mg**	2.4 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**48 mg**	4.8 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**2.4 mg**	2.4 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**28.8 mg**	2.9 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**48 mg**	4.8 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**2.4 mg**	2.4 mL	Push

24kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**384 mg**	3.8 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**120 microg**	1.2 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**240 microg**	0.6 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**7.2 mg**	1.8 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**4.8 mmol**	24 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**96 mg**	1.9 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**24 mg**	2.4 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**300 microg**	6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**120 mg**	24 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**3.6 mg**	3.6 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**4.8 mg**	0.96 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**7.2 mg**	1.4 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 10 mL (500 mg) to 50 mL	10 mg/mL	**480 mg**	48 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 3 mL (600 mg) to 30 mL	20 mg/mL	**480 mg**	24 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 15 mL (1500 mg) to 30 mL	50 mg/mL	**1440 mg**	29 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 12 mL (1200 mg) to 30 mL	40 mg/mL	**960 mg**	24 mL	Push over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**12 g**	60 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**72 mL**	72 mL	Infuse over 10 mins via central/large vein

24kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**7.2 mmol**	72 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**2.64 mmol**	12 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 4 mL (40 mg) to 40 mL	1 mg/mL	**24 mg**	24 mL	Infuse over 10 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**120 mL**	120 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**2.4 units**	2.4 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**24 mmol**	24 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**6 g**	24 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**2.64 mmol**	12 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**4.8 mmol**	24 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**240 mL**	240 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**360 mg**	36 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**36 microg**	0.72 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**12 microg**	1.2 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**1.2 mg**	1.2 mL	Dose may be repeated after 5 mins if required

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**12 mg**	1.2 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 minute. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**6 mg**	0.6 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**2.4 mg**	4.8 mL	Infuse over 5 - 10 mins

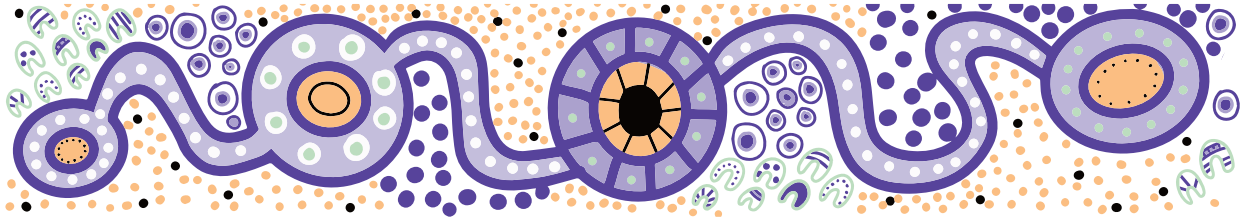
Acute behavioural disturbance **Oral**	Medication preparation	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Diazepam	Liquid 1 mg/mL 5 mg tablet	0.2 mg/kg	If liquid unavailable dissolve 5 mg tablet in 5 mL of water	1 mg/mL	**4.8 mg**	4.8 mL	If tablet preferred round dose to nearest half or full tablet
Lorazepam	1 mg tablet	0.5 - 1 mg	Tablet may be dissolved in small volume of water		**0.5 - 1 mg**		
Olanzapine	2.5 - 5 mg wafer	2.5 - 5 mg	Place wafer on top of tongue		**2.5 - 5 mg**		Max daily dose not to exceed 20 mg
Risperidone	1 mg/mL liquid or tablets	0.02 - 0.04 mg/kg	If liquid unavailable tablets may be dissolved to make 1 mg/mL solution	1 mg/mL	**0.5 mg**	0.5 mL	Dose has been rounded

Acute behavioural disturbance **IM**	Vial concentration	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Droperidol	2.5 mg/mL	0.1 - 0.2 mg/kg	Undiluted	2.5 mg/mL	**2.5 mg**	1 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg
Olanzapine	10 mg/mL	2.5 - 5 mg	Reconstitute vial with 2.1 mL WFI	5 mg/mL	**2.5 - 5 mg**	0.5 - 1 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg

Reversal dystonia	Vial concentration	Recommended dose/kg	Preparation	Final concentration	Dose	Final volume	Administration
Benztropine (Benzatropine) **IV or IM** 2 mg/2 mL	1 mg/mL	0.02 mg/kg	Undiluted	1 mg/mL	**0.48 mg**	0.48 mL	IV or IM

Queensland Paediatric Sepsis Program

Reducing the burden of sepsis on Queensland Children and families
childrens.health.qld.gov.au/sepsis

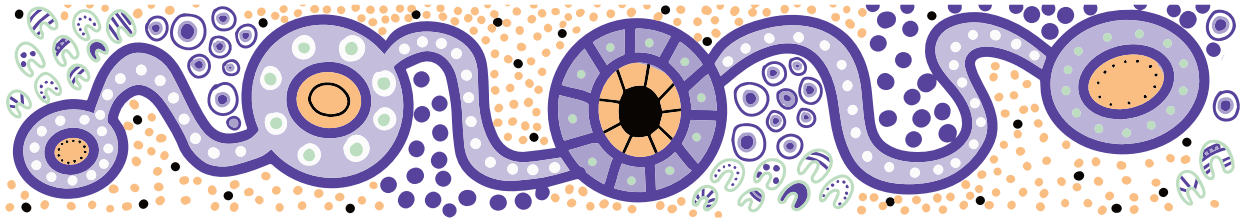


24kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**480 mg**	96 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1200 mg**	24 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 100 mL	20 mg/mL	**1200 mg**	60 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 2 x 1.2 g vials with 6 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	60 mg/mL	**1440 mg**	24 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1200 mg**	12 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1200 mg**	12 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.6 mL WFI in EACH vial	330 mg/mL	**1200 mg**	3.6 mL	**IM:** Max 2 mL per IM injection site
cefTAZIDIME (2 g)	2000 mg	50 mg/kg	Reconstitute 2 g vial with 10 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1200 mg**	12 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 50 mL	40 mg/mL	**1200 mg**	30 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.3 mL Lidocaine 1% in EACH vial	350 mg/mL	**1200 mg**	3.4 mL	**IM:** Max 2 mL per IM injection site

24kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**240 mg**	120 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**240 mg**	24 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1200 mg**	24 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 6 mL (240 mg) to a final volume of 24 mL	10 mg/mL	**180 mg**	18 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**360 mg**	36 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	50 mg/mL	**960 mg**	19.2 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**180 mg**	36 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**2400 mg**	30 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**360 mg**	72 mL	Infuse over 60 - 120 mins



24kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 0.8 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**3.6 to 60 mL/hr**	IV
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**1.9 to 19.2 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 0.8 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**3.6 to 60 mL/hr**	IV
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **144 mg (72 mL)** infuse at **18 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**3.6 to 10.8 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**7.2 to 28.8 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 6.5 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**2.4 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**1.8 to 7.2 mL/hr**	IV
Midazolam	Various strengths	**30 to 120 microg/kg/hr**	Dilute **10 mg** to 50 mL	0.2 mg/mL	**3.6 to 14.4 mL/hr**	IV
Morphine	Various strengths	**5 to 80 microg/kg/hr**	Dilute **5 mg** to 50 mL	0.1 mg/mL	**1.2 to 19.2 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**0.7 to 9.6 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**1.2 to 2.4 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**4.8 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.7 to 1.4mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**1.4 to 4.3 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**120 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**2.4 mL/hr**	


26 kg

26 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	6 mm	NG tube	10 - 12 Fr
Laryngoscope blade	2	ICC tube	16 - 24 Fr
ETT at lips – cm	16 cm	LMA	2.5
ETT at nose – cm	19 cm	IDC	10 - 12 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
300 microg	**0.3 mL**	**300 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**260 microg**	2.6 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**104 Joule**		Use adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**130 mg**	13 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			260 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			520 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		52 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**2.6 mg**	0.87 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**5.2 mg**	1.7 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**7.8 mg**	2.6 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**26 Joule**		Use adult pads
		2 Joule/kg			**52 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**520 microg**	5.2 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**26 microg**	2.6 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**52 microg**	5.2 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**26 mg**	2.6 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**52 mg**	5.2 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**2.6 mg**	2.6 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**31.2 mg**	3.1 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**52 mg**	5.2 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**2.6 mg**	2.6 mL	Push

26kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**416 mg**	4.2 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**130 microg**	1.3 mL	Push– Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**260 microg**	0.65 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**7.8 mg**	2 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**5.2 mmol**	26 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**100 mg**	2 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**26 mg**	2.6 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**300 microg**	6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**130 mg**	26 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**3.9 mg**	3.9 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**5.2 mg**	1 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**7.8 mg**	1.6 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 20 mL (1000 mg) to 100 mL	10 mg/mL	**520 mg**	52 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 3 mL (600 mg) to 30 mL	20 mg/mL	**520 mg**	26 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 20 mL (2000 mg) to 40 mL	50 mg/mL	**1560 mg**	31 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 12 mL (1200 mg) to 30 mL	40 mg/mL	**1040 mg**	26 mL	Push over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**13 g**	65 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**78 mL**	78 mL	Infuse over 10 mins via central/large vein

26kg

26kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**7.8 mmol**	78 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**2.86 mmol**	13 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 4 mL (40 mg) to 40 mL	1 mg/mL	**26 mg**	26 mL	Infuse over 10 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**130 mL**	130 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**2.6 units**	2.6 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**26 mmol**	26 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**6.5 g**	26 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**2.86 mmol**	13 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**5.2 mmol**	26 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**260 mL**	260 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**390 mg**	39 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**39 microg**	0.78 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space . May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**13 microg**	1.3 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**1.3 mg**	1.3 mL	Dose may be repeated after 5 mins if required

26kg

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**13 mg**	1.3 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**6.5 mg**	0.65 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**2.6 mg**	5.2 mL	Infuse over 5 - 10 mins

Acute behavioural disturbance **Oral**	Medication preparation	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Diazepam	Liquid 1 mg/mL 5 mg tablet	0.2 mg/kg	If liquid unavailable dissolve two 5 mg tablets in 10 mL water	1 mg/mL	**5.2 mg**	5.2 mL	If tablet preferred round dose to nearest half or full tablet
Lorazepam	1 mg tablet	0.5 - 1 mg	Tablet may be dissolved in small volume of water		**0.5 - 1 mg**		
Olanzapine	2.5 - 5 mg wafer	2.5 - 5 mg	Place wafer on top of tongue		**2.5 - 5 mg**		Max daily dose not to exceed 20 mg
Risperidone	1 mg/mL liquid or tablets	0.02 - 0.04 mg/kg	If liquid unavailable tablets may be dissolved to make 1 mg/mL solution	1 mg/mL	**0.5 mg**	0.5 mL	Dose has been rounded

Acute behavioural disturbance **IM**	Vial concentration	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Droperidol	2.5 mg/mL	0.1 - 0.2 mg/kg	Undiluted	2.5 mg/mL	**2.5 mg**	1 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg
Olanzapine	10 mg/mL	2.5 - 5 mg	Reconstitute vial with 2.1 mL WFI	5 mg/mL	**2.5 - 5 mg**	0.5 - 1 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg

Reversal dystonia	Vial concentration	Recommended dose/kg	Preparation	Final concentration	Dose	Final volume	Administration
Benztropine (Benzatropine) **IV or IM** 2 mg/2 mL	1 mg/mL	0.02 mg/kg	Undiluted	1 mg/mL	**0.52 mg**	0.52 mL	IV or IM

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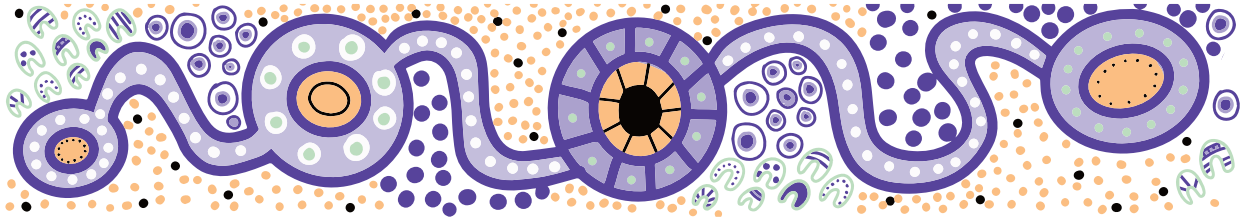

26kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 40 mL (1 g) to a final volume of 200 mL	5 mg/mL	**520 mg**	104 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1300 mg**	26 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 100 mL	20 mg/mL	**1300 mg**	65 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 2 x 1.2 g vials with 6 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	60 mg/mL	**1560 mg**	26 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1300 mg**	13 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1300 mg**	13 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.6 mL WFI in EACH vial	330 mg/mL	**1300 mg**	4 mL	**IM:** Max 2 mL per IM injection site
cefTAZIDIME (2 g)	2000 mg	50 mg/kg	Reconstitute 2 g vial with 10 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1300 mg**	13 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 50 mL	40 mg/mL	**1300 mg**	33 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.3 mL Lidocaine 1% in EACH vial	350 mg/mL	**1300 mg**	3.7 mL	**IM:** Max 2 mL per IM injection site

26kg

26kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**260 mg**	130 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**260 mg**	26 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1300 mg**	26 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 6 mL (240 mg) to a final volume of 24 mL	10 mg/mL	**195 mg**	19.5 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**390 mg**	39 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1040 mg**	21 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**195 mg**	39 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**2600 mg**	33 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**390 mg**	78 mL	Infuse over 60 - 120 mins

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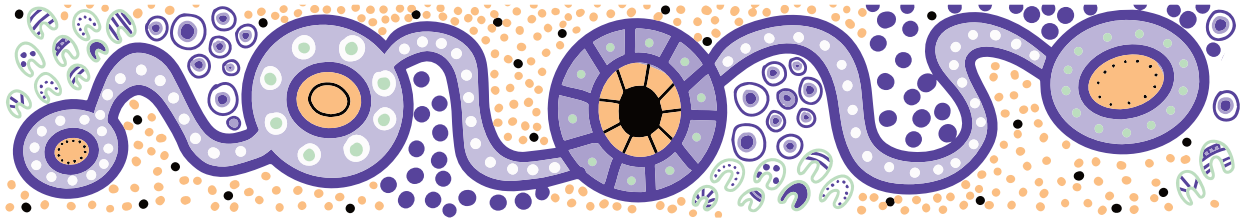

26kg

Drug	Vial concentration	Recommended dose /kg range	Preparation		Final rate range	Administration/route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 0.8 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**3.9 to 60 mL/hr**	IV
Adrenaline (Epinephrine) STRONG	*1:1000; 1 mg/mL*	***0.05 to 0.8 microg/kg/min***	*Dilute **6 mL (6 mg)** to 50 mL*	*120 microg/mL*	***0.7 to 10 mL/hr***	*Central Access*
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**2.1 to 21 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 0.8 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**3.9 to 60 mL/hr**	IV
Noradrenaline (Norepinephrine) STRONG	*4 mg/4 mL*	***0.05 to 0.8 microg/kg/min***	*Dilute **4 mL (4 mg)** to 50 mL*	*80 microg/mL*	***1 to 15 mL/hr***	*Central Access*
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **156 mg (78 mL)** infuse at **19.5 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**3.9 to 11.7 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**7.8 to 31.2 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 6 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**2.6 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**2 to 7.8 mL/hr**	IV
Midazolam *STRONG*	Various strengths	**30 to 120 microg/kg/hr**	Dilute **50 mg** to 50mL	1 mg/mL	**0.8 to 3.1 mL/hr**	IV
Morphine *STRONG*	Various strengths	**5 to 80 microg/kg/hr**	Dilute **30 mg** to 50mL	0.6 mg/mL	**0.2 to 3.5 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**0.8 to 10 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**1.3 to 2.6 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**5.2 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.8 to 1.6mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**1.6 to 4.7 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**130 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**2.6 mL/hr**	

28 kg

28 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	6 mm	NG tube	12 Fr
Laryngoscope blade	2	ICC tube	16 - 24 Fr
ETT at lips – cm	16 cm	LMA	2.5
ETT at nose – cm	19 cm	IDC	12 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
300 microg	**0.3 mL**	**300 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**280 microg**	2.8 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**112 Joule**		Use adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**140 mg**	14 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			280 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			560 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		56 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**2.8 mg**	0.93 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**5.6 mg**	1.9 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**8.4 mg**	2.8 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**28 Joule**		Use adult pads
		2 Joule/kg			**56 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**560 microg**	5.6 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**28 microg**	2.8 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**56 microg**	5.6 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**28 mg**	2.8 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**56 mg**	5.6 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**2.8 mg**	2.8 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**33.6 mg**	3.4 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**56 mg**	5.6 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**2.8 mg**	2.8 mL	Push

28kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**448 mg**	4.5 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**140 microg**	1.4 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**280 microg**	0.7 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**8.4 mg**	2.1 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**5.6 mmol**	28 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**100 mg**	2 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**28 mg**	2.8 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**300 microg**	6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**140 mg**	28 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**4.2 mg**	4.2 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**5.6 mg**	1.1 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**8.4 mg**	1.7 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 20 mL (1000 mg) to 100 mL	10 mg/mL	**560 mg**	56 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 3 mL (600 mg) to 30 mL	20 mg/mL	**560 mg**	28 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 20 mL (2000 mg) to 40 mL	50 mg/mL	**1680 mg**	34 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 12 mL (1200 mg) to 30 mL	40 mg/mL	**1120 mg**	28 mL	Push over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**14 g**	70 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**84 mL**	84 mL	Infuse over 10 mins via central/large vein

28kg

28kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**8.4 mmol**	84 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**3.08 mmol**	14 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 4 mL (40 mg) to 40 mL	1 mg/mL	**28 mg**	28 mL	Infuse over 10 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**140 mL**	140 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**2.8 units**	2.8 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**28 mmol**	28 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**7 g**	28 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**3.08 mmol**	14 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**5.6 mmol**	28 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**280 mL**	280 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**420 mg**	42 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**42 microg**	0.84 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**14 microg**	1.4 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**1.4 mg**	1.4 mL	Dose may be repeated after 5 mins if required

28kg

28kg

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**14 mg**	1.4 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 minute. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**7 mg**	0.7 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**2.8 mg**	5.6 mL	Infuse over 5 - 10 mins

Acute behavioural disturbance **Oral**	Medication preparation	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Diazepam	Liquid 1 mg/mL 5 mg tablet	0.2 mg/kg	If liquid unavailable dissolve two 5 mg tablets in 10 mL water	1 mg/mL	**5.6 mg**	5.6 mL	If tablet preferred round dose to nearest half or full tablet
Lorazepam	1 mg tablet	0.5 - 1 mg	Tablet may be dissolved in small volume of water		**0.5 - 1 mg**		
Olanzapine	2.5 - 5 mg wafer	2.5 - 5 mg	Place wafer on top of tongue		**2.5 - 5 mg**		Max daily dose not to exceed 20 mg
Risperidone	1 mg/mL liquid or tablets	0.02 - 0.04 mg/kg	If liquid unavailable tablets may be dissolved to make 1 mg/mL solution	1 mg/mL	**0.5 mg**	0.5 mL	Dose has been rounded

Acute behavioural disturbance **IM**	Vial concentration	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Droperidol	2.5 mg/mL	0.1 - 0.2 mg/kg	Undiluted	2.5 mg/mL	**2.8 mg**	1.1 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg
Olanzapine	10 mg/mL	2.5 - 5 mg	Reconstitute vial with 2.1 mL WFI	5 mg/mL	**2.5 - 5 mg**	0.5 - 1 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg

Reversal dystonia	Vial concentration	Recommended dose/kg	Preparation	Final concentration	Dose	Final volume	Administration
Benztropine (Benzatropine) **IV or IM** 2 mg/2 mL	1 mg/mL	0.02 mg/kg	Undiluted	1 mg/mL	**0.56 mg**	0.56 mL	IV or IM

28kg

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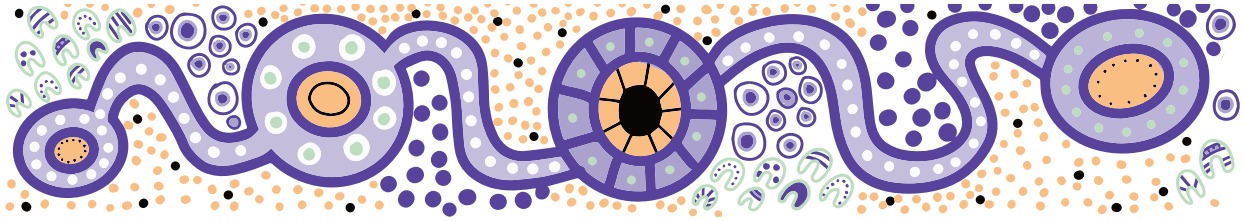

28kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 40 mL (1 g) to a final volume of 200 mL	5 mg/mL	**560 mg**	112 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1400 mg**	28 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 100 mL	20 mg/mL	**1400 mg**	70 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 2 x 1.2 g vials with 6 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	60 mg/mL	**1680 mg**	28 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1400 mg**	14 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1400 mg**	14 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.6 mL WFI in EACH vial	330 mg/mL	**1400 mg**	4.2 mL	**IM:** Max 2 mL per IM injection site
cefTAZIDIME (2 g)	2000 mg	50 mg/kg	Reconstitute 2 g vial with 10 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1400 mg**	14 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 50 mL	40 mg/mL	**1400 mg**	35 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.3 mL Lidocaine 1% in EACH vial	350 mg/mL	**1400 mg**	4 mL	**IM:** Max 2 mL per IM injection site

28kg

28kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**280 mg**	140 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**280 mg**	28 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1400 mg**	28 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7.5 mg/kg	Dilute 6 mL (240 mg) to a final volume of 24 mL	10 mg/mL	**210 mg**	21 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**420 mg**	42 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1120 mg**	22 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**210 mg**	42 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**2800 mg**	35 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**420 mg**	84 mL	Infuse over 60 - 120 mins

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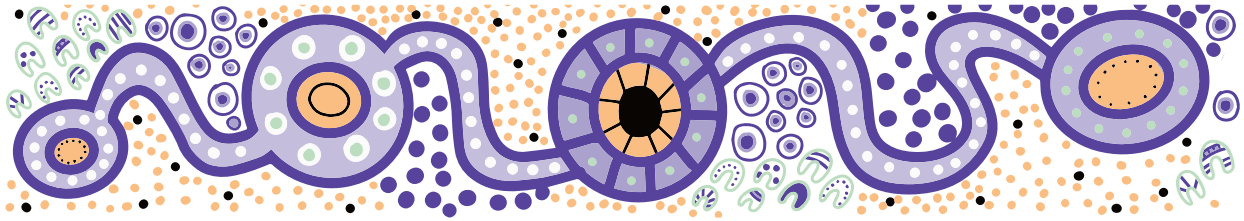

28kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 0.7 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**4.2 to 60 mL/hr**	IV
Adrenaline (Epinephrine) STRONG	*1:1000; 1 mg/mL*	***0.05 to 0.7 microg/kg/min***	*Dilute **6 mL (6 mg)** to 50 mL*	*120 microg/mL*	***0.7 to 10 mL/hr***	*Central Access*
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**2.2 to 22 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 0.7 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**4.2 to 60 mL/hr**	IV
Noradrenaline (Norepinephrine) STRONG	*4 mg/4 mL*	***0.05 to 0.7 microg/kg/min***	*Dilute **4 mL (4 mg)** to 50 mL*	*80 microg/mL*	***1.1 to 15 mL/hr***	*Central Access*
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODARONe *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **168 mg (84 mL)** infuse at **21 mL/hr**	IV
AmiODARONe [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**4.2 to 12.6 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**8.4 to 33.6 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 5.5 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**2.8 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min**	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**2.1 to 8.4 mL/hr**	IV
Midazolam *STRONG*	Various strengths	**30 to 120 microg/kg/hr**	Dilute **50 mg** to 50mL	1 mg/mL	**0.8 to 3.4 mL/hr**	IV
Morphine *STRONG*	Various strengths	**5 to 80 microg/kg/hr**	Dilute **30 mg** to 50mL	0.6 mg/mL	**0.2 to 3.7 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**0.8 to 11 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**1.4 to 2.8 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**5.6 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.8 to 1.6 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**1.7 to 5 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**140 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**2.8 mL/hr**	

30 kg

30 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	6.5 mm	NG tube	12 Fr
Laryngoscope blade	2/3	ICC tube	16 - 24 Fr
ETT at lips – cm	17 cm	LMA	2.5
ETT at nose – cm	20 cm	IDC	12 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
300 microg	**0.3 mL**	**300 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**300 microg**	3 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**120 Joule**		Use adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 3 mL (150 mg) to 15 mL in glucose 5%*	10 mg/mL	**150 mg**	15 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			300 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			600 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		60 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**3 mg**	1 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**6 mg**	2 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**9 mg**	3 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**30 Joule**		Use adult pads
		2 Joule/kg			**60 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**600 microg**	6 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**30 microg**	3 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**60 microg**	6 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**30 mg**	3 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**60 mg**	6 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**3 mg**	3 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**36 mg**	3.6 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**60 mg**	6 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**3 mg**	3 mL	Push

30kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**480 mg**	4.8 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**150 microg**	1.5 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**300 microg**	0.75 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**9 mg**	2.3 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**6 mmol**	30 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**100 mg**	2 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**30 mg**	3 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**300 microg**	6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**150 mg**	30 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**4.5 mg**	4.5 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**6 mg**	1.2 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**9 mg**	1.8 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 20 mL (1000 mg) to 100 mL	10 mg/mL	**600 mg**	60 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 3 mL (600 mg) to 30 mL	20 mg/mL	**600 mg**	30 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 20 mL (2000 mg) to 40 mL	50 mg/mL	**1800 mg**	36 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 12 mL (1200 mg) to 30 mL	40 mg/mL	**1200 mg**	30 mL	Infuse over 10 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**15 g**	75 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**90 mL**	90 mL	Infuse over 10 mins via central/large vein

30kg

30kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**9 mmol**	90 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**3.3 mmol**	15 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 4 mL (40 mg) to 40 mL	1 mg/mL	**30 mg**	30 mL	Infuse over 10 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**150 mL**	150 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**3 units**	3 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**30 mmol**	30 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**7.5 g**	30 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**3.3 mmol**	15 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**6 mmol**	30 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**300 mL**	300 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**450 mg**	45 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**45 microg**	0.9 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**15 microg**	1.5 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**1.5 mg**	1.5 mL	Dose may be repeated after 5 mins if required

30kg

30kg

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**15 mg**	1.5 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**7.5 mg**	0.75 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**3 mg**	6 mL	Infuse over 5 - 10 mins

Acute behavioural disturbance **Oral**	Medication preparation	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Diazepam	Liquid 1 mg/mL 5 mg tablet	0.2 mg/kg	If liquid unavailable dissolve two 5 mg tablets in 10 mL water	1 mg/mL	**6 mg**	6 mL	If tablet preferred round dose to nearest half or full tablet
Lorazepam	1 mg tablet	0.5 - 1 mg	Tablet may be dissolved in small volume of water		**0.5 - 1 mg**		
Olanzapine	2.5 - 5 mg wafer	2.5 - 5 mg	Place wafer on top of tongue		**2.5 - 5 mg**		Max daily dose not to exceed 20 mg
Risperidone	1 mg/mL liquid or tablets	0.02 - 0.04 mg/kg	If liquid unavailable tablets may be dissolved to make 1 mg/mL solution	1 mg/mL	**0.5 mg**	0.5 mL	Dose has been rounded

Acute behavioural disturbance **IM**	Vial concentration	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Droperidol	2.5 mg/mL	0.1 - 0.2 mg/kg	Undiluted	2.5 mg/mL	**3 mg**	1.2 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg
Olanzapine	10 mg/mL	2.5 - 5 mg	Reconstitute vial with 2.1 mL WFI	5 mg/mL	**2.5 - 5 mg**	0.5 - 1 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg

Reversal dystonia	Vial concentration	Recommended dose/kg	Preparation	Final concentration	Dose	Final volume	Administration
Benztropine (Benzatropine) **IV or IM** 2 mg/2 mL	1 mg/mL	0.02 mg/kg	Undiluted	1 mg/mL	**0.6 mg**	0.6 mL	IV or IM

30kg

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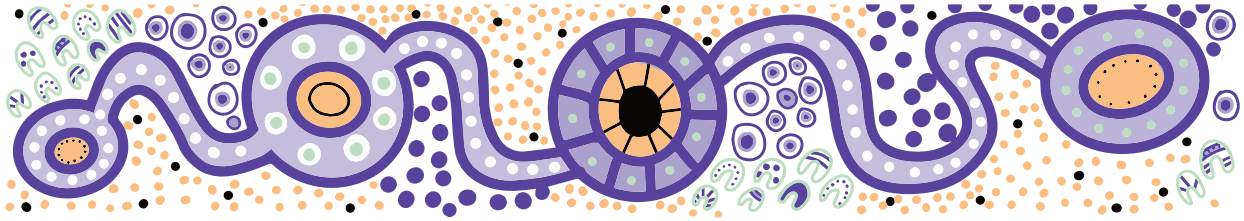

30kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 40 mL (1 g) to a final volume of 200 mL	5 mg/mL	**600 mg**	120 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1500 mg**	30 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 100 mL	20 mg/mL	**1500 mg**	75 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 2 x 1.2 g vials with 6 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	60 mg/mL	**1800 mg**	30 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1500 mg**	15 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1500 mg**	15 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.6 mL WFI in EACH vial	330 mg/mL	**1500 mg**	4.5 mL	**IM:** Max 2 mL per IM injection site
cefTAZIDIME (2 g)	2000 mg	50 mg/kg	Reconstitute 2 g vial with 10 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1500 mg**	15 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 50 mL	40 mg/mL	**1500 mg**	38 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.3 mL Lidocaine 1% in EACH vial	350 mg/mL	**1500 mg**	4.3 mL	**IM:** Max 2 mL per IM injection site

30kg

30kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**300 mg**	150 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**300 mg**	30 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1500 mg**	30 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7 mg/kg	Dilute 6 mL (240 mg) to a final volume of 24 mL	10 mg/mL	**210 mg**	21 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**450 mg**	45 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1200 mg**	24 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**225 mg**	45 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**3000 mg**	38 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (500 mg)	500 mg	15 mg/kg	Reconstitute 500 mg vial with 3 mL WFI - Withdraw entire volume and further dilute to a final volume of 100 mL	5 mg/mL	**450 mg**	90 mL	Infuse over 60 - 120 mins

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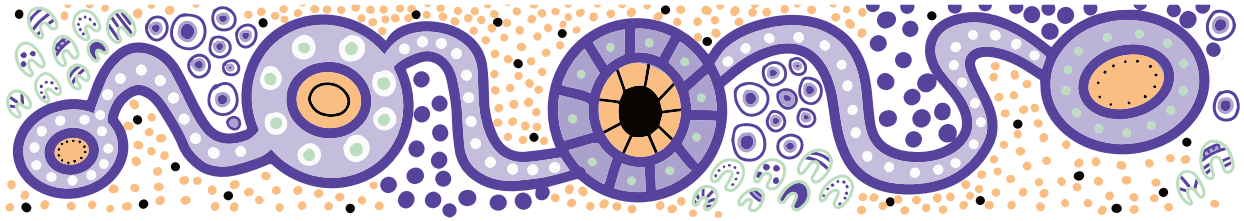

30kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 0.7 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**4.5 to 60 mL/hr**	IV
Adrenaline (Epinephrine) STRONG	*1:1000; 1 mg/mL*	***0.05 to 0.7 microg/kg/min***	*Dilute **6 mL (6 mg)** to 50 mL*	*120 microg/mL*	***0.8 to 10 mL/hr***	*Central Access*
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**2.4 to 24 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 0.7 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**4.5 to 60 mL/hr**	IV
Noradrenaline (Norepinephrine) STRONG	*4 mg/4 mL*	***0.05 to 0.7 microg/kg/min***	*Dilute **4 mL (4 mg)** to 50 mL*	*80 microg/mL*	***1.1 to 15 mL/hr***	*Central Access*
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **180 mg (90 mL)** infuse at **22.5 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**4.5 to 13.5 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**9 to 36 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 5 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**3 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min** (0.3 to 1.2 mg/kg/hr)	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**2.3 to 9 mL/hr**	IV
Midazolam *STRONG*	Various strengths	**30 to 120 microg/kg/hr**	Dilute **50 mg** to 50mL	1 mg/mL	**0.9 to 3.6 mL/hr**	IV
Morphine *STRONG*	Various strengths	**5 to 80 microg/kg/hr**	Dilute **30 mg** to 50mL	0.6 mg/mL	**0.3 to 4 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**0.9 to 12 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**1.5 to 3 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**6 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**0.9 to 1.8 mL/hr**	IV
Paralytic Agents – only on discussion with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**1.8 to 5.4 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**150 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**3 mL/hr**	


35 kg

35 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	6.5 mm	NG tube	12 Fr
Laryngoscope blade	2/3	ICC tube	20 - 28 Fr
ETT at lips – cm	17 cm	LMA	3
ETT at nose – cm	20 cm	IDC	12 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
400 microg	**0.4 mL**	**300 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**350 microg**	3.5 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**140 Joule**		Use adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 6 mL (300 mg) to 30 mL in glucose 5%*	10 mg/mL	**175 mg**	17.5 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			350 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			700 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		70 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**3.5 mg**	1.2 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**7 mg**	2.3 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**10.5 mg**	3.5 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**35 Joule**		Use adult pads
		2 Joule/kg			**70 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**600 microg**	6 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**35 microg**	3.5 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	Consider Adrenaline (Epinephrine) Push Dose Pressor	Consult	**Consult**	Consult	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**70 microg**	7 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**35 mg**	3.5 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**70 mg**	7 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**3.5 mg**	3.5 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**42 mg**	4.2 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**70 mg**	7 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**3.5 mg**	3.5 mL	Push

35kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**560 mg**	5.6 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**175 microg**	1.8 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**350 microg**	0.88 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**10.5 mg**	2.6 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**7 mmol**	35 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**100 mg**	2 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**35 mg**	3.5 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**300 microg**	6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**175 mg**	35 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**5.3 mg**	5.3 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**7 mg**	1.4 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**10 mg**	2 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 20 mL (1000 mg) to 100 mL	10 mg/mL	**700 mg**	70 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 4 mL (800 mg) to 40 mL	20 mg/mL	**700 mg**	35 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 25 mL (2500 mg) to 50 mL	50 mg/mL	**2100 mg**	42 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 16 mL (1600 mg) to 40 mL	40 mg/mL	**1400 mg**	35 mL	Push over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**17.5 g**	88 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**105 mL**	105 mL	Infuse over 10 mins via central/large vein

35kg

35kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**10.5 mmol**	105 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**3.85 mmol**	17.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 4 mL (40 mg) to 40 mL	1 mg/mL	**35 mg**	35 mL	Infuse over 10 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**175 mL**	175 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**3.5 units**	3.5 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**35 mmol**	35 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**8.75 g**	35 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**3.85 mmol**	17.5 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**7 mmol**	35 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**350 mL**	350 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**525 mg**	53 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**52.5 microg**	1.1 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**17.5 microg**	1.8 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**1.75 mg**	1.8 mL	Dose may be repeated after 5 mins if required

35kg

35kg

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**17.5 mg**	1.8 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**8.8 mg**	0.88 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**3.5 mg**	7 mL	Infuse over 5 - 10 mins

Acute behavioural disturbance **Oral**	Medication preparation	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Diazepam	Liquid 1 mg/mL 5 mg tablet	0.2 mg/kg	If liquid unavailable dissolve two 5 mg tablets in 10 mL water	1 mg/mL	**7 mg**	7 mL	If tablet preferred round dose to nearest half or full tablet
Lorazepam	1 mg tablet	0.5 - 1 mg	Tablet may be dissolved in small volume of water		**0.5 - 1 mg**		
Olanzapine	2.5 - 5 mg wafer	2.5 - 5 mg	Place wafer on top of tongue		**2.5 - 5 mg**		Max daily dose not to exceed 20 mg
Risperidone	1 mg/mL liquid or tablets	0.02 - 0.04 mg/kg	If liquid unavailable tablets may be dissolved to make 1 mg/mL solution	1 mg/mL	**0.75 mg**	0.75 mL	Dose has been rounded

Acute behavioural disturbance **IM**	Vial concentration	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Droperidol	2.5 mg/mL	0.1 - 0.2 mg/kg	Undiluted	2.5 mg/mL	**3.5 mg**	1.4 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg
Olanzapine	10 mg/mL	2.5 - 5 mg	Reconstitute vial with 2.1 mL WFI	5 mg/mL	**2.5 - 5 mg**	0.5 - 1 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg

Reversal dystonia	Vial concentration	Recommended dose/kg	Preparation	Final concentration	Dose	Final volume	Administration
Benztropine (Benzatropine) **IV or IM** 2 mg/2 mL	1 mg/mL	0.02 mg/kg	Undiluted	1 mg/mL	**0.7 mg**	0.7 mL	IV or IM

35kg

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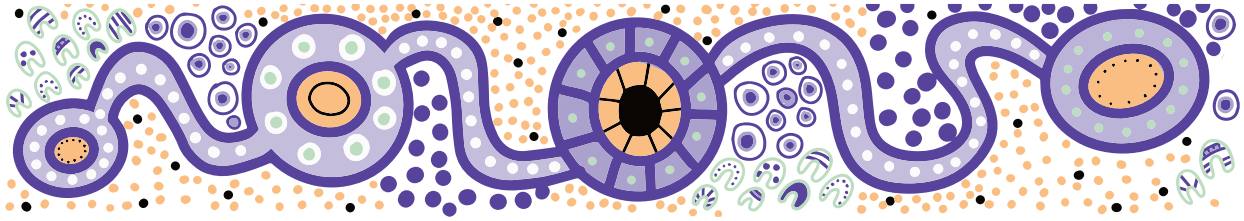

35kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	20 mg/kg	Dilute 40 mL (1 g) to a final volume of 200 mL	5 mg/mL	**700 mg**	140 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1750 mg**	35 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 100 mL	20 mg/mL	**1750 mg**	88 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 2 x 1.2 g vials with 6 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	60 mg/mL	**2100 mg**	35 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1750 mg**	17.5 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1750 mg**	17.5 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.6 mL WFI in EACH vial	330 mg/mL	**1750 mg**	5.3 mL	**IM:** Max 2 mL per IM injection site
cefTAZIDIME (2 g)	2000 mg	50 mg/kg	Reconstitute 2 g vial with 10 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**1750 mg**	17.5 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 50 mL	40 mg/mL	**1750 mg**	44 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.3 mL Lidocaine 1% in EACH vial	350 mg/mL	**1750 mg**	5 mL	**IM:** Max 2 mL per IM injection site

35kg

35kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**350 mg**	175 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**350 mg**	35 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1750 mg**	35 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7 mg/kg	Dilute 8 mL (320 mg) to a final volume of 32 mL	10 mg/mL	**245 mg**	25 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**525 mg**	53 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1400 mg**	28 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**262.5 mg**	53 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**3500 mg**	44 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (1 g)	1000 mg	15 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 250 mL	4 mg/mL	**525 mg**	131 mL	Infuse over 60 - 120 mins

35kg

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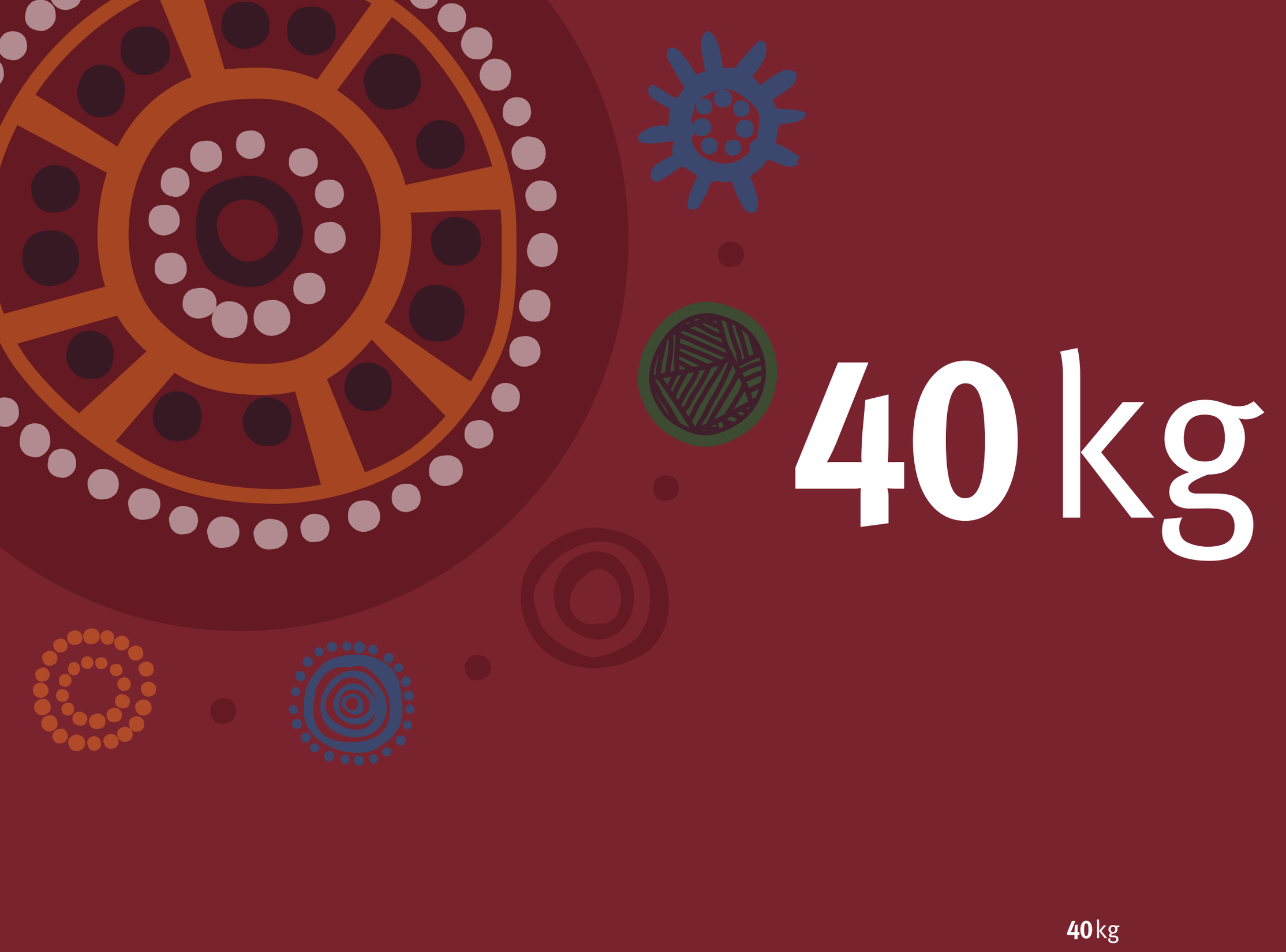
Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 0.6 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**5.3 to 60 mL/hr**	IV
Adrenaline (Epinephrine) STRONG	*1:1000; 1 mg/mL*	***0.05 to 0.6 microg/kg/min***	*Dilute **6 mL (6 mg)** to 50 mL*	*120 microg/mL*	***0.9 to 10 mL/hr***	*Central Access*
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**2.8 to 28 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 0.6 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**5.3 to 60 mL/hr**	IV
Noradrenaline (Norepinephrine) STRONG	*4 mg/4 mL*	***0.05 to 0.6 microg/kg/min***	*Dilute **4 mL (4 mg)** to 50 mL*	*80 microg/mL*	***1.3 to 15 mL/hr***	*Central Access*
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODARONe *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **210 mg (105 mL)** infuse at **26.3 mL/hr**	IV
AmiODARONe [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**5.3 to 15.8 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**10.5 to 42 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 4.5 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**3.5 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min** (0.3 to 1.2 mg/kg/hr)	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**2.6 to 10.5 mL/hr**	IV
Midazolam *STRONG*	Various strengths	**30 to 120 microg/kg/hr**	Dilute **50mg** to 50mL	1 mg/mL	**1.1 to 4.2mL/hr**	IV
Morphine *STRONG*	Various strengths	**5 to 80 microg/kg/hr**	Dilute **30mg** to 50mL	0.6 mg/mL	**0.3 to 4.7mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**1.1 to 14 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**1.8 to 3.5 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**7 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**1 to 2 mL/hr**	IV
Paralytic Agents – only in consultation with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**2.1 to 6.3 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**175 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**3.5 mL/hr**	


40 kg

40 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	7 mm	NG tube	12 - 14 Fr
Laryngoscope blade	3/4	ICC tube	20 - 28 Fr
ETT at lips – cm	17 cm	LMA	3
ETT at nose – cm	21 cm	IDC	12 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
400 microg	**0.4 mL**	**300 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**400 microg**	4 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**160 Joule**		Use adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 6 mL (300 mg) to 30 mL in glucose 5%*	10 mg/mL	**200 mg**	20 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			400 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			800 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		80 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**4 mg**	1.3 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**8 mg**	2.7 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**12 mg**	4 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**40 Joule**		Use adult pads
		2 Joule/kg			**80 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**600 microg**	6 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**40 microg**	4 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	500 microg/mL (10 mL syringe)	500 microg/mL	**400 microg**	0.8 mL	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**80 microg**	8 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**40 mg**	4 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**80 mg**	8 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**4 mg**	4 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**48 mg**	4.8 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**80 mg**	8 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**4 mg**	4 mL	Push

40kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**640 mg**	6.4 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**200 microg**	2 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**400 microg**	1 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**12 mg**	3 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**8 mmol**	40 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**100 mg**	2 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 1 mL (40 mg) to 4 mL	10 mg/mL	**40 mg**	4 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**300 microg**	6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**200 mg**	40 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**6 mg**	6 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**8 mg**	1.6 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**10 mg**	2 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 20 mL (1000 mg) to 100 mL	10 mg/mL	**800 mg**	80 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 4 mL (800 mg) to 40 mL	20 mg/mL	**800 mg**	40 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 25 mL (2500 mg) to 50 mL	50 mg/mL	**2400 mg**	48 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 16 mL (1600 mg) to 40 mL	40 mg/mL	**1600 mg**	40 mL	Push over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**20 g**	100 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**120 mL**	120 mL	Infuse over 10 mins via central/large vein

40kg

40kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**12 mmol**	120 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**4.4 mmol**	20 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 4 mL (40 mg) to 40 mL	1 mg/mL	**40 mg**	40 mL	Infuse over 10 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**200 mL**	200 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**4 units**	4 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**40 mmol**	40 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**10 g**	40 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**4.4 mmol**	20 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**8 mmol**	40 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**400 mL**	400 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**600 mg**	60 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**60 microg**	1.2 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead spac. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**20 microg**	2 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**2 mg**	2 mL	Dose may be repeated after 5 mins if required

40kg

40kg

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**20 mg**	2 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**10 mg**	1 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**4 mg**	8 mL	Infuse over 5 - 10 mins

Acute behavioural disturbance **Oral**	Medication preparation	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Diazepam	Liquid 1 mg/mL 5 mg tablet	0.2 mg/kg	If liquid unavailable dissolve two 5 mg tablets in 10 mL water	1 mg/mL	**8 mg**	8 mL	If tablet preferred round dose to nearest half or full tablet
Lorazepam	1 mg tablet	1 - 2 mg	Tablet may be dissolved in small volume of water		**1 - 2 mg**		
Olanzapine	2.5 - 5 mg wafer	5 - 10 mg	Place wafer on top of tongue		**5 - 10 mg**		Max daily dose not to exceed 20 mg
Risperidone	1 mg/mL liquid or tablets	0.02 - 0.04 mg/kg	If liquid unavailable tablets may be dissolved to make 1 mg/mL solution	1 mg/mL	**0.75 mg**	0.75 mL	Dose has been rounded

Acute behavioural disturbance **IM**	Vial concentration	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Droperidol	2.5 mg/mL	0.1 - 0.2 mg/kg	Undiluted	2.5 mg/mL	**4 mg**	1.6 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg
Olanzapine	10 mg/mL	5 - 10 mg	Reconstitute vial with 2.1 mL WFI	5 mg/mL	**5 - 10 mg**	1 - 2 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg

Reversal dystonia	Vial concentration	Recommended dose/kg	Preparation	Final concentration	Dose	Final volume	Administration
Benztropine (Benzatropine) **IV or IM** 2 mg/2 mL	1 mg/mL	0.02 mg/kg	Undiluted	1 mg/mL	**0.8 mg**	0.8 mL	IV or IM

40kg

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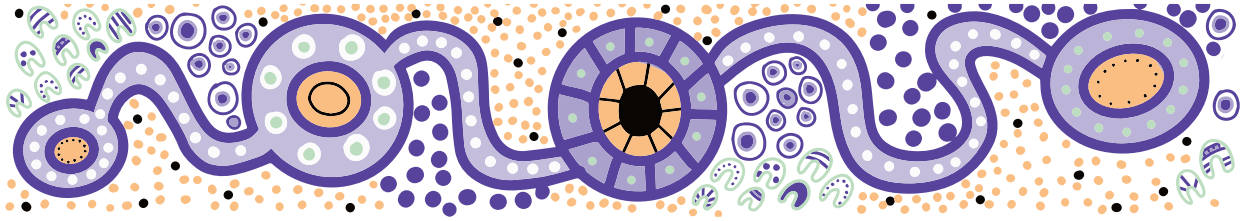

40kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	10 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**400 mg**	80 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 100 mL	20 mg/mL	**2000 mg**	100 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 2 x 1.2 g vials with 6 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	60 mg/mL	**2400 mg**	40 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.6 mL WFI in EACH vial	330 mg/mL	**2000 mg**	6 mL	**IM:** Max 2 mL per IM injection site
cefTAZIDIME (2 g)	2000 mg	50 mg/kg	Reconstitute 2 g vial with 10 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 50 mL	40 mg/mL	**2000 mg**	50 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.3 mL Lidocaine 1% in EACH vial	350 mg/mL	**2000 mg**	5.7 mL	**IM:** Max 2 mL per IM injection site

40kg

40kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**400 mg**	200 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**400 mg**	40 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7 mg/kg	Dilute 8 mL (320 mg) to a final volume of 32 mL	10 mg/mL	**280 mg**	28 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 2 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**600 mg**	60 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1600 mg**	32 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**300 mg**	60 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**4000 mg**	50 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (1 g)	1000 mg	15 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 250 mL	4 mg/mL	**600 mg**	150 mL	Infuse over 60 - 120 mins

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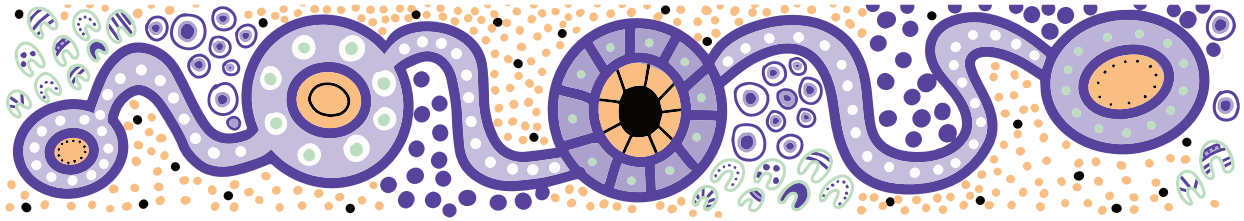

40kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 0.5 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**6 to 60 mL/hr**	IV
Adrenaline (Epinephrine) STRONG	*1:1000; 1 mg/mL*	***0.05 to 0.5 microg/kg/min***	*Dilute **6 mL (6 mg)** to 50 mL*	*120 microg/mL*	***1 to 10 mL/hr***	*Central Access*
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**3.2 to 32 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 0.5 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**6 to 60 mL/hr**	IV
Noradrenaline (Norepinephrine) STRONG	*4 mg/4 mL*	***0.05 to 0.5 microg/kg/min***	*Dilute **4 mL (4 mg)** to 50 mL*	*80 microg/mL*	***1.5 to 15 mL/hr***	*Central Access*
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **240 mg (120 mL)** infuse at **30 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 15 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**6 to 18 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**12 to 48 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 4 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**4 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min** (0.3 to 1.2 mg/kg/hr)	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**3 to 12 mL/hr**	IV
Midazolam *STRONG*	Various strengths	**30 to 120 microg/kg/hr**	Dilute **50 mg** to 50mL	1 mg/mL	**1.2 to 4.8 mL/hr**	IV
Morphine *STRONG*	Various strengths	**5 to 80 microg/kg/hr**	Dilute **30 mg** to 50mL	0.6 mg/mL	**0.3 to 5.3 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 4 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**1.2 to 15 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**2 to 4 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**8 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**1.2 to 2.4 mL/hr**	IV
Paralytic Agents – only in consultation with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**2.4 to 7.2 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**200 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**4 mL/hr**	

40kg


45 kg

45 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	7 mm	NG tube	12 - 14 Fr
Laryngoscope blade	3/4	ICC tube	20 - 28 Fr
ETT at lips – cm	19 cm	LMA	3
ETT at nose – cm	22 cm	IDC	12 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
500 microg	**0.5 mL**	**300 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**450 microg**	4.5 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**180 Joule**		Use adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 6 mL (300 mg) to 30 mL in glucose 5%*	10 mg/mL	**225 mg**	23 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			450 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			900 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		90 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**4.5 mg**	1.5 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**9 mg**	3 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**12 mg**	4 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**45 Joule**		Use adult pads
		2 Joule/kg			**90 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**600 microg**	6 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**45 microg**	4.5 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	500 microg/mL (10 mL syringe)	500 microg/mL	**450 microg**	0.9 mL	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**90 microg**	9 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**45 mg**	4.5 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**90 mg**	9 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**4.5 mg**	4.5 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**54 mg**	5.4 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**90 mg**	9 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**4.5 mg**	4.5 mL	Push

45kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**720 mg**	7.2 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**200 microg**	2 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**400 microg**	1 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**12 mg**	3 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**9 mmol**	45 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**100 mg**	2mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 2 mL (80 mg) to 8 mL	10 mg/mL	**45 mg**	4.5 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**300 microg**	6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**225 mg**	45 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**6.8 mg**	6.8 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**9 mg**	1.8 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**10 mg**	2 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 20 mL (1000 mg) to 100 mL	10 mg/mL	**900 mg**	90 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 5 mL (1000 mg) to 50 mL	20 mg/mL	**900 mg**	45 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 30 mL (3000 mg) to 60 mL	50 mg/mL	**2700 mg**	54 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 20 mL (2000 mg) to 50 mL	40 mg/mL	**1800 mg**	45 mL	Push over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**22.5 g**	113 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**135 mL**	135 mL	Infuse over 10 mins via central/large vein

45kg

45kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**13.5 mmol**	135 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**4.4 mmol**	20 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 4 mL (40 mg) to 40 mL	1 mg/mL	**40 mg**	40 mL	Infuse over 10 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**225 mL**	225 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**4.5 units**	4.5 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**45 mmol**	45 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**11.25 g**	45 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**4.4 mmol**	20 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**9 mmol**	45 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**450 mL**	450 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**675 mg**	68 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**67.5 microg**	1.4 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**22.5 microg**	2.3 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**2.25 mg**	2.3 mL	Dose may be repeated after 5 mins if required

45kg

45kg

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**22.5 mg**	2.3 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**11 mg**	1.1 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**4.5 mg**	9 mL	Infuse over 5 - 10 mins

Acute behavioural disturbance **Oral**	Medication preparation	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Diazepam	Liquid 1 mg/mL 5 mg tablet	0.2 mg/kg	If liquid unavailable dissolve two 5 mg tablets in 10 mL water	1 mg/mL	**9 mg**	9 mL	If tablet preferred round dose to nearest half or full tablet
Lorazepam	1 mg tablet	1 - 2 mg	Tablet may be dissolved in small volume of water		**1 - 2 mg**		
Olanzapine	2.5 - 5 mg wafer	5 - 10 mg	Place wafer on top of tongue		**5 - 10 mg**		Max daily dose not to exceed 20 mg
Risperidone	1 mg/mL liquid or tablets	0.02 - 0.04 mg/kg	If liquid unavailable tablets may be dissolved to make 1 mg/mL solution	1 mg/mL	**1 mg**	1 mL	Dose has been rounded

Acute behavioural disturbance **IM**	Vial concentration	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Droperidol	2.5 mg/mL	0.1 - 0.2 mg/kg	Undiluted	2.5 mg/mL	**4.5 mg**	1.8 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg
Olanzapine	10 mg/mL	5 - 10 mg	Reconstitute vial with 2.1 mL WFI	5 mg/mL	**5 - 10 mg**	1 - 2 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg

Reversal dystonia	Vial concentration	Recommended dose/kg	Preparation	Final concentration	Dose	Final volume	Administration
Benztropine (Benzatropine) **IV or IM** 2 mg/2 mL	1 mg/mL	0.02 mg/kg	Undiluted	1 mg/mL	**0.9 mg**	0.9 mL	IV or IM

45kg

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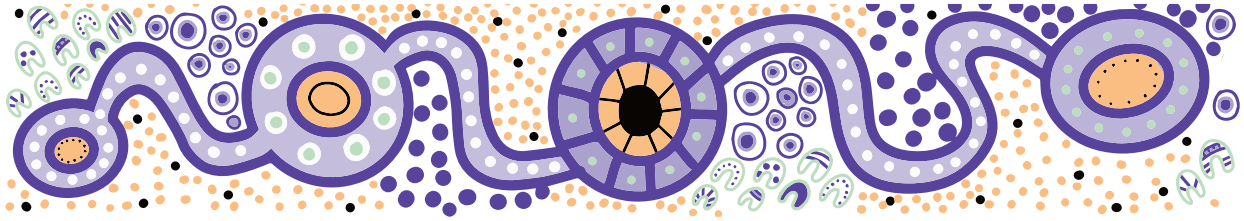

45kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	10 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**450 mg**	90 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 100 mL	20 mg/mL	**2000 mg**	100 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 2 x 1.2 g vials with 6 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	60 mg/mL	**2400 mg**	40 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.6 mL of WFI in EACH vial	330 mg/mL	**2000 mg**	6 mL	**IM:** Max 2 mL per IM injection site
cefTAZIDIME (2 g)	2000 mg	50 mg/kg	Reconstitute 2 g vial with 10 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 50 mL	40 mg/mL	**2000 mg**	50 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.3 mL Lidocaine 1% in EACH vial	350 mg/mL	**2000 mg**	5.7 mL	**IM:** Max 2 mL per IM injection site

45kg

45kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**400 mg**	200 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**450 mg**	45 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7 mg/kg	Dilute 8 mL (320 mg) to a final volume of 32 mL	10 mg/mL	**315 mg**	32 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 4 mL (1.2 g) to a final volume of 120 mL	10 mg/mL	**675 mg**	68 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**1800 mg**	36 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**337.5 mg**	68 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**4000 mg**	50 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (1 g)	1000 mg	15 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further to a final volume of 250 mL	4 mg/mL	**675 mg**	169 mL	Infuse over 60 - 120 mins

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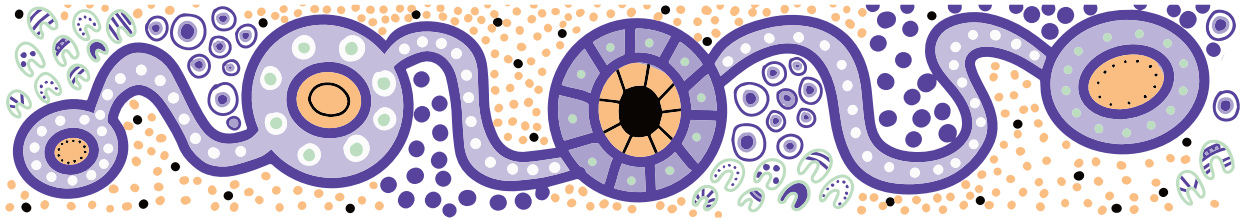

45kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 0.5 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**6.8 to 60 mL/hr**	IV
Adrenaline (Epinephrine) STRONG	*1:1000; 1 mg/mL*	***0.05 to 0.5 microg/kg/min***	*Dilute **6 mL (6 mg)** to 50 mL*	*120 microg/mL*	***1.1 to 10 mL/hr***	*Central Access*
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**3.6 to 36 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 0.5 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**6.8 to 60 mL/hr**	IV
Noradrenaline (Norepinephrine) STRONG	*4 mg/4 mL*	***0.05 to 0.5 microg/kg/min***	*Dilute **4 mL (4 mg)** to 50 mL*	*80 microg/mL*	***1.7 to 15 mL/hr***	*Central Access*
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	Dose **270 mg (135 mL)** infuse at **33.8 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 13.5 microg/kg/min**	Dilute **2 mL (100 mg)** to 50 mL in Glucose 5%	2 mg/mL	**6.8 to 18 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**13.5 to 54 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 3.5 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**4.5 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min** (0.3 to 1.2 mg/kg/hr)	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**3.4 to 13.5 mL/hr**	IV
Midazolam *STRONG*	Various strengths	**30 to 120 microg/kg/hr**	Dilute **50 mg** to 50mL	1 mg/mL	**1.4 to 5.4 mL/hr**	IV
Morphine *STRONG*	Various strengths	**5 to 80 microg/kg/hr**	Dilute **30 mg** to 50mL	0.6 mg/mL	**0.4 to 6 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 3.5 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**1.4 to 15 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**2.3 to 4.5 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**9 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**1.2 to 2.4 mL/hr**	IV
Paralytic Agents – only in consultation with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**2.7 to 8.1 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**225 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**4.5 mL/hr**	

50 kg

50 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	7 mm	NG tube	12 - 14 Fr
Laryngoscope blade	3/4	ICC tube	20 - 28 Fr
ETT at lips – cm	19 cm	LMA	3
ETT at nose – cm	22 cm	IDC	12 - 14 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
500 microg	**0.5 mL**	**300 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**500 microg**	5 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**200 Joule**		Use adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 6 mL (300 mg) to 30 mL in glucose 5%*	10 mg/mL	**250 mg**	25 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			500 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			1000 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		100 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**5 mg**	1.7 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**10 mg**	3.3 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**12 mg**	4 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**50 Joule**		Use adult pads
		2 Joule/kg			**100 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**600 microg**	6 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**50 microg**	5 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	500 microg/mL (10 mL syringe)	500 microg/mL	**500 microg**	1 mL	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**100 microg**	10 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**50 mg**	5 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**100 mg**	10 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**5 mg**	5 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**60 mg**	6 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 2 mL (100 mg) to 10 mL	10 mg/mL	**100 mg**	10 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**5 mg**	5 mL	Push

50kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**800 mg**	8 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**200 microg**	2 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**400 microg**	1 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**12 mg**	3 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**10 mmol**	50 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**100 mg**	2 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 2 mL (80 mg) to 8 mL	10 mg/mL	**50 mg**	5 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**300 microg**	6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 10 mL (250 mg) to 50 mL	5 mg/mL	**250 mg**	50 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**7.5 mg**	7.5 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**10 mg**	2 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**10 mg**	2 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 20 mL (1000 mg) to 100 mL	10 mg/mL	**1000 mg**	100 mL	Infuse over 20 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 5 mL (1000 mg) to 50 mL	20 mg/mL	**1000 mg**	50 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 30 mL (3000 mg) to 60 mL	50 mg/mL	**3000 mg**	60 mL	Push over 5 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 20mL (2000 mg) to 50 mL	40 mg/mL	**2000 mg**	50 mL	Push over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**25 g**	125 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**150 mL**	150 mL	Infuse over 10 mins via central/large vein

50kg

50kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**15 mmol**	150 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**4.4 mmol**	20 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 4 mL (40 mg) to 40 mL	1 mg/mL	**40 mg**	40 mL	Infuse over 10 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**250 mL**	250 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**5 units**	5 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**50 mmol**	50 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**12.5 g**	50 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**4.4 mmol**	20 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**10 mmol**	50 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**500 mL**	500 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**750 mg**	75 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**75 microg**	1.5 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**25 microg**	2.5 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**2.5 mg**	2.5 mL	Dose may be repeated after 5 mins if required

50kg

50kg

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**25 mg**	2.5 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**13 mg**	1.3 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**5 mg**	10 mL	Infuse over 5 - 10 mins

Acute behavioural disturbance **Oral**	Medication preparation	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Diazepam	Liquid 1 mg/mL 5 mg tablet	0.2 mg/kg	If liquid unavailable dissolve two 5 mg tablets in 10 mL water	1 mg/mL	**10 mg**	10 mL	If tablet preferred round dose to nearest half or full tablet
Lorazepam	1 mg tablet	1 - 2 mg	Tablet may be dissolved in small volume of water		**1 - 2 mg**		
Olanzapine	2.5 - 5 mg wafer	5 - 10 mg	Place wafer on top of tongue		**5 - 10 mg**		Max daily dose not to exceed 20 mg
Risperidone	1 mg/mL liquid or tablets	0.02 - 0.04 mg/kg	If liquid unavailable tablets may be dissolved to make 1 mg/mL solution	1 mg/mL	**1 mg**	1 mL	Dose has been rounded

Acute behavioural disturbance **IM**	Vial concentration	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Droperidol	2.5 mg/mL	0.1 - 0.2 mg/kg	Undiluted	2.5 mg/mL	**5 mg**	2 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg
Olanzapine	10 mg/mL	5 - 10 mg	Reconstitute vial with 2.1 mL WFI	5 mg/mL	**5 - 10 mg**	1 - 2 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg

Reversal dystonia	Vial concentration	Recommended dose/kg	Preparation	Final concentration	Dose	Final volume	Administration
Benztropine (Benzatropine) **IV or IM** 2 mg/2 mL	1 mg/mL	0.02 mg/kg	Undiluted	1 mg/mL	**1 mg**	1 mL	IV or IM

50kg

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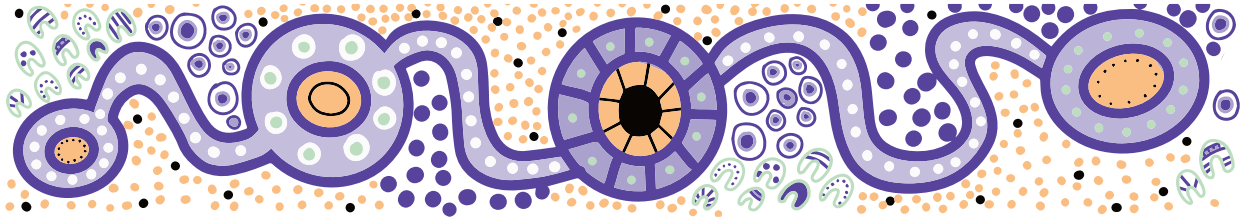

50kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	10 mg/kg	Dilute 20 mL (500 mg) to a final volume of 100 mL	5 mg/mL	**500 mg**	100 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 100 mL	20 mg/mL	**2000 mg**	100 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 2 x 1.2 g vials with 6 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	60 mg/mL	**2400 mg**	40 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.6 mL of WFI in EACH vial	330 mg/mL	**2000 mg**	6 mL	**IM:** Max 2 mL per IM injection site
cefTAZIDIME (2 g)	2000 mg	50 mg/kg	Reconstitute 2 g vial with 10 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 50 mL	40 mg/mL	**2000 mg**	50 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.3 mL Lidocaine 1% in EACH vial	350 mg/mL	**2000 mg**	5.7 mL	**IM:** Max 2 mL per IM injection site

50kg

50kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**400 mg**	200 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**500 mg**	50 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7 mg/kg	Dilute 10 mL (400 mg) to a final volume of 40 mL	10 mg/mL	**350 mg**	35 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 4 mL (1.2 g) to a final volume of 120 mL	10 mg/mL	**750 mg**	75 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**375 mg**	75 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**4000 mg**	50 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (1 g)	1000 mg	15 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 250 mL	4 mg/mL	**750 mg**	188 mL	Infuse over 60 - 120 mins

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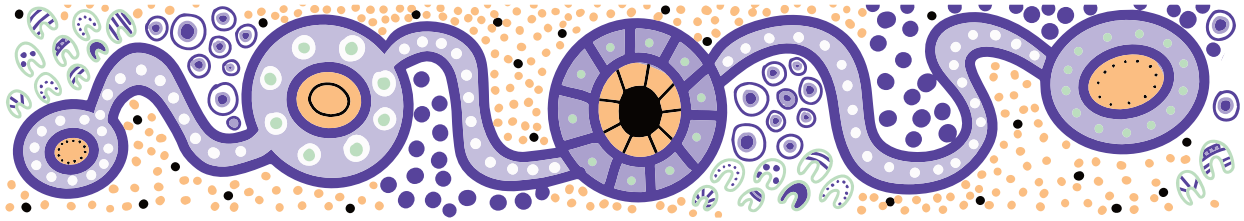

50kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 0.4 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**7.5 to 60 mL/hr**	IV
Adrenaline (Epinephrine) STRONG	*1:1000; 1 mg/mL*	***0.05 to 0.4 microg/kg/min***	*Dilute **6 mL (6 mg)** to 50 mL*	*120 microg/mL*	***1.3 to 10 mL/hr***	*Central Access*
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**4 to 40 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 0.4 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**7.5 to 60 mL/hr**	IV
Noradrenaline (Norepinephrine) STRONG	*4 mg/4 mL*	***0.05 to 0.4 microg/kg/min***	*Dilute **4 mL (4 mg)** to 50 mL*	*80 microg/mL*	***1.9 to 15 mL/hr***	*Central Access*
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**25 microg/kg/min** (for 4 hrs)	Dilute **10 mL (500 mg)** to 250 mL in Glucose 5%	2 mg/mL	Dose **300 mg (150 mL)** infuse at **37.5 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 12 microg/kg/min**	Dilute **10 mL (500 mg)** to 250 mL in Glucose 5%	2 mg/mL	**7.5 to 18 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**15 to 60 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 3 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**5 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min** (0.3 to 1.2 mg/kg/hr)	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**3.8 to 15 mL/hr**	IV
Midazolam *STRONG*	Various strengths	**30 to 120 microg/kg/hr**	Dilute **50 mg** to 50mL	1 mg/mL	**1.5 to 6 mL/hr**	IV
Morphine *STRONG*	Various strengths	**5 to 80 microg/kg/hr**	Dilute **30 mg** to 50mL	0.6 mg/mL	**0.4 to 6.7 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 3 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**1.5 to 15 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**2.5 to 5 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**10 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**1.5 to 3 mL/hr**	IV
Paralytic Agents – only in consultation with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**3 to 9 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**250 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**5 mL/hr**	

60 kg

60 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	7 mm	NG tube	12 - 14 Fr
Laryngoscope blade	4	ICC tube	20 - 28 Fr
ETT at lips – cm	20 cm	LMA	4
ETT at nose – cm	23 cm	IDC	12 - 14 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
500 microg	**0.5 mL**	**300 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**600 microg**	6 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**200 Joule**		Use adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 6 mL (300 mg) to 30 mL in glucose 5%*	10 mg/mL	**300 mg**	30 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			600 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			1200 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		120 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**6 mg**	2 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**12 mg**	4 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**12 mg**	4 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**50 Joule**		Use adult pads
		2 Joule/kg			**100 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**600 microg**	6 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**50 microg**	5 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	500 microg/mL (10 mL syringe)	500 microg/mL	**500 microg**	1 mL	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**100 microg**	10 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**60 mg**	6 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**120 mg**	12 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**6 mg**	6 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**72 mg**	7.2 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 4 mL (200 mg) to 20 mL	10 mg/mL	**120 mg**	12 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**6 mg**	6 mL	Push

60kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**960 mg**	9.6 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**200 microg**	2 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**400 microg**	1 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**12 mg**	3 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**10 mmol**	50 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**100 mg**	2 mL	Push over 30 sec or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 2 mL (80 mg) to 8 mL	10 mg/mL	**60 mg**	6 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**300 microg**	6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 20 mL (500 mg) to 100 mL	5 mg/mL	**300 mg**	60 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**9 mg**	9 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**10 mg**	2 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**10 mg**	2 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 30 mL (1500 mg) to 100 mL	15 mg/mL	**1200 mg**	80 mL	Infuse over 30 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 5 mL (1000 mg) to 50 mL	20 mg/mL	**1000 mg**	50 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 50 mL (5000 mg) to 100 mL	50 mg/mL	**3600 mg**	72 mL	Infuse over 10 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 40 mL (4000 mg) to 100 mL	40 mg/mL	**2400 mg**	60 mL	Push over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**30 g**	150 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**150 mL**	150 mL	Infuse over 10 mins via central/large vein

60kg

60kg

Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**18 mmol**	180 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**4.4 mmol**	20 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 4 mL (40 mg) to 40 mL	1 mg/mL	**40 mg**	40 mL	Infuse over 10 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**300 mL**	300 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**6 units**	6 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**60 mmol**	60 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 1 scoop (15 g) with 60 mL water	0.25 g/mL	**15 g**	60 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**4.4 mmol**	20 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**10 mmol**	50 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**600 mL**	600 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**900 mg**	90 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**90 microg**	1.8 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5-1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**30 microg**	3 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**3 mg**	3 mL	Dose may be repeated after 5 mins if required

60kg

60kg

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**30 mg**	3 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**15 mg**	1.5 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**5 mg**	10 mL	Infuse over 5 - 10 mins

Acute behavioural disturbance **Oral**	Medication preparation	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Diazepam	Liquid 1 mg/mL 5 mg tablet	0.2 mg/kg	If liquid unavailable dissolve two 5 mg tablets in 10 mL water	1 mg/mL	**10 mg**	10 mL	If tablet preferred round dose to nearest half or full tablet
Lorazepam	1 mg tablet	1 - 2 mg	Tablet may be dissolved in small volume of water		**1 - 2 mg**		
Olanzapine	2.5 - 5 mg wafer	5 - 10 mg	Place wafer on top of tongue		**5 - 10 mg**		Max daily dose not to exceed 20 mg
Risperidone	1 mg/mL liquid or tablets	0.02 - 0.04 mg/kg	If liquid unavailable tablets may be dissolved to make 1 mg/mL solution	1 mg/mL	**1 mg**	1 mL	Dose has been rounded

Acute behavioural disturbance **IM**	Vial concentration	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Droperidol	2.5 mg/mL	0.1 - 0.2 mg/kg	Undiluted	2.5 mg/mL	**6 mg**	2.4 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg
Olanzapine	10 mg/mL	5 - 10 mg	Reconstitute vial with 2.1 mL WFI	5 mg/mL	**5 - 10 mg**	1 - 2 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg

Reversal dystonia	Vial concentration	Recommended dose/kg	Preparation	Final concentration	Dose	Final volume	Administration
Benztropine (Benzatropine) **IV or IM** 2 mg/2 mL	1 mg/mL	0.02 mg/kg	Undiluted	1 mg/mL	**1 mg**	1 mL	IV or IM

60kg

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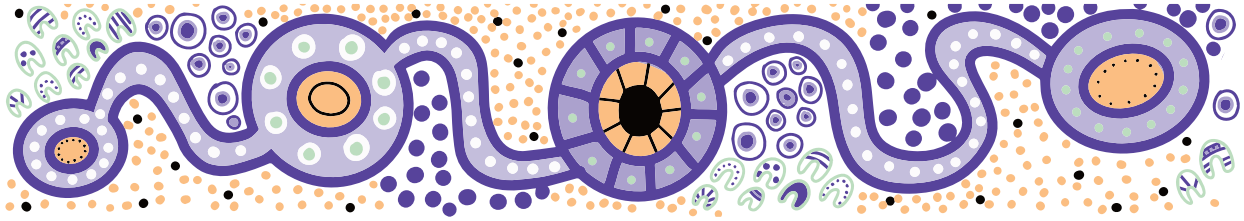

60kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	10 mg/kg	Dilute 40 mL (1 g) to a final volume of 200 mL	5 mg/mL	**600 mg**	120 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 100 mL	20 mg/mL	**2000 mg**	100 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 2 x 1.2 g vials with 6 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	60 mg/mL	**2400 mg**	40 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial- Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.6 mL of WFI in EACH vial	330 mg/mL	**2000 mg**	6 mL	**IM:** Max 2 mL per IM injection site
cefTAZIDIME (2 g)	2000 mg	50 mg/kg	Reconstitute 2 g vial with 10 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial- Withdraw entire volume and further dilute to a final volume of 50 mL	40 mg/mL	**2000 mg**	50 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.3 mL Lidocaine 1% in EACH vial	350 mg/mL	**2000 mg**	5.7 mL	**IM:** Max 2 mL per IM injection site

60kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**400 mg**	200 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**600 mg**	60 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7 mg/kg	Dilute 12 mL (480 mg) to a final volume of 48 mL	10 mg/mL	**420 mg**	42 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 4 mL (1.2 g) to a final volume of 120 mL	10 mg/mL	**900 mg**	90 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**450 mg**	90 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**4000 mg**	50 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (1 g)	1000 mg	15 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 250 mL	4 mg/mL	**750 mg**	188 mL	Infuse over 60 - 120 mins

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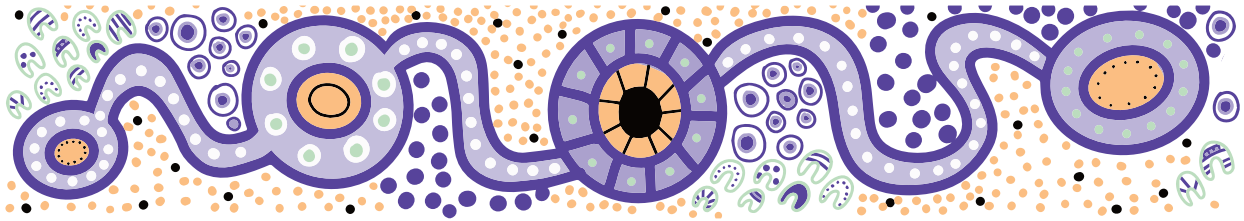
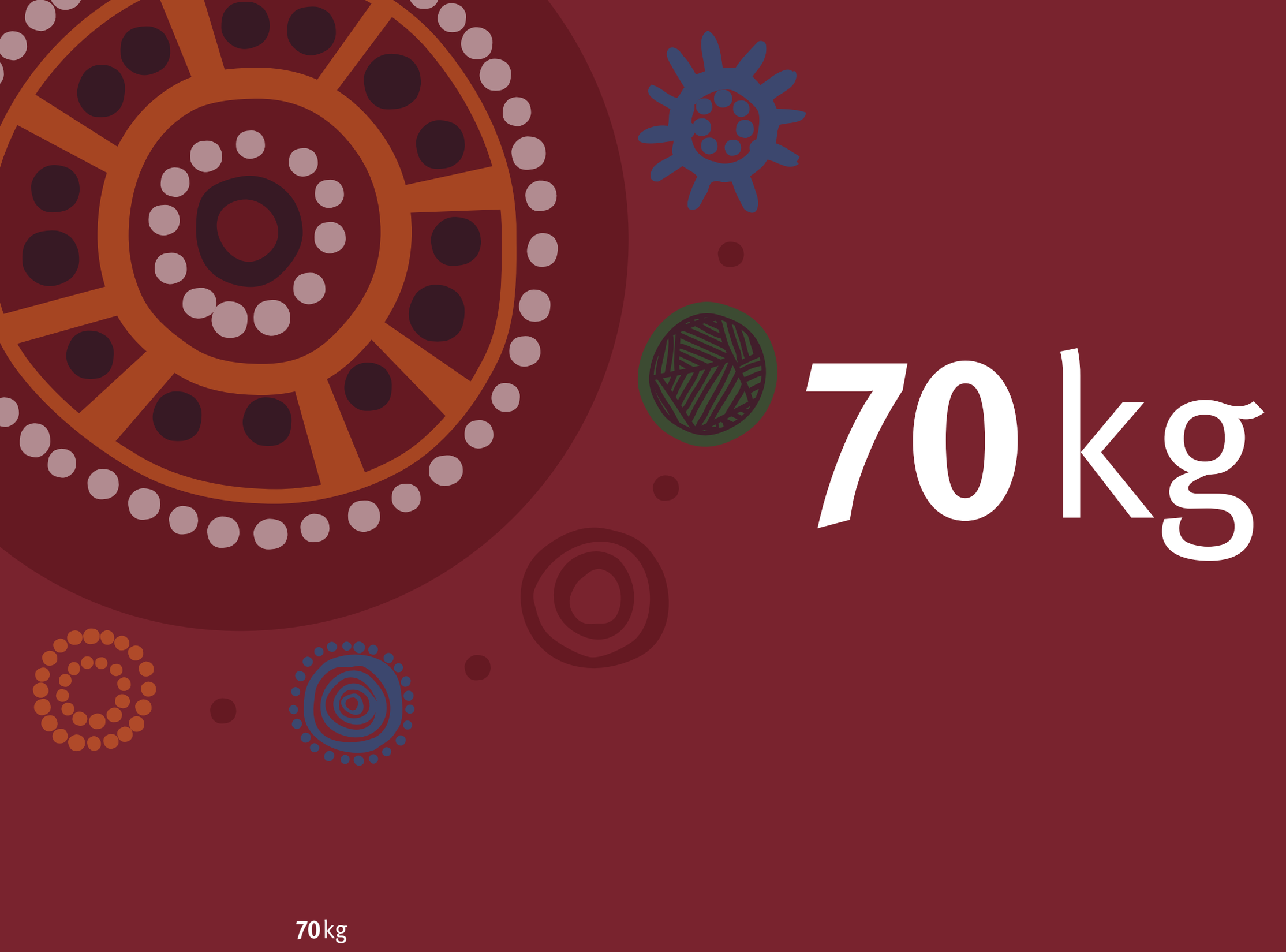


60kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 0.4 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**9 to 60 mL/hr**	IV
Adrenaline (Epinephrine) STRONG	*1:1000; 1 mg/mL*	***0.05 to 0.4 microg/kg/min***	*Dilute **6 mL (6 mg)** to 50 mL*	*120 microg/mL*	***1.5 to 10 mL/hr***	*Central Access*
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**4.8 to 48 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 0.4 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**9 to 60 mL/hr**	IV
Noradrenaline (Norepinephrine) STRONG	*4 mg/4 mL*	***0.05 to 0.4 microg/kg/min***	*Dilute **4 mL (4 mg)** to 50 mL*	*80 microg/mL*	***2.3 to 15 mL/hr***	*Central Access*
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**21 microg/kg/min** (for 4 hrs)	Dilute **10 mL (500 mg)** to 250 mL in Glucose 5%	2 mg/mL	Dose **300 mg (150 mL)** infuse at **37.5 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 10 microg/kg/min**	Dilute **10 mL (500 mg)** to 250 mL in Glucose 5%	2 mg/mL	**9 to 18 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**18 to 72 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 2.5 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**6 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min** (0.3 to 1.2 mg/kg/hr)	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**4.5 to 18 mL/hr**	IV
Midazolam *STRONG*	Various strengths	**30 to 120 microg/kg/hr**	Dilute **50 mg** to 50mL	1 mg/mL	**1.8 to 7.2 mL/hr**	IV
Morphine *STRONG*	Various strengths	**5 to 80 microg/kg/hr**	Dilute **30 mg** to 50mL	0.6 mg/mL	**0.5 to 8 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 2.5 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**1.8 to 15 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**3 to 6 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**12 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**1.8 to 3.6 mL/hr**	IV
Paralytic Agents – only in consultation with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 3 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**3.6 to 10 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**300 mL/hr**	IV. Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**6 mL/hr**	



70 kg

70 kg

Intubation – prepare ONE size tube above and below recommended size			
ETT size – microcuff	7 mm	NG tube	12 - 14 Fr
Laryngoscope blade	4	ICC tube	20 - 28 Fr
ETT at lips – cm	21 cm	LMA	4
ETT at nose – cm	23 cm	IDC	12 - 14 Fr

ANAPHYLAXIS		
IM Adrenaline (Epinephrine) 1:1000 (1 mg/mL)		
Dose	Volume	Autoinjector
500 microg	**0.5 mL**	**300 microg**

*Use autoinjector only if adrenaline 1:1000 not available

Resuscitation	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	10 microg/kg	Undiluted	100 microg/mL	**700 microg**	7 mL	Push
DC shock – VF/ pulseless VT		4 Joule/kg	Round up energy level to next highest setting on defibrillator		**200 Joule**		Use adult pads
AmiODAROne (150 mg/3 mL)	50 mg/mL	5 mg/kg	*Dilute 6 mL (300 mg) to 30 mL in glucose 5%*	10 mg/mL	**300 mg**	30 mL	Push over 5 mins
Fluid Bolus		10 mL/kg	Sodium Chloride 0.9%			700 mL	Push
Fluid Bolus		20 mL/kg	Sodium Chloride 0.9%			1400 mL	Push
Glucose 10%	100 mg/mL	2 mL/kg	Glucose 10%	100 mg/mL		140 mL	Push
Adenosine (6 mg/2 mL) – 1st dose	3 mg/mL	0.1 mg/kg	Undiluted	3 mg/mL	**6 mg**	2 mL	Push via proximal vein or CVL – Follow immediately by a 10 - 20 mL fast flush
Adenosine (6 mg/2 mL) – 2nd dose	3 mg/mL	0.2 mg/kg			**12 mg**	4 mL	
Adenosine (6 mg/2 mL) – 3rd dose	3 mg/mL	0.3 mg/kg			**12 mg**	4 mL	
Synchronised Cardioversion		1 Joule/kg	Round up energy level to next highest setting on defibrillator		**50 Joule**		Use adult pads
		2 Joule/kg			**100 Joule**		
Atropine (600 microg/mL)	600 microg/mL	20 microg/kg	Dilute 1 mL (600 microg) to 6 mL	100 microg/mL	**600 microg**	6 mL	Push
Push dose pressors – Doses may be repeated if required							
Adrenaline (Epinephrine) 1:10 000 (1 mg/10 mL)	100 microg/mL	1 microg/kg	Dilute 1 mL (100 microg) to 10 mL	10 microg/mL	**50 microg**	5 mL	Push
Metaraminol (Syringe 5 mg/10 mL)	500 microg/mL	10 microg/kg	500 microg/mL (10 mL syringe)	500 microg/mL	**500 microg**	1 mL	Push

Induction agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl (100 microg/2 mL)	50 microg/mL	2 - 5 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**100 microg**	10 mL	Push over 1 - 3 mins
Ketamine (200 mg/2 mL)	100 mg/mL	1 - 2 mg/kg	Dilute 2 mL (200 mg) to 20 mL	10 mg/mL	**70 mg**	7 mL	Push over 60 secs
PropOFol (200 mg/20 mL)	10 mg/mL	2 - 3 mg/kg	Undiluted	10 mg/mL	**140 mg**	14 mL	Push over 30 secs
Midazolam	Various strengths	0.1 - 0.2 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**7 mg**	7 mL	Push over 30 secs

Paralytic agents	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Rocuronium (50 mg/5 mL)	10 mg/mL	1.2 mg/kg	Undiluted	10 mg/mL	**84 mg**	8.4 mL	Push
Suxamethonium (100 mg/2 mL)	50 mg/mL	2 mg/kg	Dilute 4 mL (200 mg) to 20 mL	10 mg/mL	**140 mg**	14 mL	Push
Vecuronium (10 mg)	10 mg	0.1 mg/kg	*Reconstitute vial with 10 mL WFI*	1 mg/mL	**7 mg**	7 mL	Push

70kg

Reversal agents	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Sugammadex (200 mg/2 mL) Rocuronium reversal	100 mg/mL	16 mg/kg	Undiluted	100 mg/mL	**1120 mg**	11 mL	Push
Flumazenil (500 microg/5 mL) Benzodiazepine reversal	100 microg/mL	5 microg/kg	Undiluted	100 microg/mL	**200 microg**	2 mL	Push – Every 60 secs Max single dose 200 microg Max total dose 2000 microg
Naloxone (400 microg/mL) Opioid reversal	400 microg/mL	10 microg/kg	Undiluted	400 microg/mL	**400 microg**	1 mL	Push – Every 2 - 3 mins May be given IM

Respiratory	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Nebulised Adrenaline (Epinephrine) 1:1000	1 mg/mL		Undiluted	1 mg/mL	**5 mg**	5 mL	Via nebuliser
Dexamethasone (4 mg/mL)	4 mg/mL	0.3 mg/kg	Undiluted	4 mg/mL	**12 mg**	3 mL	IV or IM
Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**10 mmol**	50 mL	Infuse over 20 mins
Hydrocortisone (100 mg + 2 mL diluent)	50 mg/ mL	4 mg/kg	*Reconstitute vial with 2 mL WFI*	50 mg/mL	**100 mg**	2 mL	Push over 30 secs or IM
Methylprednisolone (40 mg/mL) sodium succinate	40 mg/mL	1 mg/kg	Dilute 2 mL (80 mg) to 8 mL	10 mg/mL	**60 mg**	6 mL	Push over 5 mins Sodium succinate ONLY
Salbutamol (5 mg/5 mL)	1000 microg/mL	15 microg/kg	Dilute 5 mL (5000 microg) to 100 mL	50 microg/mL	**300 microg**	6 mL	Load – Infuse over 10 mins
AmiNOPHYLLine (250 mg/10 mL)	25 mg/mL	5 mg/kg	Dilute 20 mL (500 mg) to 100 mL	5 mg/mL	**350 mg**	70 mL	Load – Infuse over 30 mins

Neurology/seizures	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Midazolam – **IV**	Various strengths	0.15 mg/kg	Dilute to 1 mg/mL regardless of ampoule strength	1 mg/mL	**10 mg**	10 mL	Push
Midazolam – **IM**	5 mg/mL	0.2 mg/kg	Undiluted	5 mg/mL	**10 mg**	2 mL	IM
Midazolam – **Buccal/Nasal**	5 mg/mL	0.3 mg/kg	Undiluted	5 mg/mL	**10 mg**	2 mL	Drip dose into alternate nostrils or inside cheek
Phenytoin (100 mg/2 mL) (250 mg/5 mL)	50 mg/mL	20 mg/kg	Dilute 30 mL (1500 mg) to 100 mL	15 mg/mL	**1400 mg**	93 mL	Infuse over 30 mins *use 0.22 micron filter*
Phenobarbital (200 mg/mL)	200 mg/mL	20 mg/kg	Dilute 5 mL (1000 mg) to 50 mL	20 mg/mL	**1000 mg**	50 mL	Infuse over 20 mins
Levetiracetam (500 mg/5 mL)	100 mg/mL	60 mg/kg	Dilute 50 mL (5000 mg) to 100 mL	50 mg/mL	**4200 mg**	84 mL	Infuse over 10 mins
Sodium Valproate (400 mg/4 mL)	100 mg/mL	40 mg/kg	Dilute 40 mL (4000 mg) to 100 mL	40 mg/mL	**2800 mg**	70 mL	Push over 3 - 5 mins
Mannitol 20%	0.2 g/mL	0.5 g (2.5 mL)/kg	Pre-mixed bag	0.2 g/mL	**35 g**	175 mL	Infuse over 10 mins *use 5 micron filter*
Sodium Chloride 3% – Hypertonic *For raised ICP or hyponatremic seizures*	0.5 mmol/mL	3 mL/kg	Pre-mixed bag	0.5 mmol/mL	**150 mL**	150 mL	Infuse over 10 mins via central/large vein

70kg

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Electrolytes	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Hypokalaemia (↓ Potassium) Potassium Chloride 10 mmol in 0.29% Sodium Chloride (100 mL)	0.1 mmol/mL	0.3 mmol/kg	Pre-mixed bag	0.1 mmol/mL	**20 mmol**	200 mL	Infuse over 1 hour
Hyperkalaemia (↑ Potassium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**4.4 mmol**	20 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Salbutamol Nebules	5 mg/2.5 mL	Age based	Dilute to 4 mL	–	**5 mg**	–	Inhale via nebuliser
Furosemide (20 mg/2 mL)	10 mg/mL	1 mg/kg	Dilute 4 mL (40 mg) to 40 mL	1 mg/mL	**40 mg**	40 mL	Infuse over 10 mins
Glucose 10% (with insulin below)	See Infusion guide for doses and administration directions. In a rare event of cardiac arrest due to hyperkalaemia, Glucose 10% and Insulin may be given more quickly see below						
Insulin – Actrapid (300 units/3 mL)							
Hyperkalaemia (Cardiac arrest) Glucose 10%		5 mL/ kg	Use a Glucose 10% bag undiluted	10%	**350 mL**	350 mL	ARREST dose only. Push over 3 - 5 mins followed by insulin dose
Insulin - Actrapid (300 units/3 mL)	100 units/mL	0.1 units/ kg	Dilute 0.1 mL (10 units) to 10 mL	1 unit/mL	**7 units**	7 mL	ARREST dose only. Push over 3 - 5 mins. High risk of hypoglycaemia. Monitor BSL closely
Sodium Bicarbonate 8.4%	1 mmol/mL	1 mmol/kg	Undiluted	1 mmol/mL	**70 mmol**	70 mL	Large vein push over 5 mins DO NOT mix with other drugs
Resonium A	–	0.25 g/kg	Mix 2 scoops (30 g) with 120 mL water	0.25 g/mL	**17.5 g**	70 mL	Oral, nasogastric or rectal
Hypocalcaemia – Critical (↓ calcium) Calcium gluconate (2.2 mmol/10 mL)	0.22 mmol/mL	0.11 mmol/kg	Undiluted	0.22 mmol/mL	**4.4 mmol**	20 mL	Large vein push over 3 - 5 mins DO NOT give with sodium bicarbonate
Hypomagnesaemia or Arrhythmia Magnesium Sulfate (10 mmol/5 mL)	2 mmol/mL	0.2 mmol/kg	Dilute 5 mL (10 mmol) to 50 mL	0.2 mmol/mL	**10 mmol**	50 mL	**Pulse absent** – Push over 3 - 5 mins **Pulse present** – Infuse over 20 mins

Trauma	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Blood – Initial		10 mL/kg			**700 mL**	700 mL	As clinically indicated
Tranexamic Acid – 1000 mg/10 mL	100 mg/mL	15 mg/kg	Dilute 10 mL (1000 mg) to 100 mL	10 mg/mL	**1000 mg**	100 mL	Infuse over 10 mins
For ongoing bleeding refer to local Massive Haemorrhage Protocol for blood and product replacement							

Analgesia	Vial concentration	Recommended dose/kg	Dilution – Sodium Chloride 0.9%	Final concentration	Dose	Final volume	Administration
Fentanyl – **Nasal** (100 microg/2 mL) Use Mucosal Atomiser Device (MAD)	50 microg/mL	1.5 microg /kg	Undiluted	50 microg/mL	**100 microg**	2 mL	Add 0.1 mL to initial dose to accommodate (MAD) dead space. May repeat after 5 - 10 mins
Fentanyl – **IV** (100 microg/2 mL)	50 microg/mL	0.5 - 1 microg/kg	Dilute 2 mL (100 microg) to 10 mL	10 microg/mL	**35 microg**	3.5 mL	Dose may be repeated after 5 mins if required
Morphine – **IV** (10 mg/mL)	10 mg/mL	0.05 - 0.1 mg/kg	Dilute 1 mL (10 mg) to 10 mL	1 mg/mL	**3.5 mg**	3.5 mL	Dose may be repeated after 5 mins if required

70kg

70kg

Analgesia if intraosseous **IO** drug or fluid administration causes pain	Vial concentration	Recommended dose/kg	Preparation		Dose	Final volume to administer	Administration
			Dilution – Sodium Chloride 0.9%	Final concentration			
Lidocaine 1% **IO**	10 mg/mL (1%)	0.5 mg/kg	Undiluted	10 mg/mL	**35 mg**	3.5 mL	Instill dose - Follow with 1 mL slow push of Sodium Chloride 0.9% over 1 - 2 mins. Allow to dwell for 1 min. Rapid flush with 5 mL. Half original dose can be repeated as above

Antiarrhythmics - only in consultation with a Paediatric Cardiologist	Vial concentration	Recommended dose/kg	**Dilution – Sodium Chloride 0.9%**	Final concentration	Dose	Final volume	Administration
AmiODAROne (Load) 150 mg/3 mL	See Infusion guide for doses and administration directions						
Esmolol 100 mg/10 mL	10 mg/mL	0.25 - 0.5 mg/kg	Undiluted	10 mg/mL	**18 mg**	1.8 mL	LOAD – Push over 1 - 2 mins. Continuous infusion may be considered after loading dose
Verapamil 5 mg/2 mL	2.5 mg/mL	0.1 mg/kg	Dilute 2 mL (5 mg) up to 10 mL	0.5 mg/mL	**5 mg**	10 mL	Infuse over 5 - 10 mins

Acute behavioural disturbance **Oral**	Medication preparation	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Diazepam	Liquid 1 mg/mL 5 mg tablet	0.2 mg/kg	If liquid unavailable dissolve two 5 mg tablets in 10 mL water	1 mg/mL	**10 mg**	10 mL	If tablet preferred round dose to nearest half or full tablet
Lorazepam	1 mg tablet	1 - 2 mg	Tablet may be dissolved in small volume of water		**1 - 2 mg**		
Olanzapine	2.5 - 5 mg wafer	5 - 10 mg	Place wafer on top of tongue		**5 - 10 mg**		Max daily dose not to exceed 20 mg
Risperidone	1 mg/mL liquid or tablets	0.02 - 0.04 mg/kg	If liquid unavailable tablets may be dissolved to make 1 mg/mL solution	1 mg/mL	**1 mg**	1 mL	Dose has been rounded

Acute behavioural disturbance **IM**	Vial concentration	Recommended dose	Preparation	Final concentration	Dose	Final volume	Administration
Droperidol	2.5 mg/mL	0.1 - 0.2 mg/kg	Undiluted	2.5 mg/mL	**7 mg**	2.8 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg
Olanzapine	10 mg/mL	5 - 10 mg	Reconstitute vial with 2.1 mL WFI	5 mg/mL	**5 - 10 mg**	1 - 2 mL	Max single dose not to exceed 10 mg. Total daily dose 0.4 mg/kg not to exceed 20 mg

Reversal dystonia	Vial concentration	Recommended dose/kg	Preparation	Final concentration	Dose	Final volume	Administration
Benztropine (Benzatropine) **IV or IM** 2 mg/2 mL	1 mg/mL	0.02 mg/kg	Undiluted	1 mg/mL	**1 mg**	1 mL	IV or IM

70kg

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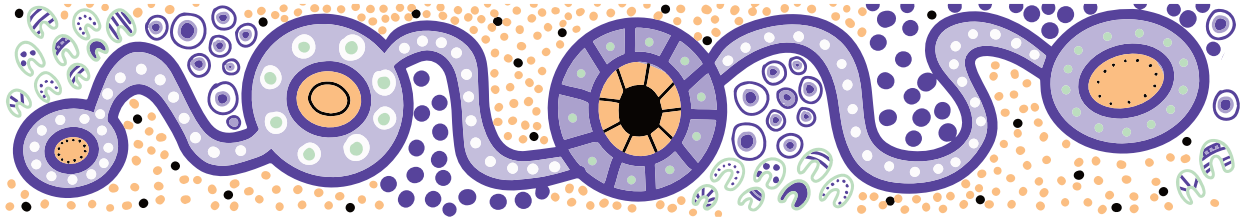

70kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Aciclovir (250 mg/10 mL) (500 mg/20 mL)	25 mg/mL	10 mg/kg	Dilute 40 mL (1 g) to a final volume of 200 mL	5 mg/mL	**700 mg**	140 mL	Infuse over 60 mins
Amoxicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	Infuse over 30 mins. Doses of 100 mg/kg may be required for meningitis
AMPicillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 100 mL	20 mg/mL	**2000 mg**	100 mL	Infuse over 15 mins. Doses of 100 mg/kg may be required for meningitis
Benzylpenicillin (1.2 g)	1200 mg	60 mg/kg	Reconstitute 2 x 1.2 g vials with 6 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	60 mg/mL	**2400 mg**	40 mL	Infuse over 30 mins
cefaZOLin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefOTAXIME (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefOTAXIME **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.6 mL of WFI in EACH vial	330 mg/mL	**2000 mg**	6 mL	**IM:** Max 2 mL per IM injection site
cefTAZIDIME (2 g)	2000 mg	50 mg/kg	Reconstitute 2 g vial with 10 mL WFI - Withdraw entire volume and further dilute to a final volume of 20 mL	100 mg/mL	**2000 mg**	20 mL	PUSH over 3 - 5 mins
cefTRIAXONE (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 50 mL	40 mg/mL	**2000 mg**	50 mL	PUSH over 5 mins
cefTRIAXONE **Intramuscular** (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 2.3 mL Lidocaine 1% in EACH vial	350 mg/mL	**2000 mg**	5.7 mL	**IM:** Max 2 mL per IM injection site

70kg

70kg

Antimicrobials	Vial concentration	Recommended dose/kg	Preparation		Dose	Dose in mL	Administration - 1st dose
			Dilution – Sodium Chloride 0.9%	Final concentration			
Ciprofloxacin (200 mg/100 mL)	2 mg/mL	10 mg/kg	Undiluted	2 mg/mL	**400 mg**	200 mL	Infuse over 60 mins
Clindamycin (600 mg/4 mL)	150 mg/mL	10 mg/kg	Dilute 4 mL (600 mg) to a final volume of 60 mL	10 mg/mL	**600 mg**	60 mL	Infuse over 30 mins
Flucloxacillin (1 g)	1000 mg	50 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	PUSH over 3 - 5 mins (phlebitis risk) OR Infuse over 30 mins
Gentamicin (80 mg/2 mL)	40 mg/mL	7 mg/kg	Dilute 14 mL (560 mg) to a final volume of 56 mL	10 mg/mL	**490 mg**	49 mL	Infuse over 30 mins
linCOMYCIN (600 mg/2 mL)	300 mg/mL	15 mg/kg	Dilute 4 mL (1.2 g) to a final volume of 120 mL	10 mg/mL	**1050 mg**	105 mL	Infuse over 60 mins
Meropenem (1 g)	1000 mg	40 mg/kg	Reconstitute 2 x 1 g vials with 5 mL WFI in EACH vial - Withdraw entire volume and further dilute to a final volume of 40 mL	50 mg/mL	**2000 mg**	40 mL	PUSH over 5 mins
Metronidazole (500 mg/100 mL)	5 mg/mL	7.5 mg/kg	Undiluted	5 mg/mL	**500 mg**	100 mL	Infuse over 20 mins
Piperacillin/Tazobactam (4000 mg - 500 mg)	4000 mg Piperacillin + 500 mg Tazobactam	100 mg/kg	Reconstitute 4 g vial with 20 mL WFI - Withdraw entire volume and further dilute to a final volume of 50 mL	80 mg/mL	**4000 mg**	50 mL	Infuse over 30 mins. Dose based on Piperacillin component
Vancomycin (1 g)	1000 mg	15 mg/kg	Reconstitute 1 g vial with 5 mL WFI - Withdraw entire volume and further dilute to a final volume of 250 mL	4 mg/mL	**750 mg**	188 mL	Infuse over 60 - 120 mins

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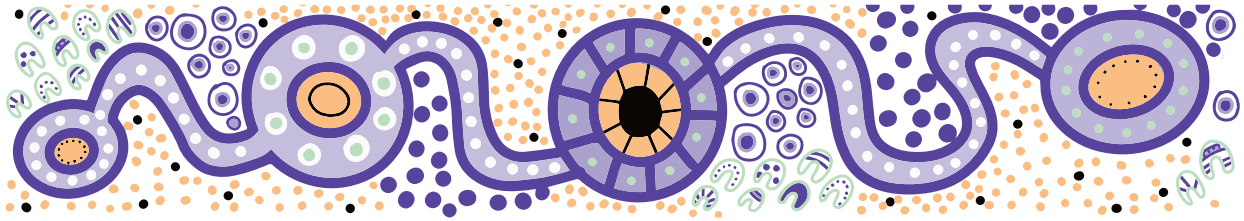

70kg

Drug	Vial concentration	Recommended dose/kg range	Preparation		Final rate range	Administration/ route
			Glucose 5% or Sodium Chloride 0.9%	Final concentration		
Inotropes						
Adrenaline (Epinephrine)	1:1000; 1 mg/mL	**0.05 to 0.3 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**10.5 to 60 mL/hr**	IV
Adrenaline (Epinephrine) STRONG	*1:1000; 1 mg/mL*	***0.05 to 0.3 microg/kg/min***	*Dilute **6 mL (6 mg)** to 50 mL*	*120 microg/mL*	***1.8 to 10 mL/hr***	*Central Access*
Dobutamine	250 mg/20 mL	**2 to 20 microg/kg/min**	Dilute **6 mL (75 mg)** to 50 mL	1.5 mg/mL	**5.6 to 56 mL/hr**	IV
Noradrenaline (Norepinephrine)	4 mg/4 mL	**0.05 to 0.3 microg/kg/min**	Dilute **1 mL (1 mg)** to 50 mL	20 microg/mL	**10.5 to 60 mL/hr**	IV
Noradrenaline (Norepinephrine) STRONG	*4 mg/4 mL*	***0.05 to 0.3 microg/kg/min***	*Dilute **4 mL (4 mg)** to 50 mL*	*80 microg/mL*	***2.6 to 15 mL/hr***	*Central Access*
Antiarrhythmics - only in consultation with a Paediatric Cardiologist						
AmiODAROne *LOAD*	50 mg/mL	**18 microg/kg/min** (for 4 hrs)	Dilute **10 mL (500 mg)** to 250 mL in Glucose 5%	2 mg/mL	Dose **300 mg (150 mL)** infuse at **37.5 mL/hr**	IV
AmiODAROne [after loading dose]	50 mg/mL	**5 to 9 microg/kg/min**	Dilute **10 mL (500 mg)** to 250 mL in Glucose 5%	2 mg/mL	**10.5 to 18 mL/hr**	IV
Esmolol	100 mg/10 mL	**50 to 200 microg/kg/min**	Undiluted – draw up 50 mL (500 mg)	10 mg/mL	**21 to 84 mL/hr**	IV
Sedation						
Fentanyl	100 microg/2 mL	**1 to 2 microg/kg/hr**	Dilute **10 mL (500 microg)** to 50 mL	10 microg/mL	**7 to 15 mL/hr**	IV
Ketamine	200 mg/2 mL	**5 to 20 microg/kg/min** (0.3 to 1.2 mg/kg/hr)	Dilute **2 mL (200 mg)** to 50 mL	4 mg/mL	**5.3 to 21 mL/hr**	IV
Midazolam *STRONG*	Various strengths	**30 to 120 microg/kg/hr**	Dilute **50 mg** to 50mL	1 mg/mL	**2.1 to 8.4 mL/hr**	IV
Morphine *STRONG*	Various strengths	**5 to 80 microg/kg/hr**	Dilute **30 mg** to 50mL	0.6 mg/mL	**0.6 to 9.3 mL/hr**	IV
PropOFol	200 mg/20 mL	**0.3 to 2 mg/kg/hr**	Undiluted – draw up **50 mL (500 mg)**	10 mg/mL	**2.1 to 15 mL/hr**	IV
Diabetic Ketoacidosis						
Insulin (neutral) ACTRAPID	300 units/3 mL	**0.05 to 0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9%	1 unit/mL	**3.5 to 7 mL/hr**	IV
Asthma						
Aminophylline [after loading dose]	250 mg/10 mL	**1 mg/kg/hr**	Dilute **10 mL (250 mg)** to 50 mL	5 mg/mL	**14 mL/hr**	IV
Salbutamol	5 mg/5 mL	**0.5 to 1 microg/kg/min**	Undiluted – draw up **50 mL (50 mg)**	1 mg/mL	**2.1 to 4.2 mL/hr**	IV
Paralytic Agents – only in consultation with Paediatric Intensivist						
Vecuronium	10 mg vial	**1 to 2.5 microg/kg/min**	Dilute **25 mL (50 mg)** to 50 mL	1 mg/mL	**4.2 to 10 mL/hr**	IV
Electrolytes						
Hyperkalaemia Glucose 10%	–	**5 mL/kg/hr**	Use a glucose 10% bag – Undiluted *Administer with Actrapid infusion*	10%	**350 mL/hr**	IV Run insulin and glucose infusions (concurrently) until K+ within range monitor BSLs
AND ACTRAPID (Insulin neutral)	300 units/3 mL	**0.1 units/kg/hr**	Dilute **0.5 mL (50 units)** to 50 mL with Sodium Chloride 0.9% *Administer with Glucose infusion*	1 unit/mL	**7 mL/hr**	

70kg

References

Provided below are the references to support the recommendations outlined in this book.

Table 2. References to support medication recommendations

Drug	Indication	Dose	Dilution and final concentration	Max dose/adult dose	Administration	References
Adrenaline	Anaphylaxis	10 microg/kg , now dose banded ref page 3. Auto-injector over 7 kg use 150 microg over 20 kg use 300 microg	1:1000 = 1000 microg/mL	0.5 mg	IM	Ascia, AMHc, APLS, ANZCOR
Adrenaline	Upper airway obstruction	5 mg	5 mL of 1:1000	5 mg	Nebuliser	Ascia, eTG
Adrenaline	Cardiac arrest	10 microg/kg	1:10,000 = 100 microg/mL	1 mg	IV	ANZCOR, APLS
D/C Shock	Cardiac arrest shockable rhythm	PAD selection size dependant on make of machine		Dependant on model Biphasic 150–200 J Monophasic 360 J		ANZCOR, APLS
AmiODAROne	Shock resistant VT/VF	5 mg/kg	Glucose 5% final concentration 10 mg/mL	300 mg Adult dose from 60 kg	IV	ANZCOR APLS
Fluid Bolus	Hypovolaemia	10 mL/kg	Sodium Chloride 0.9%			ANZCOR, APLS
Fluid Bolus	Hypovolaemia	20 mL/kg	Sodium Chloride 0.9%		IV	ANZCOR, APLS
Glucose 10%	Hypoglycaemia	2 mL/kg	Glucose 10%	150 mL repeat to effect	IV	APLS
Adenosine 1st	SVT	0.1 mg/kg	Undiluted	6 mg	IV	ANZCOR, APLS
Adenosine 2nd	SVT	0.2 mg/kg	Undiluted	12 mg	IV	ANZCOR, APLS, AMH
Adenosine 3rd	SVT	0.3 mg/kg	Undiluted	12 mg from 40 kg	IV	ANZCOR, APLS, AMH
Synchronised cardioversion		1–2 J/kg		Adult 50 J 100 J 200 J		APLS, ANZCOR
Atropine	Bradycardia	20 microg/kg	Dilute to 100 microg/mL	600 microg	IV	APLS, ANZCOR, AMH
Push Dose Pressor	Intermittent administration of small doses of vasopressors for hypotension particularly associated with Intubation. Useful as a temporizing bridge to inotrope infusion commencing. Below 40 kg Adrenaline is preferred over Metaraminol.					Ross et al 2018, Scott Weingart 2017
Adrenaline	Hypotension	1 microg/kg	10 microg/mL	50 microg at 50 kg	Push in 1 mL aliquots if multiple doses needed start infusion	Ross et al 2018, Scott Weingart 2017
Metaraminol	Hypotension	10 microg/kg	500 microg/mL	Max 0.5 mg per dose Use over 12 years	Max 1 mL boluses repeated up to 5 mg	BNFc
Fentanyl	Sedation	2–5 microg/kg	10 microg/mL	100 microg	Titrate to effect	AMH
Ketamine	Sedation	1–2 mg/kg	10 mg/mL	200 mg	Titrate to effect	AMHc
PropOFOl	Sedation	2–3 mg/kg	10 mg/mL		Titrate to effect	AMHc, BNFc
Midazolam	Sedation/seizure	0.15 mg/kg	1 mg/mL	10 mg	IV	AMHc
Rocuronium	Muscle relaxation	1.2 mg/kg	10 mg/mL		IV	QCH, Shann
Suxamethonium	Muscle relaxation	2 mg/kg	10 mg/mL	150 mg	IV	QCH

Drug	Indication	Dose	Dilution and final concentration	Max dose/adult dose	Administration	References
Vecuronium	Muscle relaxation	0.1 mg/kg	1 mg/mL	10 mg	IV	AMH, Shann
Sugammadex	Rocuronium reversal	16 mg/kg	100 mg/mL		IV	AMH, Shann
Flumazenil	Benzodiazepine reversal	5 microg/kg	100 microg/mL	Max single dose 200 microg can go up to total dose 2 mg	IV	AMHc, BNFc
Naloxone	Opioid reversal	10 microg/kg	400 microg/mL	400 microg	IV/IM	AMH, QCH
Dexamethasone	Severe croup	0.3 mg/kg	4 mg/mL	12 mg	IV/IM	CHQ
Magnesium Sulfate	Asthma Polymorphic VT	0.2 mmol/kg	0.2 mmol/mL	10 mmol	IV	AMHc, QCH, PIG
Hydrocortisone	Adrenal crisis, Asthma	4 mg/kg	50 mg/mL	100 mg	IV	AMHc, CHQ
Methylprednisolone	Asthma	1 mg/kg	40 mg/mL	60 mg	IV	CHQ
Salbutamol	Asthma load	15 microg/kg	0.1 mg/mL	300 microg	IV	CHQ
Aminophylline	Asthma load	5 mg/kg	5 mg/mL	500 mg	IV	CHQ
Midazolam	Seizure	0.2 mg/kg	5 mg/mL	10 mg	IM	AMHc
Midazolam	Seizure	0.3 mg/kg	5 mg/mL	10 mg	Nasal/buccal	AMHc
Phenytoin	Status epilepticus	20 mg/kg	10 mg/mL	1500 mg	IV	AMHc, APLS
Phenobarbital	Status epilepticus	20 mg/kg	20 mg/mL	1000 mg	IV	AMHc, APLS, BNFc
Levetiracetam	Status epilepticus	60 mg/kg	50 mg/mL	4.5 g	IV	Lyttle et al 2019
Sodium Valporate	Status epilepticus	40 mg/kg	40 mg/mL	3 g	IV	CHQ, AMHC
Mannitol 20%	Raised ICP	0.5 g/kg	0.2 g/mL		IV	CHQ, BNFc
Sodium Chloride 3%	Raised ICP	3 mL/kg	0.5 mmol/mL	150 mL	IV	CHQ
Potassium Chloride	Hypokalaemia	0.3 mmol/kg	0.1 mmol/mL premixed bag	20 mmol/hr	IV	CHQ
Calcium Gluconate	Hypocalcaemia, Hyperkalaemia	0.11 mmol/Kg	0.2 mmol/mL	4.5 mmol 20 mL 10%	IV	BNFc
Salbutamol Nebs	Hyperkalaemia	2.5 mg under 6 years 5 mg over 6 years			Neb	RCH
Furosemide		1 mg/kg	1 mg/mL		IV	AMHc, BNFc
Sodium bicarbonate 8.4%	Hyperkalaemia	1 mmol/kg	1 mmol/mL		IV	BNFc, RCH
Resonium A	Hyperkalaemia	0.25 g/kg	Dilution chosen for ease of administration		PO/PR	BNFc
Blood	Blood loss Anaemia	10 mL/kg	As clinically indicated. Blood loss 10–20 mL/kg and reassess. Elective transfusion equation child under 20 kg. mL = weight (kg) x desired Hb rise g/L (desired Hb g/L– Actual Hb g/L) x 0.5 10 mL/kg usually = 2 g/L rise			APLS, ANZCOR
Tranexamic acid	Large blood loss	15 mg/kg	10 mg/mL	1000 mg	IV	AMHc
Fentanyl	Analgesia	1.5 microg/kg	50 microg/mL	100 microg	IN	AMH
Fentanyl	Analgesia	0.1–1 microg/kg	10 microg/mL	100 microg	IV	AMH
Morphine	Analgesia	0.05–0.1 mg/kg	1 mg/kg	10 mg	IV	AMH

Antibiotics: Refer to paediatric sepsis pathway (https://clinicalexcellence.qld.gov.au/sites/default/files/docs/clinical-pathways/paed-sepsis-pathway.pdf)

Drug	Indication	Dose	Dilution and final concentration	Max dose/adult dose	Administration	References
Lidocaine (lignocaine) 1%	Analgesia for **IO** infusions	0.5 mg/kg	10 mg/mL	40 mg initial 20 mg subsequent MAX 60 mg	IO follow dose with 1 mL Sodium Choride 0.9% flush over 2 min. Dwell for 1 min. Rapid flush 5 mL. Half original dose can be repeated as above	QAS, PCCM
AmiODAROne (load)	Antiarrhythmic	5 mg/kg	Glucose 5% 2 mg/mL	300 mg	Use 0.22 micron Filter load over 4 hours = 20–25 microg/kg/min	ANZCOR, AMHc, PIG
Esmolol (load)	Beta blocker SVT	0.25–0.5 mg/kg	Undiluted	500 microg	Push over 1–2 min	AMHc, BNFc, PIG
Esmolol (infusion)	Beta blocker	50–300 microg/kg/min	Undiluted	500 microg/kg/min	Titrate in 25–50 microg/min increments	AMHc, PIG
Verapamil	SVT	0.1 mg/kg	1 mg/mL	10 mg	Infuse over 5–10 min	AMHc, BNFc, PIG, AID
Diazepam	Behavioural disturbance	0.2 mg/kg	1 mg/mL	10 mg	PO	QHG, RCH
Lorazepam	Behavioural disturbance	Less than 40 kg 0.5–1 mg Greater than 40 kg 1–2 mg		2 mg	PO Dose banding	CHQ, RCH
Olanzapine	Behavioural disturbance	Less than 40 kg 2.5–5 mg Greater than 40 kg 5–10 mg		10 mg	PO Dose banding	QHG, CHQ
Risperidone	Behavioural disturbance	0.02–0.04 mg/kg		2 mg	PO Dose banding	QHG, RCH
Droperidol	Behavioural disturbance	0.1–0.2 mg/kg	Undiluted 2.5 mg/mL	10 mg	IM	QHG, CHQ
Olanzapine IM	Behavioural disturbance	0.2 mg/kg Less than 40 kg 2.5–5 mg Greater than 40 kg 5–10 mg		10 mg	IM Dose banding	CHQ, RCH
Benztropine	Dystonic reaction	0.02 mg/kg	Undiluted 1 mg/mL	1 mg	IM/IV	CHQ, AMHc

Table 3. References to support equipment recommendations

Equipment	Recommendation	Reference
ETT	Tube sizes are calculated according to age. As this is a weight based book we have used 50th centile weights for age from AMH to determine weights at which tube size and depth of insertion change	APLS
ETT	Calculated as Age/4 + 4.0 for children 1 year or older. ETT with average weight for age represented	APLS
Depth at lips	Calculated as Age/2 + 12 for children 1 year or older. Newborn 8 cm, 6 months 10 cm, 1 year 12 cm	APLS
Depth at nose	Calculated as Age/2 + 15 for children 1 year or older. Newborn 10 cm, 6 months 13 cm, 1 year 14 cm	APLS
LMA size	Under 5 kg = 1, 6–10 kg = 1.5, 11–20 kg = 2, 21–30 kg = 2.5, 31 –50 kg = 3, 51–70 kg = 4	ANZCOR
IDC and Nasogastric tube	2 x uncuffed ETT	Standard practice
Intercostal catheter	4 x uncuffed ETT	Standard practice

Table 3. References to support antimicrobial recommendations

Drug	Initial Dose Refer to relevant resources for ongoing dosing, frequency and therapeutic drug monitoring adjustments for organ dysfunction	Maximum dose/adult dose	Dilution and final concentration	Administration	References
Aciclovir	Birth to 3 months of age = 20 mg/kg IV Greater than or equal to 3 months of age and 12 years of age = 500 mg/m^2 Greater than 12 years of age = 10 mg/kg	1 gram Consider using IBW or ABW for patients with large BMI	5 mg/mL Range 5 mg/mL – 7 mg/mL peripherally; 25 mg/mL via central line	Infuse over 60 minutes	PSP, PIG, AIDH
Amoxicillin	50 mg/kg Meningitis: 100 mg/kg/dose (on ID advice)	2 grams	50 mg/mL or weaker	Infuse over 30 minutes	PSP, PIG, AIDH
Ampicillin	50 mg/kg Meningitis: 100 mg/kg/dose (on ID advice)	2 grams	50 mg/mL for doses of 50 mg/kg or less than 500 mg 30 mg/mL for doses of 100 mg/kg or greater than 500 mg	• 50 mg/kg UP TO 500 mg: Inject over 3–5 minutes • 100 mg/kg OR greater than 500 mg: Infuse over 15–30 minutes	PSP, PIG, AIDH
Benzylpenicillin	60 mg/kg	2.4 grams	60 mg/mL or weaker	Infuse over 30 minutes	PSP, PIG, AIDH
Cefazolin	50 mg/kg	2 grams	100 mg/mL	Inject over 3–5 minutes	PSP, PIG, AIDH
cefOTAXIME	50 mg/kg	2 grams	200 mg/mL	Inject over 3–5 minutes	
cefOTAXIME IM	50 mg/kg	2 grams	330 mg/mL	cefOTAXIME IM can be diluted with lidocaine (lignocaine) 0.5%. To make 0.5% lidocaine, dilute 1% lidocaine with an equal quantity of water or sodium chloride 0.9% to make a 0.5% solution	Intramuscular injection: See *RCH Clinical Guidelines (Nursing): Intramuscular Injections* (rch.org.au) and *CHQ-PROC-01039 Medication administration*.
Ceftazidime	50 mg/kg	2 grams	100 mg /mL Range: 40–170 mg/mL	Inject over 3–5 minutes	PIG, AIDH
cefTRIAXONE	50 mg/kg	2 grams	40 mg/mL	Inject over 5 minutes cefTRIAXONE can be diluted with lidocaine (lignocaine) 1%”	PSP, PIG, AIDH
cefTRIAXONE IM	50 mg/kg	2 grams	350 mg/mL	cefTRIAXONE IM can be diluted with lidocaine (lignocaine) 1%	Intramuscular injection: See *RCH Clinical Guidelines (Nursing)*: Intramuscular Injections (rch.org.au) and *CHQ-PROC-01039 Medication administration*
Ciprofloxacin	Greater than 1 month of age = 10 mg/kg	400 mg	2 mg/mL or weaker	Infuse over 60 minutes preferably via a large vein	PSP, PIG, AIDH
Clindamycin	Less than or equal to 1 month of age = 7 mg/kg Greater than 1 month of age = 10 mg/kg	600 mg Doses of up to 900 mg may be required on specialist advice	10 mg/mL (for ease of measurement). Range: 18 mg/mL or weaker	Infuse over 20–60 minutes Maximum infusion rate: 20 mg/kg/hr or 30 mg/minute	CREDD consensus, PIG, AIDH

Drug	Initial Dose Refer to relevant resources for ongoing dosing, frequency and therapeutic drug monitoring adjustments for organ dysfunction	Maximum dose/adult dose	Dilution and final concentration	Administration	References
Flucloxacillin	50 mg/kg	2 grams	50 mg/mL or weaker	Infuse over at least 30 minutes OR inject over 3–5 minutes (phlebitis risk)	PSP, PIG, AIDH
Gentamicin	Less than 1 month of age = 5 mg/kg Greater than 1 month of age and less than 10 years of age = 7.5 mg/kg Greater than or equal to 10 years of age = 7 mg/kg Dose based on Adjusted Body Weight	Greater than 1 month of age and less than 10 years of age = 320 mg Greater than or equal to 10 years of age = 700 mg	10 mg/mL or weaker	Infuse over 30 minutes	PSP, PIG, AIDH
linCOMYCIN	Greater than 1 month of age = 15 mg/kg	1.2 grams	10 mg/mL or weaker	Infuse over 60 minutes Maximum infusion rate 1 g/hour	PSP, PIG, AIDH
Meropenem	40 mg/kg	2 grams	50 mg/mL or weaker	Inject over 3–5 minutes	PSP, PIG, AIDH
Metronidazole	Less than or equal to 1 month of age = 15 mg/kg loading dose, then 7.5 mg/kg Greater than 1 month of age = 7.5 mg/kg	500 mg	5 mg/mL or weaker	Infuse over 20 minutes. Maximum rate is 25 mg/minute	PSP, PIG, AIDH
Piperacillin-Tazobactam	100 mg/kg based on Piperacillin component	4 grams of piperacillin (4.5 g of combined piperacillin – tazobactam)	80 mg/mL Range: 15–90 mg/mL	Infuse over 30 minutes	PSP, PIG, AIDH
Vancomycin	Under 16 years: 15 mg/kg (max 750 mg) For critically ill or obese patients: Loading dose 25–30 mg/kg (max 1500 mg) Over 16 years: 15 mg/kg (max 750 mg) For critically ill or obese patients: Loading dose: 25–30mg/kg (max 3000 mg) Loading dose, if given, is considered to be first dose: Refer to local or statewide procedures for further guidance	Refer to local / statewide procedures for dosing guidance For patients greater than or equal to 16 years: Seek specialist advice For patients 16 years: max 750 mg	5 mg/mL	Infuse over 60–120 minutes	PIG, AIDH, CHQ-PMG-01293

Glossary

ABW	Adjusted Body Weight
AMH	*Australian Medicines Handbook July 2019*, amhonline.amh.net.au
AMHc	*Australian Medicines Handbook Children's Dosing Companion* July 2019, childrens.amh.net.au
ANZCOR	Australian Resuscitation Council, *Australian New Zealand Resuscitation Council (ANZCOR) Guidelines*; January 2016 resus.org.au/ guidelines/anzcor-guidelines
ASCIA	Australasian Society of Clinical Immunology and Allergy, July 2019, www.allergy.org.au
APLS	Australian Paediatric Life Support Australia; August 2017 www.apls.org.au
BNFc	*British National Formulary for Children* July 2019, www.medicinescomplete.com/#/browse/bnfc
CHQ	Children's Health Queensland Hospital and Health Service *Queensland Paediatric Guidelines*, August 2019, www.childrens.health.qld.gov.au/for-health-professionals/queensland-paediatric-emergency-care-qpec/queensland-paediatric-clinical-guidelines
eTG	*Therapeutic guidelines*, June 2019, tgldcdp.tg.org.au/etgAccess
IBW	Ideal Body Weight
PCCM	*Primary Clinical Care Manual - 10th edition Section 8: Paediatrics,* www.publications.qld.gov.au/dataset/primary-clinical-care-manual-10th-edition
PIG	The Royal Children's Hospital Melbourne *Paediatric Injectable Guidelines* 2019 July 2019, pig.rch.org.au/monographs
PSP	Peadiatric Sepsis Pathway
QAS	*Queensland ambulance service field reference guide*
QCH	*Queensland Children's Hospital Paediatric Emergency Drug Preparation Guide*
QHG	Queensland health guideline *Acute behavioural disturbance in Emergency Departments,* www.health.qld.gov.au/__data/assets/pdf_file/0031/629491/qh-gdl-438.pdf
RCH	The Royal Children's Hospital Melbourne *Royal Children's Hospital Clinical Guidelines* www.rch.org.au/home

Maximal amounts of solutions to be Injected into Muscle Tissue CREDD consensus
For more infomation, refer to *Clinical Guidelines (Nursing) : Intramuscular Injections* (rch.org.au) and *CHQ-PROC-01039 Medication administration*.
References: *CHQ-PROC-01039, RCH Intramuscular Injection* (rch.org.au), Hockenberry, M. & Wilson, D. (2018). *Wong's Nursing Care of Infants and Children*. (11th ed.) St Louis: Mosby

Rationale for consensus decisions

Anaphylaxis
In line with the latest ASCIA recommendations January 2023 we have decided to apply dose banding to Intramuscular Adrenaline.

The minimum dose of 100 microg (0.1 mL of 1:1000) recommended by both ANZCOR and ASCIA aims to remove the risk of error when drawing up volumes smaller than 0.1 mL.

It is acknowledged that 100 microg would be a large dose for a small infant below 7.5 kg.

This will result in pallor and tachycardia. This is acknowledged in the *ASCIA Guidelines – Acute Management of Anaphylaxis*.

www.allergy.org.au/hp/papers/acute-management-of-anaphylaxis-guidelines

"Infants with anaphylaxis may retain pallor despite 2–3 doses of adrenaline, and this can resolve without further doses. More than 2–3 doses of Adrenaline in infants may cause hypertension and tachycardia, which is often misinterpreted as an ongoing cardiovascular compromise or anaphylaxis. Blood pressure measurement can provide a guide to the effectiveness of treatment, to check if additional doses of adrenaline are required."

Mini-Jets
Due to unreliable availability we have opted to prepare most commonly used resuscitation drugs e.g. Adrenaline and Atropine instead of using mini-jets.

Metaraminol
We have recommended the use of a pre-prepared diluted solution of Metaraminol 5 mg/10 mL = 500 microg/mL available through central pharmacy. This is to minimise the steps that would be involved in preparing the medication from the 10 mg/mL vial.

Intravenous Salbutamol
The current evidence to support the Salbutamol IV bolus and infusion dosing is limited and practice varies considerably throughout Australia. The dosages contained in this book align with the latest *Queensland Paediatric Emergency Care Asthma Guideline*.

Due to the potential significant side effects of Salbutamol toxicity and recent new evidence from a study published in 2022 "Optimising intravenous salbutamol in children: a phase 2 study" Walsh S, et al. Arch Dis Child 2022;0:1–7. doi: 10.1136/archdischild-2022-324008 we have chosen to lower both the loading and continuous infusion dose.

Higher doses may be delivered in conjunction with consultation of a Paediatric Intensive Care specialist.

Morphine
Morphine is available in a variety of concentrations.
To standardise preparation instructions, we have recommended using the readily available 10 mg/mL preparation to produce the final concentration of 1 mg/mL. If an alternate concentration of morphine is used it will be necessary to change the diluent volume to produce a final concentration of 1 mg/mL.

Insulin and Glucose
In response to several requests we reviewed the option to administer a faster dose of Glucose and Insulin. The context was a paediatric patient in cardiac arrest or cardiac instability secondary to hyperkalaemia. The review included current literature and protocols. The conclusion of the team is:

- Hyperkalaemia is a very rare cause of paediatric cardiac arrest less than 0.6% of cases.
- There is a very limited evidence base for of Insulin and Glucose in hyperkalaemia management.
- Paediatric emergency management plans of Royal Children's Hospital and Starship Children's Hospital reference a "slow push dose".
- Adult emergency practice is to give 50 mls of 50% Glucose with 10 units of Insulin.
- The paediatric patient has a high risk of becoming hypoglycaemic when unwell.
- Insulin should be used with caution due to high risk of hypoglycaemia.
- Endogenous Insulin response to Glucose bolus "may" be sufficient.
- Glucose and Insulin will only lower Potassium level by 0.6–1.2 mmol/L

Consensus
Glucose concentration should be 10% volume 5 mL/kg
Significant risk of hypertonic fluid administration and the challenges of extravasation using stronger concentrations of Glucose. Insulin dose 0.1 units/kg to be given only after bolus of Glucose given. A standard concentration of Insulin 1 unit/ml to be prepared in a 10 ml mothership syringe maximum of 10 units.

Authors and acknowledgements

This is the third version of CREDD. Since its first publication in November 2019, CREDD has become an established resource in managing critically unwell children in Queensland.

The initial version was developed by a multi-disciplinary group of clinicians from a wide range of facilities throughout Queensland. These clinicians, supporting organisations and external inspirations for the original development can be found in the *Historical acknowledgment* section.

The ongoing collation of feedback review and maintenance and editing of CREDD is lead by the following:

Medical lead
- Dr Christa Bell – Emergency and Paediatric Emergency Physician – Gold Coast University Hospital (GCUH)

Nursing lead
- Lauren Morgan – CNC– Queensland Children's Hospital

Pharmacy leads
- Karyn Dahms – Pharmacist Advanced – Women's, Newborns and Children's Services – GCUH
- Kayla Doyle, Senior Paediatric Pharmacist Operational Portfolio – Sunshine Coast HHS

Graphic design
- Megan Drew – Graphic Designer – Children's Health Queensland

The CREDD team consult with key stakeholders to ensure the resource remains consistent with the *Queensland Paediatric Emergency Care Guidelines* and *The Children's Intensive care Drug Dosage* (CIDD) infusion resource.

Antimicrobial section
A significant addition to CREDD version 3 is the Antimicrobial section. This body of work has been done in response to feedback from the Queensland Sepsis Program. The Antimicrobials included are current to the Queensland *Paediatric Sepsis Pathway* (V 2.00 11/2023).

The database has been created by the CREDD team leads.

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Salbutamol review team
Dr Paula Lister, Dr Christian Stocker, Dr Sharon Anne McAuley, Dr Deborah Shellshear, Dr Fiona Thomson, Michele Cree, Vanessa Muller, Chloe Hall, Quyen Tu, Shona Hubsher, Dr Sadasivam Suresh, Dr Sebastian Rimpau, Lucie Scott.

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Historical acknowledgements

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CREDD team leads and steering committee

- Dr Christa Bell, Emergency Physician and Paediatric Emergency Physician – Medical lead, Gold Coast University Hospital (GCUH)
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- Kayla Doyle, Senior Paediatric Pharmacist Operational Portfolio – Pharmacy lead, Sunshine Coast University Hospital (SCUH)
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CREDD database calculator creation

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Ann-Maree Brady, Clinical Nurse Consultant, Children's Health Queensland Retrieval Services (CHQRS); Michele Cree, Pharmacist Critical Care Lead, Queensland Children's Hospital (QCH); Louise Dodson, Nurse Educator, Simulation Training Optimising Resuscitation for Kids (STORK); Lisa Gabb, Nurse Educator, CHQRS; Dr Paul Holmes, Director, CHQRS; Loretta Scaini, Nurse Educator Paediatric Intensive Care Unit, QCH; Dr Fiona Thomson, Clinical Director Emergency, QCH and Cochair, Queensland Emergency Care of Children Working Group.

Gold Coast Hospital and Health Service
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Sunshine Coast Hospital and Health Service
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Travis Cole, Nurse Educator Emergency, The Townsville Hospital (TTH), Queensland Emergency Care of Children Working Group, Meghan Fitzpatrick, Senior Pharmacist Emergency, TTH.

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The concept and layout have been endorsed by the Medicines Advisory Committee at GCUH, QCH, SCUH and TTH.

fluid recipes

Fluid recipes

Fluid ordered	Available as premade bag	Starting fluid			Additive		Final volume after mixing
			Volume required	Volume to remove and discard		Volume to add	
Sodium Chloride 0.9% with Glucose 5%	Use premade bag						1000 mL
Sodium Chloride 0.9% with Glucose 5%	If premade bag is not available	Sodium Chloride 0.9%	1000 mL	100 mL	Glucose 50%	100 mL	1000 mL
Sodium Chloride 0.9% with Glucose 10%	**No**	Sodium Chloride 0.9% with 5% Glucose	1000 mL	100 mL	Glucose 50%	100 mL	1000 mL
Sodium Chloride 0.9% with Glucose 10%	If premade not available	Sodium Chloride 0.9%	1000 mL	200 mL	Glucose 50%	200 mL	1000 mL
Sodium Chloride 0.9% with Glucose 12.5%	**No**	Sodium Chloride 0.9%	1000 mL	250 mL	Glucose 50%	250 mL	1000 mL
Sodium Chloride 0.9% with Glucose 5% and Potassium Chloride 20 mmol/L	Use premade bag						1000 mL
Sodium Chloride 0.9% with Glucose 5% and Potassium Chloride 20 mmol/L	If premade bag is not available	Sodium Chloride 0.9% with Potassium Chloride 20 mmol	1000 mL	100 mL	Glucose 50%	100 mL	1000 mL
Sodium Chloride 0.9% with Glucose 10% and Potassium Chloride 20 mmol/L	**No**	Sodium Chloride 0.9% with Glucose 5% and Potassium Chloride 20 mmol/L	1000 mL	100 mL	Glucose 50%	100 mL	1000 mL
Sodium Chloride 0.9% with Glucose 10% and Potassium Chloride 20 mmol/L	**No**	Sodium Chloride 0.9% with Potassium Chloride 20 mmol	1000 mL	200 mL	Glucose 50%	200 mL	1000 mL
Sodium Chloride 0.9% with Glucose 5% and Potassium Chloride 40 mmol/L	**No**	Sodium Chloride 0.9% with Potassium Chloride 40 mmol/L	1000 mL	100 mL	Glucose 50%	100 mL	1000 mL
Sodium Chloride 0.9% with Glucose 10% and Potassium Chloride 40 mmol/L	**No**	Sodium Chloride 0.9% with Potassium Chloride 40 mmol/L	1000 mL	200 mL	Glucose 50%	200 mL	1000 mL

Please be aware than when preparing fluids of different glucose concentrations in potassium containing base fluids, the removal of the required amount of the starting fluid will also result in removal of potassium. This reduces the concentration of potassium in the final product. When removing 100mL of solution, potassium concentration is reduced by 10%. When removing 200 mL of solution, potassium concentration is reduced by 20%.

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