Paediatric Anaesthesia

(for the non-specialist centre)

Version 1.1
2021

MAY CONTAIN ERRORS
IT IS YOUR RESPONSIBILITY
TO VERIFY ALL THAT IS CONTAINED.
AUTHORS DO NOT TAKE ANY
RESPONSIBILITY FOR ACCURACY AND
ACCEPT NO LIABILITY FOR ANY HARM THAT
FLOWS FROM THIS BOOKLET'S USE.

ASCAR

Disclaimer

Our cognitive aids and multimedia are not designed to be guidelines and should not be used as such.

The information contained within our website, cognitive aids, crisis manuals, videos and other multimedia (including social media) has been collated and prepared by ASCAR group for the sole purpose of making health information available to senior anaesthetists and critical care doctors primarily in Australia, who are responsible for treating patients in a hospital or clinical setting.

The information contained within our website, cognitive aids, crisis manuals, videos, and other multimedia (including social media) is not a substitute for independent clinical judgment. Nothing contained within our website, cognitive aids, crisis manuals, videos, and other multimedia (including social media) is intended to be used to diagnose, treat, cure, or prevent any disease, nor should it be used for therapeutic purposes or as a substitute for clinical judgement of a health professional.

Clinicians should use their own judgment when making use of this material and should carefully evaluate its currency, completeness and relevance for their own purposes as well as the extent to which this material can or should be modified to suit the treatment of a particular patient.

While steps have been taken to ensure the accuracy of the information contained in our website, cognitive aids, crisis manuals, videos and other multimedia (including social media), ASCAR GROUP does not guarantee, and accepts no legal liability whatsoever or howsoever arising from or connected to, the accuracy, currency, completeness of any material contained in our website, cognitive aids, crisis manuals, videos and other multimedia (including social media). This includes any liability that may flow directly or indirectly from the modification of the information contained in these aforementioned mediums. This also includes without limitation any damages as a result of lost profits, loss of goodwill, work stoppage, computer failure or computer malfunction (for instance, where received electronically).

The authors are not responsible for the user's use or delivery of the information in the course of their training or practice or for any other purpose, over which the authors have no control.

Section Contents

Dosing

Tools & Tips

Crisis Aids

Forward

'Paediatric Anaesthesia for the Non-specialist Centre' is the kind of guide I would have found immensely reassuring to have at arm's reach at many points during my career - concise, informative, very well laid out - it is a clever and approachable rapid reference aid for the occasional paediatric or adult anaesthetist, trainee, and nurse preparing to care for paediatric patients.

The authors have successfully crafted a booklet that presents the practical knowledge and wisdom that paediatric anaesthetists use on a day to day basis in an easy to read and intuitive format. From ergonomically arranging the theatre space for induction to considerations when dealing with a child who presents with an URTI, to the rapid reference sizing and dosing guides, this booklet will assist the user make good practical management plans and choices whilst caring for our youngest patients.

Dr Andrea Santoro FANZCA, B Med, B Med Sci.
Staff Specialist Paediatric Anaesthetist
The Children's Hospital at Westmead 212 Hawkesbury Rd, Westmead, 2145

Acknowledgements

With the hugest of thanks to Dr Andrea Santoro, Dr Ben Olesnicky, Dr Jonothon Brock, Dr Adriana Davis, Dr Jim Mcdonald, Dr Gene Lee, Dr Blake Kesby and Dr Craig Garfinkel at Royal North Shore Hospital for all the encouragement, wisdom and experience (as well as endless reviews) that enabled this project to reach fruition. We remain ever-grateful.

We would also like to sincerely thank the Anaesthetic Department at Children's Hospital Westmead who continue to dedicate so much of their time and effort in providing anaesthetic excellence for some of our most vulnerable patients. Without the learning opportunities provided and your overall approach to wellbeing this project simply would not have been possible. Thank you.

Introduction

This book of cognitive aids has been designed to assist the experienced non-paediatric anaesthetist when they are confronted with a child in the operating room. To many, the unfamiliarity can be particularly daunting.

This booklet should be considered in the same light as any other educational resource that the clinician encounters and be viewed with a similar healthy skepticism. This booklet should certainly not be used as a recipe book or replace the clinical judgement that comes with experience. Similarly it is far from a replete manual of authority on paediatric anaesthesia.

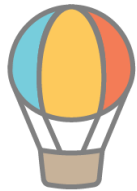
Much effort has gone into fact-checking as of early 2021, however this process does not guarantee accuracy by any means. We also recognise there are multiple ways to skin a cat and some may disagree with the information contained in this booklet.

Where possible, we encourage you to verify all doses and clinical frameworks with other existing sources including local and national guidelines.

We are an organisation intent on supporting clinicians on the frontlines and accordingly we welcome any feedback (including recognition of errors). We will always strive to take on board your suggestions and incorporate improvements where possible in future versions.

Thank you for your support.

ASCAR group
Ascargroup.com



Key numbers

ASCAR

ETT SIZE - have a size up/down ready:

1 - 2 kg:	***2.5 - 3 uncuffed***
2-3 kg:	***3 uncuffed***
Term:	***3 cuffed*** *or* ***3.5 uncuffed***
6 mo:	***3 cuffed***
1 year:	***3.5 cuffed***
2 years:	***4 cuffed***
3 years:	***4.5 - 5***
4 years:	***4.5 - 5***
5 years:	***5 - 5.5***
6 years:	***5 - 5.5***
7 years:	***6 - 6.5***
8 - 12 years:	***6 - 6.5***
13 years:	***6.5 - 7***
14 years:	***7 - 7.5***

ETT DEPTH:

2 kg:	*7 - 8 cm*
3 kg:	*9 cm*
4 kg:	*10 cm*

Above this, use ETT size x3

Suction Catheter (Fr):

Use ETT size x 2

LMA:

< 5 kg:	*1*
5-10 kg:	*1.5*
10-20 kg:	*2*
20-30 kg:	*2.5*
30-50 kg:	*3*

ART LINE SIZES

< 3 kg	*24G*
3 - 50 kg	*22G*

NEURO GOALS (Sydney Children's Hospital:

CPP (<1 yo)	*45-50 mmHg*
CPP (1-10 yo)	*50-60 mmHg*
CPP (> 10 yo)	*60-70 mmHg*

Check cuff pressures routinely with all cuffed tubes

For children > 1; age is a better guide for ETT size than weight

Pre-med

ASCAR

Midazolam	**PO: 0.5 mg/kg (max 15mg)** Onset 30 mins Duration 60 mins	Risk of paradoxical agitation. Unpleasant taste, disguise with apple juice.
Ketamine	**PO: 5-8 mg/kg** **IM: 4-5 mg/kg** Onset 15 mins Duration 3 hrs	Salivation and hallucinations. In high doses can cause PONV.
Clonidine	**PO: 4 mcg/kg** **(max 200 mcg)** Onset 45 mins Duration 90 mins	Tasteless. **Slower onset** May cause bradycardia.
Dexmede-tomidine	**IN: 1-4 mcg/kg** **(max 200mcg)** Onset 25 mins Duration 135 mins	Assistant to hold head. Use Nasal MAD device and 1mL Syringe. May cause bradycardia.
Midaz-Ket	**Midazolam: PO 0.25 mg/kg** **Ketamine: PO 3 mg/kg**	Best of both worlds. Faster onset More reliable effect than sole agent
EMLA	**For kids > 3 months.** Takes **60 - 90 mins** to work. Remove at 90 mins max. Effect lasts 2 hours.	**Angel cream alternative** for > 1 month old. Works in 30-45 mins. Can last 3-4 hours. Can cause erythema.
Nitrous Oxide	**50% Nitrous. 50% Oxygen**	**For IVC insertion**

General principles:

- Very **little role in giving < 2.5 years of age -** won't remember
- Ensure given in monitored environment - close observation post dose
- **Midazolam alone is fine** for most patients, if no previous issue.
- Beware of patients on **Macrolides, Antifungals, Ca2+ Blockers**, these drugs can inhibit CYP3A4 and dangerously increase Midazolam plasma levels.

Term Newborn = 4kg

EQUIPMENT

ETT:	2.5 - 3 - 3.5	**ETT depth:**	8 - 10 cm
LMA:	1	**OG/NGT:**	8 F
Blade:	Miller 0 and 1	**ETT suction:**	6 F

Circuit:	T-piece or Paeds circle	**Bougie:**	6Fr Stylet or 2.3 x 500mm bougie	**OPA:**	40mm (pink)	**NPA:**	12 - 14F	**Bag:**	500mL

INDUCTION

(Doses for IV administration unless otherwise stated. Doses refer to well children. Caution in shock)

Drug	Conc	Dose		Vol (mL)
Propofol	10 mg/mL	3 mg/kg	Caution	
		5 mg/kg	Caution	
Ketamine	10 mg/mL	1 mg/kg	4 mg	**4 mL**
		2 mg/kg	Caution	

Drug	Conc	Dose		Vol (mL)
Rocuronium	10 mg/mL	0.6 mg/kg	2.4 mg	**0.3 mL**
		1.2 mg/kg	4.8 mg	**0.5 mL**
Vecuronium	1 mg/mL	100 mcg/kg	400 mcg	**0.4 mL**

Drug	Dose	Conc	Final Dose	Volume
Fentanyl	*1-5 mcg/kg*	10 mcg/mL	4 - 20 mcg	**0.4 - 2 mL**
Oxycodone	*0.1 mg/kg*	1 mg/mL	0.4 mg	**0.4 mL**
Paracetamol	*10 mg/kg*	10 mg/mL	40 mg	**4 mL**
Parecoxib	*0.5mg/kg*	Not recommended		
Cefazolin	*25 mg/kg*	100 mg/mL	100 mg	**1 mL**
Metaraminol	*10mcg/kg*	40 mcg. Consider increasing HR first		
Dexamethasone	*0.15 mg/kg*	1 mg/mL	0.6 mg	**0.6 mL**
Ondansetron	*0.15 mg/kg*	Not recommended		

Term Newborn = 4 kg

RESUSCITATION *(Doses for IV administration unless otherwise stated)*

Adrenaline 1:10,000	10 mcg/kg	**40 mcg** / **0.4 mL**	**TV** 6-8mL/kg 24 - 36 mL	**HR** 110 - 160
Atropine 100mcg/mL	20 mcg/kg	**80 mcg** / **0.8 mL**	**RR** 30 - 50	**SBP** 50 - 90
Sux IV (neat)	2 mg/kg	**8 mg** / **0.2 mL**	**Defib (Arrest) (4J / kg)** 20 Joules	**Cardioversion (1J / kg)** 4 Joules
Sux IM (neat)	4 mg/kg	**16 mg** / **0.4 mL**		

FLUIDS + TRANSFUSION

Crystalloid	Blood	FFP	Platelets	Cryo
80 mL (20 mL/kg)	**40 mL** (10 mL/kg)	**60 mL** (15 mL/kg)	**40 mL** (10 mL/kg)	**20 mL** (5 mL/kg)

Intra-op Fluids	1st hour (10 mL/kg) **40 mL**	Next hrs (5 mL/kg) **20 mL /hr**	**CaCl 10%**	0.2 mL/kg	**0.8 mL**
			Est. Blood Vol	80 mL/kg	**320 mL**

OTHER *(Doses for IV administration unless otherwise stated)*

TXA	15 mg/kg	**60 mg**	**MgSO4 50%**	0.1 mL/Kg	**0.4 mL**
Amiodarone	5 mg/kg (max 300mg)	**20 mg**	**Salbutamol**	neb	-
Adenosine	0.1-0.2mg/kg	**0.4 - 0.8 mg**	**Mannitol**	0.5 g/kg	- / -
Neostigmine /Atropine	Draw up separately	Draw up separately	**Hypertonic Saline (3%)**	3 mL/kg	**12 mL**
Midazolam	0.1 mg/kg	**0.4 mg**	**Dextrose (10%)**	2 mL/kg	**8 mL**

ANAESTHETIC CRISES *(Doses for IV administration unless otherwise stated)*

Dantrolene initial bolus	2.5 mg/kg	**Seek advice**	**Intralipid 20% initial bolus**	1.5 mL/kg	**Seek advice**
Bicarbonate	1mmol/kg	**4 mmoL**	**Intralipid 20% initial infusion**	15 mL/kg/hr	**Seek advice**

6 months = 8 kg

EQUIPMENT

ETT:	3 - 3.5	**ETT depth:**	8 - 10 cm
LMA:	1	**OG/NGT:**	8 F
Blade:	Miller 1	**ETT suction:**	6 F

Circuit:	T-piece or Paeds circle	**Bougie:**	6Fr Stylet or 2.3 x 500mm bougie	**OPA:**	50mm (blue)	**NPA:**	14-16F	**Bag:**	500mL

INDUCTION *(Doses for IV administration unless otherwise stated. Doses refer to well children. Caution in shock)*

Drug	Conc	Dose		Vol (mL)
Propofol	10 mg/mL	3 mg/kg	24 mg	**2.4 mL**
		5 mg/kg	40 mg	**4 mL**
Ketamine	10 mg/mL	1 mg/kg	8 mg	**0.8 mL**
		2 mg/kg	16 mg	**1.6 mL**

Drug	Conc	Dose		Vol (mL)
Rocuronium	10 mg/mL	0.6 mg/kg	4.8 mg	**0.5 mL**
		1.2 mg/kg	9.6 mg	**1 mL**
Vecuronium	1 mg/mL	0.1 mg/kg	0.8 mg	**0.8 mL**

Drug	Dose	Conc	Final Dose	Volume
Fentanyl	*1-5 mcg/kg*	10 mcg/mL	8 - 40 mcg	**0.8 - 4 mL**
Oxycodone	*0.1 mg/kg*	1 mg/mL	0.8 mg	**0.8 mL**
Paracetamol	*15 mg/kg*	10 mg/mL	120 mg	**12 mL**
Parecoxib	*0.5mg/kg*	4 mg/mL	4 mg	**1 mL**
Cefazolin	*25 mg/kg*	100 mg/mL	200 mg	**2 mL**
Metaraminol	*10mcg/kg*		80 mcg	
Dexamethasone	*0.15 mg/kg*	1 mg/mL	1.2 mg	**1.2 mL**
Ondansetron	*0.15 mg/kg*	1 mg/mL	1.2 mg	**1.2 mL**

6 months = 8 kg

RESUSCITATION *(Doses for IV administration unless otherwise stated)*

Adrenaline 1:10,000	10 mcg/kg	**80 mcg** / **0.8 mL**	**TV** 6-8mL/kg 45 - 65 mL	**HR** 110 - 160
Atropine 100mcg/mL	20 mcg/kg	**160 mcg** / **1.6 mL**	**RR** 30 - 40	**SBP** 50 - 90
Sux IV 10mg/mL	2 mg/kg	**16 mg** / **1.6 mL**	**Defib (Arrest) (4J / kg)** 30 Joules	**Cardioversion (1J / kg)** 8 Joules
Sux IM (neat)	4 mg/kg	**32 mg** / **0.6 mL**		

FLUIDS + TRANSFUSION

Crystalloid	Blood	FFP	Platelets	Cryo
160 mL (20 mL/kg)	**80 mL** (10 mL/kg)	**120 mL** (15 mL/kg)	**80 mL** (10 mL/kg)	**40 mL** (5 mL/kg)

Intra-op Fluids	1st hour (10 mL/kg) **80 mL**	Next hrs (5 mL/kg) **40 mL /hr**	**CaCl 10%**	0.2 mL/kg	**1.6 mL**
			Est. Blood Vol	80 mL/kg	**640 mL**

OTHER *(Doses for IV administration unless otherwise stated)*

TXA	15 mg/kg	**120 mg**	**MgSO4 50%**	0.1 mL/Kg	**0.8 mL**
Amiodarone	5 mg/kg (max 300mg)	**40 mg**	**Salbutamol**	neb	**2.5mg or 6 puffs**
Adenosine	0.1-0.2mg/kg	**0.8 - 1.6 mg**	**Mannitol**	0.5 g/kg	**4 g** / **20 mL**
Neostigmine 2.5mg + Atropine 1.2mg	Dilute to 5ml 0.1mL / kg	**0.8 mL**	**Hypertonic Saline (3%)**	3 mL/kg	**24 mL**
Midazolam	0.1 mg/kg	**0.8 mg**	**Dextrose (10%)**	2 mL/kg	**16mL** **or 4 mL D50W**

ANAESTHETIC CRISES *(Doses for IV administration unless otherwise stated)*

Dantrolene INITIAL bolus	2.5 mg/kg	**20 mg**	**Intralipid 20% INITIAL bolus**	1.5 mL/kg	**12 mL**
Bicarbonate	1mmol/kg	**8 mmoL**	**Intralipid 20% INITIAL infusion**	15 mL/kg/hr	**120 mL/hr**

1 year = 10 kg

EQUIPMENT

ETT:	3.5 - 4	**ETT depth:**	10 - 12 cm
LMA:	1.5 - 2	**OG/NGT:**	10 F
Blade:	Miller 1	**ETT suction:**	8 F

Circuit:	T-piece or Paeds circle	**Bougie:**	6Fr Stylet or 2.3 x 500mm bougie	**OPA:**	50mm (blue)	**NPA:**	16-18F	**Bag:**	500mL

INDUCTION *(Doses for IV administration unless otherwise stated. Doses refer to well children. Caution in shock)*

Drug	Conc	Dose		Vol (mL)
Propofol	10 mg/mL	3 mg/kg	30 mg	**3 mL**
		5 mg/kg	50 mg	**5 mL**
Ketamine	10 mg/mL	1 mg/kg	10 mg	**1 mL**
		2 mg/kg	20 mg	**2 mL**

Drug	Conc	Dose		Vol (mL)
Rocuronium	10 mg/mL	0.6 mg/kg	6 mg	**0.6 mL**
		1.2 mg/kg	12 mg	**1.2 mL**
Vecuronium	1 mg/mL	0.1 mg/kg	1 mg	**1 mL**

Drug	Dose	Conc	Final Dose	Volume
Fentanyl	*1-5 mcg/kg*	10 mcg/mL	10 - 50 mcg	**1 - 5 mL**
Oxycodone	*0.1 mg/kg*	1 mg/mL	1 mg	**1 mL**
Paracetamol	*15 mg/kg*	10 mg/mL	150 mg	**15 mL**
Parecoxib	*0.5mg/kg*	4 mg/mL	5 mg	**1.3 mL**
Cefazolin	*25 mg/kg*	100 mg/mL	250 mg	**2.5 mL**
Metaraminol	*10mcg/kg*		100 mcg	
Dexamethasone	*0.15 mg/kg*	1 mg/mL	1.5 mg	**1.5 mL**
Ondansetron	*0.15 mg/kg*	1 mg/mL	1.5 mg	**1.5 mL**

1 year = 10 kg

RESUSCITATION *(Doses for IV administration unless otherwise stated)*

Adrenaline 1:10,000	10 mcg/kg	**100 mcg** / **1 mL**	**TV** 6-8mL/kg 60 - 80 mL	**HR** 100 - 150
Atropine 100mcg/mL	20 mcg/kg	**200 mcg** / **2 mL**	**RR** 25	**SBP** 60 - 90
Sux IV 10mg/mL	2 mg/kg	**20 mg** / **2 mL**	**Defib (Arrest) (4J / kg)**	**Cardioversion (1J / kg)**
Sux IM (neat)	4 mg/kg	**40 mg** / **0.8 mL**	40 Joules	10 Joules

FLUIDS + TRANSFUSION

Crystalloid	Blood	FFP	Platelets	Cryo
200 mL (20 mL/kg)	**100 mL** (10 mL/kg)	**150 mL** (15 mL/kg)	**100 mL** (10 mL/kg)	**50 mL** (5 mL/kg)

Intra-op Fluids	1st hour (10 mL/kg) **100 mL**	Next hrs (5 mL/kg) **50 mL /hr**	**CaCl 10%**	0.2 mL/kg	**2 mL**
			Est. Blood Vol	80 mL/kg	**800 mL**

OTHER *(Doses for IV administration unless otherwise stated)*

TXA	15 mg/kg	**150 mg**	**MgSO4 50%**	0.1 mL/Kg	**1 mL**
Amiodarone	5 mg/kg (max 300mg)	**50 mg**	**Salbutamol**	neb	**2.5mg or 6 puffs**
Adenosine	0.1-0.2mg/kg	**1 - 2 mg**	**Mannitol**	0.5 g/kg	**5 g** / **25 mL**
Neostigmine 2.5mg + Atropine 1.2mg	Dilute to 5ml 0.1mL / kg	**1 mL**	**Hypertonic Saline (3%)**	3 mL/kg	**30 mL**
Midazolam	0.1 mg/kg	**1 mg**	**Dextrose (10%)**	2 mL/kg	**20 mL** **or 5 mL D50W**

ANAESTHETIC CRISES *(Doses for IV administration unless otherwise stated)*

Dantrolene INITIAL bolus	2.5 mg/kg	**25 mg**	**Intralipid 20% INITIAL bolus**	1.5 mL/kg	**15 mL**
Bicarbonate	1mmol/kg	**10 mmoL**	**Intralipid 20% INITIAL infusion**	15 mL/kg/hr	**150 mL/hr**

2 year = 12 kg

EQUIPMENT

ETT:	4 - 4.5	**ETT depth:**	13 cm
LMA:	2	**OG/NGT:**	12 F
Blade:	MAC 2	**ETT suction:**	8 F

Circuit:	T-piece or Paeds circle	**Bougie:**	10Fr Stylet or 3.2 x 500mm bougie	**OPA:**	50mm (black)	**NPA:**	18-19F	**Bag:**	500mL

INDUCTION *(Doses for IV administration unless otherwise stated. Doses refer to well children. Caution in shock)*

Drug	Conc	Dose		Vol (mL)
Propofol	10 mg/mL	3 mg/kg	36 mg	**3.6 mL**
		5 mg/kg	60 mg	**5.5 mL**
Ketamine	10 mg/mL	1 mg/kg	12 mg	**1.2 mL**
		2 mg/kg	24 mg	**2.4 mL**

Drug	Conc	Dose		Vol (mL)
Rocuronium	10 mg/mL	0.6 mg/kg	7 mg	**0.7 mL**
		1.2 mg/kg	14 mg	**1.4 mL**
Vecuronium	1 mg/mL	0.1 mg/kg	1.2 mg	**1.2 mL**

Drug	Dose	Conc	Final Dose	Volume
Fentanyl	*1-5 mcg/kg*	10 mcg/mL	12 - 60 mcg	**1.2 - 6 mL**
Oxycodone	*0.1 mg/kg*	1 mg/mL	1.2 mg	**1.2 mL**
Paracetamol	*15 mg/kg*	10 mg/mL	180 mg	**18 mL**
Parecoxib	*0.5mg/kg*	4 mg/mL	6 mg	**1.5 mL**
Cefazolin	*25 mg/kg*	100 mg/mL	300 mg	**3 mL**
Metaraminol	*10mcg/kg*		120 mcg	
Dexamethasone	*0.15 mg/kg*	1 mg/mL	1.8 mg	**1.8 mL**
Ondansetron	*0.15 mg/kg*	1 mg/mL	1.8 mg	**1.8 mL**

2 year = 12 kg

RESUSCITATION *(Doses for IV administration unless otherwise stated)*

Adrenaline 1:10,000	10 mcg/kg	**120 mcg** / **1 mL**	**TV** 6-8mL/kg 75 - 100 mL	**HR** 100 - 150
Atropine 100mcg/mL	20 mcg/kg	**240 mcg** / **2.4 mL**	**RR** 20 - 25	**SBP** 60 - 90
Sux IV 10mg/mL	2 mg/kg	**24 mg** / **2.4 mL**	**Defib (Arrest) (4J / kg)**	**Cardioversion (1J / kg)**
Sux IM (neat)	4 mg/kg	**48 mg** / **1 mL**	48 Joules	12 Joules

FLUIDS + TRANSFUSION

Crystalloid	Blood	FFP	Platelets	Cryo
240 mL (20 mL/kg)	**120 mL** (10 mL/kg)	**180 mL** (15 mL/kg)	**120 mL** (10 mL/kg)	**60 mL** (5 mL/kg)

Intra-op Fluids	1st hour (10 mL/kg) **120 mL**	Next hrs (5 mL/kg) **60 mL /hr**	**CaCl 10%**	0.2 mL/kg	**2.4 mL**
			Est. Blood Vol	70 mL/kg	**840 mL**

OTHER *(Doses for IV administration unless otherwise stated)*

TXA	15 mg/kg	**180 mg**	**MgSO4 50%**	0.1 mL/Kg	**1.2 mL**
Amiodarone	5 mg/kg (max 300mg)	**60 mg**	**Salbutamol**	neb	**2.5mg or 6 puffs**
Adenosine	0.1-0.2mg/kg	**1.2 - 2.4 mg**	**Mannitol**	0.5 g/kg	**6 g** / **30 mL**
Neostigmine 2.5mg + Atropine 1.2mg	Dilute to 5ml 0.1mL / kg	**1.2 mL**	**Hypertonic Saline (3%)**	3 mL/kg	**36 mL**
Midazolam	0.1 mg/kg	**1.2 mg**	**Dextrose (10%)**	2 mL/kg	**24 mL** **or 6 mL D50W**

ANAESTHETIC CRISES *(Doses for IV administration unless otherwise stated)*

Dantrolene INITIAL bolus	2.5 mg/kg	**25 mg**	**Intralipid 20% INITIAL bolus**	1.5 mL/kg	**15 mL**
Bicarbonate	1mmol/kg	**10 mmoL**	**Intralipid 20% INITIAL infusion**	15 mL/kg/hr	**150 mL/hr**

3 year = 15 kg

EQUIPMENT

ETT:	4.5 - 5	**ETT depth:**	13 - 14cm
LMA:	2	**OG/NGT:**	12 F
Blade:	MAC 2	**ETT suction:**	8 / 10 F

Circuit:	T-piece or Paeds circle	**Bougie:**	10Fr Stylet or 3.2 x 500mm bougie	**OPA:**	50mm (black)	**NPA:**	19 - 20F	**Bag:**	500mL

INDUCTION *(Doses for IV administration unless otherwise stated. Doses refer to well children. Caution in shock)*

Drug	Conc	Dose		Vol (mL)
Propofol	10 mg/mL	3 mg/kg	45 mg	**4.5 mL**
		5 mg/kg	75 mg	**7.5 mL**
Ketamine	10 mg/mL	1 mg/kg	15 mg	**1.5 mL**
		2 mg/kg	30 mg	**3 mL**

Drug	Conc	Dose		Vol (mL)
Rocuronium	10 mg/mL	0.6 mg/kg	9 mg	**0.9 mL**
		1.2 mg/kg	18 mg	**1.8 mL**
Vecuronium	1 mg/mL	0.1 mg/kg	1.2 mg	**1.5 mL**

Drug	Dose	Conc	Final Dose	Volume
Fentanyl	*1-5 mcg/kg*	10 mcg/mL	15 - 75 mcg	**1.5 - 7.5 mL**
Oxycodone	*0.1 mg/kg*	1 mg/mL	1.5 mg	**1.5 mL**
Paracetamol	*15 mg/kg*	10 mg/mL	225 mg	**22.5 mL**
Parecoxib	*0.5mg/kg*	4 mg/mL	7.5 mg	**2 mL**
Cefazolin	*25 mg/kg*	100 mg/mL	375 mg	**3.8 mL**
Metaraminol	*10mcg/kg*		150 mcg	
Dexamethasone	*0.15 mg/kg*	1 mg/mL	2.3 mg	**2.3 mL**
Ondansetron	*0.15 mg/kg*	1 mg/mL	2.3 mg	**2.3 mL**

3 year = 15 kg

RESUSCITATION *(Doses for IV administration unless otherwise stated)*

Adrenaline 1:10,000	10 mcg/kg	**150 mcg** **1.5 mL**	**TV** 6-8mL/kg 120 - 150 mL	**HR** 80 - 140
Atropine 100mcg/mL	20 mcg/kg	**300 mcg** **3 mL**	**RR** 20 - 25	**SBP** 75 - 110
Sux IV 10mg/mL	2 mg/kg	**30 mg** **3 mL**	**Defib (Arrest) (4J / kg)** 60 Joules	**Cardioversion (1J / kg)** 15 Joules
Sux IM (neat)	4 mg/kg	**60 mg** **1.2 mL**		

FLUIDS + TRANSFUSION

Crystalloid	Blood	FFP	Platelets	Cryo
300 mL (20 mL/kg)	**150 mL** (10 mL/kg)	**225 mL** (15 mL/kg)	**150 mL** (10 mL/kg)	**75 mL** (5 mL/kg)

Intra-op Fluids	1st hour (10 mL/kg) **150 mL**	Next hrs (5 mL/kg) **75 mL /hr**	**CaCl 10%**	0.2 mL/kg	**3 mL**
			Est. Blood Vol	70 mL/kg	**1050 mL**

OTHER *(Doses for IV administration unless otherwise stated)*

TXA	15 mg/kg	**225 mg**	**MgSO4 50%**	0.1 mL/Kg	**1.5 mL**
Amiodarone	5 mg/kg (max 300mg)	**75 mg**	**Salbutamol**	neb	**2.5mg or 6 puffs**
Adenosine	0.1-0.2mg/kg	**1.5 - 3 mg**	**Mannitol**	0.5 g/kg	**7.5 g** **38 mL**
Neostigmine 2.5mg + Atropine 1.2mg	Dilute to 5ml 0.1mL / kg	**1.5 mL**	**Hypertonic Saline (3%)**	3 mL/kg	**45 mL**
Midazolam	0.1 mg/kg	**1.5 mg**	**Dextrose (10%)**	2 mL/kg	**30 mL** or 8 mL D50W

ANAESTHETIC CRISES *(Doses for IV administration unless otherwise stated)*

Dantrolene INITIAL bolus	2.5 mg/kg	**37.5 mg**	**Intralipid 20% INITIAL bolus**	1.5 mL/kg	**22.5 mL**
Bicarbonate	1mmol/kg	**15 mmoL**	**Intralipid 20% INITIAL infusion**	15 mL/kg/hr	**225 mL/hr**

4 year = 18 kg

EQUIPMENT

ETT:	4.5 - 5	**ETT depth:**	14cm
LMA:	2	**OG/NGT:**	12 F
Blade:	MAC 2	**ETT suction:**	8 / 10 F

Circuit:	T-piece or Paeds circle	**Bougie:**	10Fr Stylet or 3.2 x 500mm bougie	**OPA:**	60mm (black)	**NPA:**	19 - 20F	**Bag:**	500mL

INDUCTION *(Doses for IV administration unless otherwise stated. Doses refer to well children. Caution in shock)*

Drug	Conc	Dose		Vol (mL)
Propofol	10 mg/mL	3 mg/kg	54 mg	**5.4 mL**
		5 mg/kg	90 mg	**9 mL**
Ketamine	10 mg/mL	1 mg/kg	18 mg	**1.8 mL**
		2 mg/kg	36 mg	**3.6 mL**

Drug	Conc	Dose		Vol (mL)
Rocuronium	10 mg/mL	0.6 mg/kg	11 mg	**1.1 mL**
		1.2 mg/kg	22 mg	**2.2 mL**
Vecuronium	1 mg/mL	0.1 mg/kg	1.8 mg	**1.8 mL**

Drug	Dose	Conc	Final Dose	Volume
Fentanyl	*1-5 mcg/kg*	10 mcg/mL	18 - 90 mcg	**1.8 - 9 mL**
Oxycodone	*0.1 mg/kg*	1 mg/mL	1.8 mg	**1.8 mL**
Paracetamol	*15 mg/kg*	10 mg/mL	270 mg	**27 mL**
Parecoxib	*0.5mg/kg*	4 mg/mL	9 mg	**2.3 mL**
Cefazolin	*25 mg/kg*	100 mg/mL	450 mg	**4.5 mL**
Metaraminol	*10mcg/kg*		180 mcg	
Dexamethasone	*0.15 mg/kg*	1 mg/mL	2.7 mg	**2.7 mL**
Ondansetron	*0.15 mg/kg*	1 mg/mL	2.7 mg	**2.7 mL**

4 year = 18 kg

RESUSCITATION *(Doses for IV administration unless otherwise stated)*

Adrenaline 1:10,000	10 mcg/kg	**180 mcg** / **1.8 mL**	**TV** 6-8mL/kg 110 - 150 mL	**HR** 70 - 110
Atropine 100mcg/mL	20 mcg/kg	**360 mcg** / **3.6 mL**	**RR** 15 - 20	**SBP** 75 - 110
Sux IV 10mg/mL	2 mg/kg	**36 mg** / **3.6 mL**	**Defib (Arrest) (4J / kg)**	**Cardioversion (1J / kg)**
Sux IM (neat)	4 mg/kg	**72 mg** / **1.4 mL**	60 Joules	15 Joules

FLUIDS + TRANSFUSION

Crystalloid	Blood	FFP	Platelets	Cryo
360 mL (20 mL/kg)	**180 mL** (10 mL/kg)	**270 mL** (15 mL/kg)	**180 mL** (10 mL/kg)	**90 mL** (5 mL/kg)

Intra-op Fluids	1st hour (10 mL/kg) **180 mL**	Next hrs (5 mL/kg) **90 mL /hr**	**CaCl 10%**	0.2 mL/kg	**3.6 mL**
			Est. Blood Vol	70 mL/kg	**1260 mL**

OTHER *(Doses for IV administration unless otherwise stated)*

TXA	15 mg/kg	**270 mg**	**MgSO4 50%**	0.1 mL/Kg	**1.8 mL**
Amiodarone	5 mg/kg (max 300mg)	**90 mg**	**Salbutamol**	neb	**2.5mg or 6 puffs**
Adenosine	0.1-0.2mg/kg	**1.8 - 3.6 mg**	**Mannitol**	0.5 g/kg	**9 g** / **45 mL**
Neostigmine 2.5mg + Atropine 1.2mg	Dilute to 5ml 0.1mL / kg	**1.8 mL**	**Hypertonic Saline (3%)**	3 mL/kg	**54 mL**
Midazolam	0.1 mg/kg	**1.8 mg**	**Dextrose (10%)**	2 mL/kg	**36 mL** **or 10 mL D50W**

ANAESTHETIC CRISES *(Doses for IV administration unless otherwise stated)*

Dantrolene INITIAL bolus	2.5 mg/kg	**45 mg**	**Intralipid 20% INITIAL bolus**	1.5 mL/kg	**27 mL**
Bicarbonate	1mmol/kg	**18 mmoL**	**Intralipid 20% INITIAL infusion**	15 mL/kg/hr	**270 mL/hr**

5 year = 22 kg

EQUIPMENT

ETT:	5 - 5.5	**ETT depth:**	15 cm
LMA:	2 - 2.5	**OG/NGT:**	12 F
Blade:	MAC 2	**ETT suction:**	10 F

Circuit:	T-piece or Paeds circle	**Bougie:**	10Fr Stylet or 3.8 x 700mm bougie	**OPA:**	70mm (black)	**NPA:**	20 - 22F	**Bag:**	500mL

INDUCTION *(Doses for IV administration unless otherwise stated. Doses refer to well children. Caution in shock)*

Drug	Conc	Dose		Vol (mL)
Propofol	10 mg/mL	3 mg/kg	66 mg	**6.6 mL**
		5 mg/kg	110 mg	**11 mL**
Ketamine	10 mg/mL	1 mg/kg	22 mg	**2.2 mL**
		2 mg/kg	44 mg	**4.4 mL**

Drug	Conc	Dose		Vol (mL)
Rocuronium	10 mg/mL	0.6 mg/kg	13 mg	**1.3 mL**
		1.2 mg/kg	26 mg	**2.6 mL**
Vecuronium	1 mg/mL	0.1 mg/kg	2.2 mg	**2.2 mL**

Drug	Dose	Conc	Final Dose	Volume
Fentanyl	*1-5 mcg/kg*	10 mcg/mL	22 - 110 mcg	**2.2 - 11 mL**
Oxycodone	*0.1 mg/kg*	1 mg/mL	2.2 mg	**2.2 mL**
Paracetamol	*15 mg/kg*	10 mg/mL	330 mg	**33 mL**
Parecoxib	*0.5mg/kg*	4 mg/mL	11 mg	**2.8 mL**
Cefazolin	*25 mg/kg*	100 mg/mL	550 mg	**5.5 mL**
Metaraminol	*10mcg/kg*		220 mcg	
Dexamethasone	*0.15 mg/kg*	1 mg/mL	3.3 mg	**3.3 mL**
Ondansetron	*0.15 mg/kg*	1 mg/mL	3.3 mg	**3.3 mL**

5 year = 22 kg

RESUSCITATION *(Doses for IV administration unless otherwise stated)*

Adrenaline 1:10,000	10 mcg/kg	**220 mcg** / **2.2 mL**	**TV** 6-8mL/kg 135 - 180 mL	**HR** 70 - 110
Atropine 100mcg/mL	20 mcg/kg	**440 mcg** / **4.4 mL**	**RR** 15 - 20	**SBP** 75 - 110
Sux IV 10mg/mL	2 mg/kg	**44 mg** / **4.4 mL**	**Defib (Arrest) (4J / kg)** 90 Joules	**Cardioversion (1J / kg)** 25 Joules
Sux IM (neat)	4 mg/kg	**88 mg** / **1.8 mL**		

FLUIDS + TRANSFUSION

Crystalloid	Blood	FFP	Platelets	Cryo
440 mL (20 mL/kg)	**220 mL** (10 mL/kg)	**330 mL** (15 mL/kg)	**220 mL** (10 mL/kg)	**110 mL** (5 mL/kg)

Intra-op Fluids	1st hour (10 mL/kg) **220 mL**	Next hrs (5 mL/kg) **110 mL /hr**	**CaCl 10%**	0.2 mL/kg	**4.4 mL**
			Est. Blood Vol	70 mL/kg	**1540 mL**

OTHER *(Doses for IV administration unless otherwise stated)*

TXA	15 mg/kg	**330 mg**	**MgSO4 50%**	0.1 mL/Kg	**2.2 mL**
Amiodarone	5 mg/kg (max 300mg)	**110 mg**	**Salbutamol**	neb	**2.5mg or 6 puffs**
Adenosine	0.1-0.2mg/kg	**2.2 - 4.4 mg**	**Mannitol**	0.5 g/kg	**11 g** / **55 mL**
Neostigmine 2.5mg + Atropine 1.2mg	Dilute to 5ml 0.1mL / kg	**2.2 mL**	**Hypertonic Saline (3%)**	3 mL/kg	**66 mL**
Midazolam	0.1 mg/kg	**2.2 mg**	**Dextrose (10%)**	2 mL/kg	**44 mL** **or 10 mL D50W**

ANAESTHETIC CRISES *(Doses for IV administration unless otherwise stated)*

Dantrolene INITIAL bolus	2.5 mg/kg	**55 mg**	**Intralipid 20% INITIAL bolus**	1.5 mL/kg	**33 mL**
Bicarbonate	1mmol/kg	**22 mmoL**	**Intralipid 20% INITIAL infusion**	15 mL/kg/hr	**330 mL/hr**

6 year = 25 kg

EQUIPMENT

ETT:	5 - 5.5	**ETT depth:**	15 - 16 cm
LMA:	2.5	**OG/NGT:**	12 F
Blade:	MAC 2	**ETT suction:**	10 F

Circuit: T-piece or Paeds circle

Bougie: 10Fr Stylet or 3.8 x 700mm bougie

OPA: 70mm (black)

NPA: 20 - 22F

Bag: 500mL

INDUCTION

(Doses for IV administration unless otherwise stated. Doses refer to well children. Caution in shock)

Drug	Conc	Dose		Vol (mL)
Propofol	10 mg/mL	3 mg/kg	75 mg	**7.5 mL**
		5 mg/kg	125 mg	**12.5 mL**
Ketamine	10 mg/mL	1 mg/kg	25 mg	**2.5 mL**
		2 mg/kg	50 mg	**5 mL**

Drug	Conc	Dose		Vol (mL)
Rocuronium	10 mg/mL	0.6 mg/kg	15 mg	**1.5 mL**
		1.2 mg/kg	30 mg	**3 mL**
Vecuronium	1 mg/mL	0.1 mg/kg	2.5 mg	**2.5 mL**

Drug	Dose	Conc	Final Dose	Volume
Fentanyl	*1-5 mcg/kg*	10 mcg/mL	25 - 125 mcg	**2.5 - 12.5 mL**
Oxycodone	*0.1 mg/kg*	1 mg/mL	2.5 mg	**2.5 mL**
Paracetamol	*15 mg/kg*	10 mg/mL	375 mg	**37 mL**
Parecoxib	*0.5mg/kg*	4 mg/mL	12.5 mg	**3.1 mL**
Cefazolin	*25 mg/kg*	100 mg/mL	625 mg	**6.3 mL**
Metaraminol	*10mcg/kg*		250 mcg	
Dexamethasone	*0.15 mg/kg*	1 mg/mL	3.8 mg	**3.8 mL**
Ondansetron	*0.15 mg/kg*	1 mg/mL	3.8 mg	**3.8 mL**

6 year = 25 kg

RESUSCITATION *(Doses for IV administration unless otherwise stated)*

Adrenaline 1:10,000	10 mcg/kg	**250 mcg** / **2.5 mL**	**TV** 6-8mL/kg 150 - 200 mL	**HR** 70 - 110
Atropine 100mcg/mL	20 mcg/kg	**500 mcg** / **5 mL**	**RR** 15 - 20	**SBP** 80 - 110
Sux IV 10mg/mL	2 mg/kg	**50 mg** / **5 mL**	**Defib (Arrest) (4J / kg)** 100 Joules	**Cardioversion (1J / kg)** 25 Joules
Sux IM (neat)	4 mg/kg	**100 mg** / **2 mL**		

FLUIDS + TRANSFUSION

Crystalloid	Blood	FFP	Platelets	Cryo
500 mL (20 mL/kg)	**250 mL** (10 mL/kg)	**375 mL** (15 mL/kg)	**250 mL** (10 mL/kg)	**125 mL** (5 mL/kg)

Intra-op Fluids	1st hour (10 mL/kg) **250 mL**	Next hrs (5 mL/kg) **125 mL /hr**	**CaCl 10%**	0.2 mL/kg	**5 mL**
			Est. Blood Vol	70 mL/kg	**1750 mL**

OTHER *(Doses for IV administration unless otherwise stated)*

TXA	15 mg/kg	**375 mg**	**MgSO4 50%**	0.1 mL/Kg	**2.5 mL**
Amiodarone	5 mg/kg (max 300mg)	**125 mg**	**Salbutamol**	neb	**5 mg or 12 puffs**
Adenosine	0.1-0.2mg/kg	**2.5 - 5 mg**	**Mannitol**	0.5 g/kg	**12.5 g** / **63 mL**
Neostigmine 2.5mg + Atropine 1.2mg	Dilute to 5ml 0.1mL / kg	**2.5 mL**	**Hypertonic Saline (3%)**	3 mL/kg	**75 mL**
Midazolam	0.1 mg/kg	**2.5 mg**	**Dextrose (10%)**	2 mL/kg	**50 mL** **or 12 mL D50W**

ANAESTHETIC CRISES *(Doses for IV administration unless otherwise stated)*

Dantrolene INITIAL bolus	2.5 mg/kg	**63 mg**	**Intralipid 20% INITIAL bolus**	1.5 mL/kg	**38 mL**
Bicarbonate	1mmol/kg	**25 mmoL**	**Intralipid 20% INITIAL infusion**	15 mL/kg/hr	**380 mL/hr**

8 year = 30 kg

EQUIPMENT

ETT:	6 - 6.5	**ETT depth:**	16 - 17cm
LMA:	2.5 - 3	**OG/NGT:**	12 or 14 F
Blade:	MAC 3	**ETT suction:**	12 F

Circuit: T-piece or Paeds circle

Bougie: 14Fr Stylet or 5.3 x 700mm bougie

OPA: 80mm (Green)

NPA: 24 - 26F

Bag: 1000mL

INDUCTION

(Doses for IV administration unless otherwise stated. Doses refer to well children. Caution in shock)

Drug	Conc	Dose		Vol (mL)
Propofol	10 mg/mL	3 mg/kg	90 mg	**9 mL**
		5 mg/kg	150 mg	**15 mL**
Ketamine	10 mg/mL	1 mg/kg	30 mg	**3 mL**
		2 mg/kg	60 mg	**6 mL**

Drug	Conc	Dose		Vol (mL)
Rocuronium	10 mg/mL	0.6 mg/kg	15 mg	**1.5 mL**
		1.2 mg/kg	30 mg	**3 mL**
Vecuronium	1 mg/mL	0.1 mg/kg	2.5 mg	**2.5 mL**

Drug	Dose	Conc	Final Dose	Volume
Fentanyl	*1-5 mcg/kg*	10 mcg/mL	30 - 150 mcg	**3 - 15 mL**
Oxycodone	*0.1 mg/kg*	1 mg/mL	3 mg	**3 mL**
Paracetamol	*15 mg/kg*	10 mg/mL	450 mg	**45 mL**
Parecoxib	*0.5mg/kg*	4 mg/mL	15 mg	**3.8 mL**
Cefazolin	*25 mg/kg*	100 mg/mL	750 mg	**7.5 mL**
Metaraminol	*10 mcg/kg*		300 mcg	
Dexamethasone	*0.15 mg/kg*	1 mg/mL	4 mg	**4 mL**
Ondansetron	*0.15 mg/kg*	1 mg/mL	4 mg	**4 mL**

8 year = 30 kg

RESUSCITATION *(Doses for IV administration unless otherwise stated)*

Adrenaline 1:10,000	10 mcg/kg	**300 mcg** / **2.5 mL**	**TV** 6-8mL/kg 150 - 200 mL	**HR** 70 - 110
Atropine 100mcg/mL	20 mcg/kg	**600 mcg** / **6 mL**	**RR** 15 - 20	**SBP** 80 - 110
Sux IV 10mg/mL	2 mg/kg	**60 mg** / **6 mL**	**Defib (Arrest) (4J / kg)**	**Cardioversion (1J / kg)**
Sux IM (neat)	4 mg/kg	**120 mg** / **2.4 mL**	120 Joules	30 Joules

FLUIDS + TRANSFUSION

Crystalloid	Blood	FFP	Platelets	Cryo
600 mL (20 mL/kg)	**300 mL** (10 mL/kg)	**375 mL** (15 mL/kg)	**300 mL** (10 mL/kg)	**150 mL** (5 mL/kg)

Intra-op Fluids	1st hour (10 mL/kg) **300 mL**	Next hrs (5 mL/kg) **150 mL /hr**	**CaCl 10%**	0.2 mL/kg	**6 mL**
			Est. Blood Vol	70 mL/kg	**2100 mL**

OTHER *(Doses for IV administration unless otherwise stated)*

TXA	15 mg/kg	**450 mg**	**MgSO4 50%**	0.1 mL/Kg	**3 mL**
Amiodarone	5 mg/kg (max 300mg)	**150 mg**	**Salbutamol**	neb	**5 mg or 12 puffs**
Adenosine	0.1-0.2mg/kg	**3 - 6 mg**	**Mannitol**	0.5 g/kg	**15 g** / **75 mL**
Neostigmine 2.5mg + Atropine 1.2mg	Dilute to 5ml 0.1mL / kg	**3 mL**	**Hypertonic Saline (3%)**	3 mL/kg	**90 mL**
Midazolam	0.1 mg/kg	**3 mg**	**Dextrose (10%)**	2 mL/kg	**60 mL** **or 15 mL D50W**

ANAESTHETIC CRISES *(Doses for IV administration unless otherwise stated)*

Dantrolene INITIAL bolus	2.5 mg/kg	**75 mg**	**Intralipid 20% INITIAL bolus**	1.5 mL/kg	**45 mL**
Bicarbonate	1mmol/kg	**30 mmoL**	**Intralipid 20% INITIAL infusion**	15 mL/kg/hr	**450 mL/hr**

10 year = 35 kg

EQUIPMENT

ETT:	6 - 6.5	**ETT depth:**	18 cm
LMA:	3	**OG/NGT:**	14 F
Blade:	MAC 3	**ETT suction:**	12 F

Circuit: T-piece or Paeds circle

Bougie: 14Fr Stylet or 5.3 x 700mm bougie

OPA: 80mm (green)

NPA: 24 - 26F

Bag: 1000mL

INDUCTION

(Doses for IV administration unless otherwise stated. Doses refer to well children. Caution in shock)

Drug	Conc	Dose		Vol (mL)
Propofol	10 mg/mL	3 mg/kg	105mg	**10.5 mL**
		5 mg/kg	175 mg	**17.5 mL**
Ketamine	10 mg/mL	1 mg/kg	35 mg	**3.5 mL**
		2 mg/kg	70 mg	**7 mL**

Drug	Conc	Dose		Vol (mL)
Rocuronium	10 mg/mL	0.6 mg/kg	21 mg	**2.1 mL**
		1.2 mg/kg	42 mg	**4.2 mL**
Vecuronium	1 mg/mL	0.1 mg/kg	3.5 mg	**3.5 mL**

Drug	Dose	Conc	Final Dose	Volume
Fentanyl	*1-5 mcg/kg*	10 mcg/mL	35 - 175 mcg	**3.5 - 17.5 mL**
Oxycodone	*0.1 mg/kg*	1 mg/mL	3.5 mg	**3.5 mL**
Paracetamol	*15 mg/kg*	10 mg/mL	525 mg	**52 mL**
Parecoxib	*0.5mg/kg*	4 mg/mL	17.5 mg	**4.4 mL**
Cefazolin	*25 mg/kg*	100 mg/mL	875 mg	**8.8 mL**
Metaraminol	*10mcg/kg*		350 mcg	
Dexamethasone	*0.15 mg/kg*	1 mg/mL	4 mg	**4 mL**
Ondansetron	*0.15 mg/kg*	1 mg/mL	4 mg	**4 mL**

10 year = 35 kg

RESUSCITATION *(Doses for IV administration unless otherwise stated)*

Adrenaline 1:10,000	10 mcg/kg	**350 mcg** / **3.5 mL**	**TV** 6-8mL/kg 210 - 280 mL	**HR** 80 - 110
Atropine 100mcg/mL	20 mcg/kg	**700 mcg** / **7 mL**	**RR** 15 - 20	**SBP** 90 - 110
Sux IV 10mg/mL	2 mg/kg	**70 mg** / **7 mL**	**Defib (Arrest) (4J / kg)** 140 Joules	**Cardioversion (1J / kg)** 35 Joules
Sux IM (neat)	4 mg/kg	**140 mg** / **2.8 mL**		

FLUIDS + TRANSFUSION

Crystalloid	Blood	FFP	Platelets	Cryo
700 mL (20 mL/kg)	**350 mL** (10 mL/kg)	**525 mL** (15 mL/kg)	**350 mL** (10 mL/kg)	**175 mL** (5 mL/kg)

Intra-op Fluids	1st hour (10 mL/kg) **350 mL**	Next hrs (5 mL/kg) **175 mL /hr**	**CaCl 10%**	0.2 mL/kg	**7 mL**
			Est. Blood Vol	70 mL/kg	**2450 mL**

OTHER *(Doses for IV administration unless otherwise stated)*

TXA	15 mg/kg	**525 mg**	**MgSO4 50%**	0.1 mL/Kg	**3.5 mL**
Amiodarone	5 mg/kg (max 300mg)	**175 mg**	**Salbutamol**	neb	**5 mg or 12 puffs**
Adenosine	0.1-0.2mg/kg	**3.5 - 7 mg**	**Mannitol**	0.5 g/kg	**17.5 g** / **88 mL**
Neostigmine 2.5mg + Atropine 1.2mg	Dilute to 5ml 0.1mL / kg	**3.5 mL**	**Hypertonic Saline (3%)**	3 mL/kg	**105 mL**
Midazolam	0.1 mg/kg	**3.5 mg**	**Dextrose (10%)**	2 mL/kg	**70 mL** **or 15 mL D50W**

ANAESTHETIC CRISES *(Doses for IV administration unless otherwise stated)*

Dantrolene INITIAL bolus	2.5 mg/kg	**88 mg**	**Intralipid 20% INITIAL bolus**	1.5 mL/kg	**53 mL**
Bicarbonate	1mmol/kg	**35 mmoL**	**Intralipid 20% INITIAL infusion**	15 mL/kg/hr	**530 mL/hr**

12 year = 40 kg

EQUIPMENT

ETT:	6 - 6.5	**ETT depth:**	18 cm
LMA:	3	**OG/NGT:**	14 F
Blade:	MAC 3 or 4	**ETT suction:**	12 F

Circuit:	T-piece or Paeds circle	**Bougie:**	14Fr Stylet or 5.3 x 700mm bougie	**OPA:**	80mm (green)	**NPA:**	24 - 26F	**Bag:**	1000mL

INDUCTION *(Doses for IV administration unless otherwise stated. Doses refer to well children. Caution in shock)*

Drug	Conc	Dose		Vol (mL)
Propofol	10 mg/mL	3 mg/kg	120mg	**12 mL**
		5 mg/kg	200 mg	**20 mL**
Ketamine	10 mg/mL	1 mg/kg	40 mg	**4 mL**
		2 mg/kg	80 mg	**8 mL**

Drug	Conc	Dose		Vol (mL)
Rocuronium	10 mg/mL	0.6 mg/kg	24 mg	**2.4 mL**
		1.2 mg/kg	48 mg	**4.8 mL**
Vecuronium	1 mg/mL	0.1 mg/kg	4.8 mg	**4.8 mL**

Drug	Dose	Conc	Final Dose	Volume
Fentanyl	*1-5 mcg/kg*	10 mcg/mL	40 - 200 mcg	**4 - 20 mL**
Oxycodone	*0.1 mg/kg*	1 mg/mL	4 mg	**4 mL**
Paracetamol	*15 mg/kg*	10 mg/mL	600 mg	**50 mL**
Parecoxib	*0.5mg/kg*	4 mg/mL	20 mg	**5 mL**
Cefazolin	*25 mg/kg*	100 mg/mL	1000 mg	**10 mL**
Metaraminol	*10mcg/kg*		400 mcg	
Dexamethasone	*0.15 mg/kg*	1 mg/mL	4 mg	**4 mL**
Ondansetron	*0.15 mg/kg*	1 mg/mL	4 mg	**4 mL**

12 year = 40 kg

RESUSCITATION *(Doses for IV administration unless otherwise stated)*

Adrenaline 1:10,000	10 mcg/kg	**400 mcg** **4 mL**	**TV** 240 - 320 mL 6-8mL/kg	**HR** 60 - 100
Atropine 100mcg/mL	20 mcg/kg	**800 mcg** **8 mL**	**RR** 15	**SBP** 90 - 110
Sux IV 10mg/mL	2 mg/kg	**80 mg** **8 mL**	**Defib (Arrest) (4J / kg)** 160 Joules	**Cardioversion (1J / kg)** 40 Joules
Sux IM (neat)	4 mg/kg	**160 mg** **3.2 mL**		

FLUIDS + TRANSFUSION

Crystalloid	Blood	FFP	Platelets	Cryo
800 mL (20 mL/kg)	**400 mL** (10 mL/kg)	**600 mL** (15 mL/kg)	**400 mL** (10 mL/kg)	**200 mL** (5 mL/kg)

Intra-op Fluids	1st hour (10 mL/kg) **400 mL**	Next hrs (5 mL/kg) **200 mL /hr**	**CaCl 10%**	0.2 mL/kg	**8 mL**
			Est. Blood Vol	70 mL/kg	**2800 mL**

OTHER *(Doses for IV administration unless otherwise stated)*

TXA	15 mg/kg	**600 mg**	**MgSO4 50%**	0.1 mL/Kg	**4 mL**
Amiodarone	5 mg/kg (max 300mg)	**200 mg**	**Salbutamol**	neb	**5 mg or 12 puffs**
Adenosine	0.1-0.2mg/kg	**4 - 8 mg**	**Mannitol**	0.5 g/kg	**20 g** **100 mL**
Neostigmine 2.5mg + Atropine 1.2mg	Dilute to 5ml 0.1mL / kg	**4 mL**	**Hypertonic Saline (3%)**	3 mL/kg	**120 mL**
Midazolam	0.1 mg/kg	**4 mg**	**Dextrose (10%)**	2 mL/kg	**80 mL** **or 20 mL D50W**

ANAESTHETIC CRISES *(Doses for IV administration unless otherwise stated)*

Dantrolene INITIAL bolus	2.5 mg/kg	**100 mg**	**Intralipid 20% INITIAL bolus**	1.5 mL/kg	**60 mL**
Bicarbonate	1mmol/kg	**40 mmoL**	**Intralipid 20% INITIAL infusion**	15 mL/kg/hr	**600 mL/hr**

NMB Reversal

ASCAR

Option 1

Neostigmine 2.5mg + **Atropine 1.2mg.**
Dilute to **5mL using N. saline.**
Dose = **1mL / 10kg** (0.1mL / kg)

Option 2

Neostigmine 2.5mg + **Glycopyrolate 400mcg.**
Dilute to **5mL using N. saline.**
Dose = **1mL / 10kg** (0.1mL / kg)

Option 3

Suggamadex: 2 mg/kg (TOF = 2 twitches)
Suggamadex: 4 mg/kg (PTC = 1-2 counts but no twitches on TOF)
Suggamadex: 16 mg/kg (Immediate Reversal)

TIPS + TOOLS

Fasting times

ASCAR

< 6 months:

6 hrs: Solids, Gastric feeds

4 hrs: Infant formula

3 hours: Breast Milk

1 hour: Clear fluids

> 6 months:

6 hrs: Solids, Gastric feeds, Infant Formula

4 hrs: Breast milk

1 hour: Clear fluids

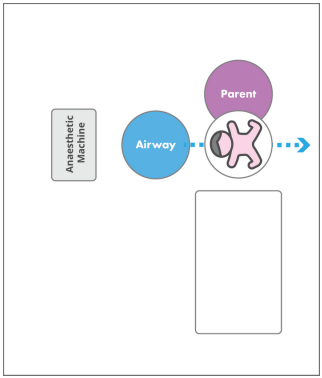
1 hour clear fluids fasting:

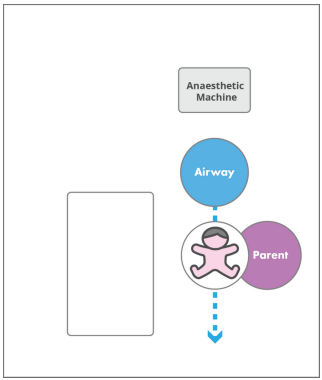
- Suitable for **elective surgery and minor non urgent surgery** (e.g. minor lacerations, medical imaging) in **patients without delayed gastric emptying, impaired swallow or N+V**. It is **not suitable for patients undergoing airway surgery** (e.g. LBO).
- Clear fluids includes water, clear apple juice, 5-10% Dextrose, clear carbohydrate drinks and icy pole ice-blocks. The volume must be limited to 3mL/kg (maximum 150 mL).
- If safe criteria not met for 1 hour clear fluids fasting protocol, permit clear fluids until 2 hours pre-operatively, unless other concerns exist.
- Type 1 diabetics and patients with Metabolic disorders seek advice.

This is based on current (2020) guidelines at the Children's Hospital Westmead.
Always ensure you follow local policy and procedure at your institution.

Optimal Ergonomics

(for induction on parents' lap; Guide only)





- Anaesthetic machine within in reach of anaesthetist.
- Child's arms and legs embraced by parent.
- Anaesthetist able to support child's head whilst applying the face-mask.
- Parent to place one arm under child's legs prior to standing to safely facilitate transfer to the bed.

Setup

ASCAR

Emergency Drugs

- **Propofol** 10 mL syringe
- Sux 100 mg in 5 mL Syringe or neat. **IM needle** ready
- **Atropine** 100 mcg/mL or neat
- Adrenaline (1:10,000) **10 mcg/mL**
- Adrenaline (1:10,000) **1 mcg/mL**
- **1 mL drawing up** syringe for **Adrenaline**

Consider contraindications to suxamethonium

Routine Set up

- T-piece (correct size bag)
- Mask (correct size)
- Guedel
- LMA
- Bougie **(check it fits)**
- Suction Catheter
- Bite block **(beware loose teeth)**
- Cuff manometer
- Under body Bair-Hugger
- Temp probe
- IV cannulae
- Burette
- Fluid warmer (big case)
- Chair for parent

Last minute checks

Check switch; Circle vs T-piece
Someone to **escort parent**
Guedel and LMA ready (+/- open)

Gas induction

(May be unsuitable for some patients)

ASCAR

Mask with O2 / N2O

Incremental Sevo or immediate 8%

Consider Immediate 8% if uncooperative. Maintain good seal.
Caution with high volatile conc. in patients with cardiac disease.

Cannulate

Once deep (HR falls, eyes central)

Turn Sevo down to 4%

if HR falls, to minimise hypotension

N2O off, increase Sevo

once IVC in to pre-oxygenate for airway

IV Propofol / Opioid; (if light plane)

Propofol / Fentanyl may not be needed for LMA

Deep extubation

(May be unsuitable for some patients)

ASCAR

Spont Ventilation (CO2, reversal)

Not strictly necessary, if able to manage the airway

100% O2. Maintain depth.

May need to increase sevoflurane if N2O turned off

Turn on side (facing monitor)

Also optional, may help with secretions

Suction secretions +/- OPA / NPA

Propofol 1-2 mg/kg

Depth noted by; eyes central, RR appropriate for age.

Extubate, support airway

Ventilate if apnoeic. Vigilance for laryngospasm.

Nasal intubation
(a framework for insertion)

ASCAR

ETT size: 1 size smaller than oral.
Consider contraindications. Estimated depth at nares: (Age in years / 2) + 15

Drixine intranasal
Only insert once IVC secure, as can cause laryngospasm.
Can take 2-3 mins to work effectively.

Careful nasal insertion
Constant gentle pressure. DO NOT corkscrew.

Laryngoscopy + intubation + Cuff up

Options to assist:
- ETT rotation
- ELM
- Mcgills
- Head elevation

Confirm position and secure
Foam cut-out on forehead + Head roll if nasal RAE. Care to avoid pressure on nostril. if using normal ETT, can consider liquorice stick. If concerned about minimising deadspace avoid liquorice stick and support weight of ETT with towels to the side.

Rescue oxygenation
If de-saturates prior to intubation, consider connecting ETT to T-piece for oxygenation +/- IPPV. Occlude opposite nostril and mouth

Other nuances

Securing the airway:

- Tape the ETT. Note the depth carefully.
- Transitioning to FiO2 50%, may help to identify a possible end-bronchial intubation early. Ausculate the chest.
- Insert temp probe, measured to the pharynx.
- Consider gastric tube if ++ PPV prior to intubation.

Using a T-piece:

Ensure flows are > 6 L/min

Transferring to PACU:

- Hudson Mask + T-piece
- Propofol, Sux and Flush
- +/- Pulse Oximeter / Monitor

Anaesthesia + URTI

ASCAR

Favor postponing / referring to kids hospital;

- < 1 yo, Ex-prem, Febrile, URTI < 2 weeks, LRTI < 6-8 weeks, green sputum, chest signs, RSV +ve (may look clinically well, but have lots of secretions)

Intra-op considerations:

- Salbutamol **neb**
- **ETT** > LMA
- **Paralysis or deep** anaesthesia
- **Suction catheter with Saline** ready
- Dexamethasone **0.2 mg/kg**
- **Awake** extubation

Sputum considerations:

- Sputum plugging may cause **inspiratory wheeze**
- Sputum plugging may raise the **Ppeak; monitor closely**
- Pass **suction catheter, after squirting N.saline down ETT**
- If it doesn't clear secretions or pass distal; **exchange the ETT**
- **VCV may work better** with sputum plugging

Induction with potential full stomach

(A Framework; when an IV is not forthcoming)

ASCAR

<u>An IV induction for an RSI is the safest option.</u>
Who else might be around to help get an IVC?
Can you consider an IO or awake CVC?
Can surgery be delayed for fasting?
Have you considered an NGT?

Aspiration can be life threatening. An inhalational induction remains a very last resort and may be unsuitable for patients at high risk (e.g. bowel obstruction).

Team briefed to facilitate rapid roll to left lateral.

Instrument when deep (**HR low, eyes central**).

Controls ready to go head down

Suction ready

VL + bougie for best attempt

IM Sux

Dose ready with IM needle

Achieving a deep plane of anaesthesia:

A patient with a partially obstructed airway (e.g. large tonsils) may need <u>more time</u> to achieve a safe depth. Airway patency is crucial.

Transfusing kids

- Consider a **blood giving set primed with N.Saline attached to a fluid warmer and 3-way tap distal to the warmer**. A pumpset may contribute excessive deadspace. Hang the blood and draw 10 mL/kg boluses from a syringe connected to the 3-way tap distal to warmer.
- **10 mL/kg** will typically raise Hb by 20 g/L
- **After 20 mL/kg, consider adding other blood products** (e.g. Cryoprecipitate). Platelets usually needed if > 40mL/kg pRBC.
- If concerned about bleeding, **raise the OT temperature.**

Volume per unit

260 mL approx

Volume per unit

35 mL approx

Starting Dose:
5 mL/kg

Volume per unit

280 mL approx

Starting Dose:
10 - 15 mL/kg

Volume per unit

330 mL approx

Starting Dose:
10 mL/kg

Common Conditions

ASCAR

OSA

- Additional **pair of hands**
- Lower threshold to use **CPAP, Guedel** on induction
- Reduce **opioid dose** (50% dose reduction)
- **Awake extubation +/- NP airway**
- **ICU / apnoea monitoring post-op**
- **Extra consideration for disposition if CVS/Resp disease, age < 2yo, AHI > 24, craniofacial abnormalities, syndromic.**

Down syndrome

- **Difficult BVM:** 2 hands, Guedel, CPAP
- **OSA** (as above)
- **Atlanto-axial** subluxation: MILS and avoid extending neck
- **Subglottic Stenosis:** Smaller ETT ready, Cuff pressure monitor
- **Bradycardia:** Limit Sevoflurane (avoid >4%). Atropine IM ready.
- **Cardiac disease:** Manage as per the lesion.
- **Behavioural issues:** consider pre-med
- **Epilepsy and Reflux:** Consider impact

Cerebral Palsy

- **Bleeding (low muscle mass):** X-match blood + warmer.
- **Hypothermia:** Pre-warm, increase OT temperature
- **Suxamethonium likely CI** - hyper-kalaemia

- **When confronted with an unfamiliar condition and the implications for anaesthesia, check out OrphanAnesthesia.eu and Orphan.net and consider contacting your local paediatric hospital.**

PACU problem solving

ASCAR

Emergence delirium

Prevent: Propofol 1 mg/kg or 3 mg/kg in the final 15 minutes of the case, Fentanyl 1 mcg/kg, Dexmedetomidine 0.3-1.0 mcg/kg

Diagnose: Exclude pain/hypoxia/hypercarbia/hypoglycaemia, full bladder, No eye contact, non-purposeful movement, disorientated, restless, inconsolable

Treat: **Fentantly 1-2 mcg/kg (have T-piece available)**, **Propofol 1 mg/kg**, **Dexmedetomidine 0.3 mcg/kg**

Post extubation stridor

Prevent: Correct size ETT, Cuff pressure <20mmHg, minimise intubation attempts, minimise ETT movement + coughing with ETT, IV Dex 0.2mg/kg

Diagnose: Croupy cough, stridor, increased WOB, symptoms/signs usually within 1hr of extubation can be up to 24h

Treat: **IV Dex** 0.6 mg/kg (max 20mg), **Nebulised adrenaline** 0.5 mL/kg per dose 1:1000 adrenaline (max 5mL) can repeat total 3 x q 15min - risk rebound 2-4hr. **Nebulised budesonide** 1mg x 2 doses q30min. If reintubation required used smaller **uncuffed ETT. Consult ENT early.**

PONV

Prevent: Use 2 interventions below in pt with > 2 risk factors
Patient: Age > 3, hx PONV, Hx. motion sickness, female, post puberty,
Procedure: ENT, Ophthalmic surgery and laparoscopic
Anaesthetic: Duration > 30 min, use. of volatile (Not. N2O)

Intervention: **Dex 0.15 mg/Kg**, **Ondansetron 0.15 mg/kg**, **Droperidol 10 mcg/kg** or **TIVA**, **30 mL/Kg IV fluid** in day surgery, **Minimise post-op opioid** requirement.

Trigger-free Routine

ASCAR

- **Remove Suxmethonium**
- **Remove Vaporisers**
- **Replace Soda Lime**
- **Replace Breathing Circuit**
- **Replace Reservoir Bag**

- **Machine flush** as per manufacturer instructions
- **Do not turn machine off until used.**

- Patient FIRST ON list.
- IVC pre-induction (can't have gas induction)
- **Pre-med considered to facilitate IVC**
- TIVA
- Keep ventilator flows at >10 L/min for whole case
- HDU for post-op monitoring
- Temperature probe

If using Charcoal Filters:

- Remove vaporisers. Increase FGF to >10L/min for 90 seconds. Then attach filters to insp + exp port. Attach new breathing circuit + reservoir bag. Ensure flows at > 3L/min for whole case. **Always follow local instructions on their use.**

PCA (for < 50 kg)

Drug	Preparation	Program
Morphine / Oxycodone	**1 mg/kg** (max 50mg) made up to **50mL**	**20 mcg/kg bolus q5min** (max 1mg) **Hrly limit:** 150 mcg/kg (max 7.5mg/hr)
Fentanyl	**25 mcg/kg** (max 1250 mcg) made up to **50mL**	**0.5 mcg/kg bolus q5min** (max 50mcg) **Hrly limit:** 2.5 mcg/kg (max 125 mcg/hr)

Protocol from Children's Hospital Westmead 2020. Always use your local policy.

PCA Troubleshooting

Pruritus:

- Ondansetron 0.1 mg/kg q8hrly PRN
- Loratadine 10 mg per day (if > 6 years old)
- Naloxone 0.5 mcg/kg ONCE
- Consider opioid rotation

Resp depression:

- Naloxone 5 mcg/kg

Analgesic Adjuncts

Drug	Preparation	Program
Ketamine	**5 mg/kg** (max 200mg) made up to **50mL**	**Run at 1 mL/hr i.e. 100 mcg/kg/hr** (max 4 mg/hr if >40kg)

Protocol from Children's Hospital Westmead 2020. Always use your local policy.

Local Anaesthetics

Drug	Max dose
0.25% Bupivicaine or 0.25% Ropivicaine	1 mL/kg
0.5% Bupivicaine or 0.5% Ropivicaine	0.5 mL/kg

Sedation infusions
(for critical care transport)

3 mg/kg made up to 50mL
e.g. 12 mg for a 4 kg child.

Sedation dose: 0.2 - 1 mcg/kg/min
1 mcg/kg/min = 1 mL/hr

1 mg/kg made up to 50mL
e.g. 4 mg for a 4 kg child.

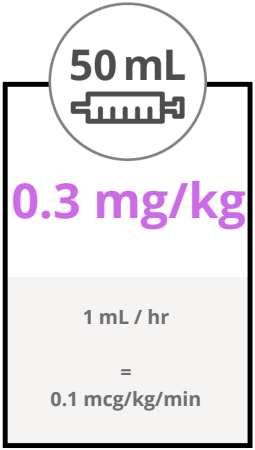
Sedation dose: 10 - 40 mcg/kg/hr
20 mcg/kg/hr = 1 mL/hr

Protocol from Children's Hospital Westmead 2020. Always use your local policy.

Paediatric Infusions

ASCAR

Adrenaline / Noradrenaline / Metaraminol and Isoprenaline



Milrinone

Dobutamine / Dopamine

Vasopressin

Rate:

2 mL bolus
then 1-3 mL/hr

SNIP

Remifentanil infusion

(for kids < 12 yo / unsuitable for TCI)

ASCAR

1 mg in **40 mL Normal saline** (25 mcg/mL)

0.1 - 0.3 mcg/kg/min - intra-operative analgesia
0.4 - 0.5 mcg/kg/min - painful stimuli

Beware that higher doses can cause bradycardia.
Have atropine ready.

Weight	0.1 mcg/kg/min	0.2 mcg/kg/min	0.3 mcg/kg/min	0.4 mcg/kg/min	0.5 mcg/kg/min	0.6 mcg/kg/min
15 kg	90 mcg/hr **3.6 mL/hr**	180 mcg/hr **7.2 mL/hr**	270 mcg/hr **10.8 mL/hr**	360 mcg/hr **14.4 mL/hr**	450 mcg/hr **18 mL/hr**	540 mcg/hr **21.6 mL/hr**
20 kg	120 mcg/hr **4.8 mL/hr**	240 mcg/hr **9.6 mL/hr**	360 mcg/hr **14.4 mL/hr**	480 mcg/hr **19.2 mL/hr**	600 mcg/hr **24 mL/hr**	720 mcg/hr **28.8 mL/hr**
25 kg	150 mcg/hr **6 mL/hr**	300 mcg/hr **12 mL/hr**	450 mcg/hr **18 mL/hr**	600 mcg/hr **24 mL/hr**	750 mcg/hr **30 mL/hr**	900 mcg/hr **36 mL/hr**
30 kg	180 mcg/hr **7.2 mL/hr**	360 mcg/hr **14.4 mL/hr**	540 mcg/hr **21.6 mL/hr**	720 mcg/hr **28.8 mL/hr**	900 mcg/hr **36 mL/hr**	1080 mcg/hr **43.2 mL/hr**
35 kg	210 mcg/hr **8.4 mL/hr**	420 mcg/hr **16.8 mL/hr**	630 mcg/hr **25.2 mL/hr**	840 mcg/hr **33.6 mL/hr**	1050 mcg/hr **42 mL/hr**	1260 mcg/hr **50.4 mL/hr**
40 kg	240 mcg/hr **9.6 mL/hr**	480 mcg/hr **19.2 mL/hr**	720 mcg/hr **28.8 mL/hr**	960 mcg/hr **38.4 mL/hr**	1200 mcg/hr **38.4 mL/hr**	1440 mcg/hr **57.6 mL/hr**

Remifentanil infusion

Alternative "Quick" method

3 mg in **50 mL Normal saline** (60 mcg/mL)

Patient weight (kg) / 10 = **rate in mL/hr that corresponds to 0.1 mcg/kg/min.**

E.g.

20 kg child.
Running 2 mL/hr = 0.1 mcg/kg/min
Running 4 mL/hr = 0.2 mcg/kg/min

45 kg child
Running 4.5 mL/hr = 0.1 mcg/kg/min
Running 9 mL/hr = 0.2 mcg/kg/min

Dosing guide:

0.1 - 0.3 mcg/kg/min - intra-operative analgesia
0.4 - 0.5 mcg/kg/min - painful stimuli

Beware that higher doses can cause bradycardia.
Ensure atropine on standby.

TIVA Protocol
(with TCI pump)

ASCAR

General points:

Cannula site visible, with anti-reflux + siphon valves (chook's foot)
Always check initial bolus is safe
If transitioning from volatile, avoid overdosing
Entropy (if > 1 yr): aim 40 - 60
If signs of reduced depth, consider propofol 1mg/kg +/- adjunct
Consider adjuncts: remifentanil, fentanyl, ketamine, precedex

Paedfusor

Age: **1 - 16**
Weight: **5 - 61 kg**

Kataria

Age: **3 - 16**
Weight: **15 - 61 kg**

Based on Cp prediction
so **allow time** for Cp-Ce equilibration

Cp (target) if sole agent: **4 - 6** mcg/mL

Cp (target) + adjuncts: **3 - 4** mcg/mL

Adjuncts do not include NMBA

TIVA Protocol

(without TCI pump. Guide only, not a recipe)

ASCAR

General points:

Cannula site visible, with anti-reflux + siphon valves
Always check initial bolus is safe
If transitioning from volatile, avoid overdosing
Entropy (if > 1 yr): aim 40 - 60
If signs of reduced depth, consider propofol 1mg/kg +/- adjunct
Consider adjuncts: remifentanil, fentanyl, ketamine, precedex

Mcfarlan infusion scheme:

Age	Induction dose	0-15 min	15-30 min	30-60 min	1-2 hrs	2-4 hrs
3-11y	2.5 mg/kg	15 mg/kg/hr	13 mg/kg/hr	11 mg/kg/hr	10 mg/kg/hr	9 mg/kg/hr

Weight	Induction	0-15 min	15-30 min	30-60 min	1-2 hr	2-4 hr
15 kg	37.5 mg **4 mL**	225 mg/hr **22.5 mL/hr**	195 mg/hr **19.5 mL/hr**	165 mg/hr **16.5 mL/hr**	150 mg/hr **15 mL/hr**	135 mg/hr **13.5 mL/hr**
20 kg	50 mg **5 mL**	300 mg/hr **30 mL/hr**	260 mg/hr **26 mL/hr**	220 mg/hr **22 mL/hr**	200 mg/hr **20 mL/hr**	180 mg/hr **18 mL/hr**
25 kg	62.5 mg **6 mL**	375 mg/hr **37.5 mL/hr**	325 mg/hr **32.5 mL/hr**	275 mg/hr **27.5 mL/hr**	250 mg/hr **25 mL/hr**	225 mg/hr **22.5 mL/hr**
30 kg	75 mg **8 mL**	450 mg/hr **45 mL/hr**	390 mg/hr **39 mL/hr**	330 mg/hr **33 mL/hr**	300 mg/hr **30 mL/hr**	270 mg/hr **27 mL/hr**
35 kg	87.5 mg **9 mL**	525 mg/hr **53 mL/hr**	455 mg/hr **36 mL/hr**	385 mg/hr **39 mL/hr**	350 mg/hr **35 mL/hr**	315 mg/hr **32 mL/hr**
40 kg	100 mg **10 mL**	600 mg/hr **60 mL/hr**	520 mg/hr **52 mL/hr**	440 mg/hr **44 mL/hr**	400 mg/hr **40 mL/hr**	360 mg/hr **36 mL/hr**

CRISIS AIDS

ASCAR

Obstructed Airway

ASCAR

CPAP +/- 2 hand seal

Deepen (Sevo 8%)

Judgement call whether to keep N2O
or change to 100% Oxygen

Guedel

If adequate depth of anaesthesia

LMA

Consider increasing O2 to 100%.
May need to increase Sevoflurane

IM Sux +/- ETT

Hypoxia with ETT

ASCAR

100% FiO2. Switch to the T-piece.

Oesophageal intubation?
Verify Sustained ETCO2

Endobronchial intubation?
Suspect if Small / Syndromic children / RAE tube.

Is there wheeze? Could it be anaphylaxis?
Inspiratory wheeze may be sputum plugging.

Sputum Plugging or Aspiration?
Pass suction catheter OR replace the ETT

Cuff leak or herniation?
Check Spirometry, Cuff pressures. Consider video laryngoscopy.

Recruitment maneuver + PEEP

Ventilation; Change Mode, Paralyse, OGT?

Exclude Equipment issue

USS - pneumothorax? Contusion/Oedema?
Fibreoptic Assessment - airway soiling
Replacing the ETT
Call for Help; ICU/ ECMO / Retrival

Neonatal Life Support

ASCAR

Call for HELP	Start APGAR TIMER	Pulse oximeter RIGHT HAND

D R S

- Dry
- Radiant Heater
- Stimulate

Every 30 sec
Re-assess

Meconium AND Flat Baby:

- **Do NOT** stimulate
- **If Airway soiled:**
  Y-suction mouth *then* nose
  OR suction using ETT with meconium aspirator
- **DO NOT DELAY IPPV by > 60 sec**

A

Open Airway
Do not routinely suction

B

IPPV 40 - 60
HR < 100
Apnoea
Poor resp effort

CPAP
HR > 100
work of breathing

FiO2 0.21
Titrate up if SpO2 targets not met

For CPR use FiO2 1.0

SpO2 Targets:
1 min: 60%
2 min: 65%
3 min: 70%
4 min: 75%
> 5 min: 80-90%

C

HR < 60
after 30 seconds of IPPV

CPR 3 : 1

HR < 60
after 30 seconds of CPR

Adrenaline 10 mcg/kg
Fluid bolus 20 mL/kg
(see reverse)

Neonatal Life Support

ASCAR

GESTATION	ETT SIZE	ETT DEPTH (CM)
< 28 wk	2.5	6
28-32 wk	3.0	7
32-34 wk	3.5	8
35-40 wk	4.0	9

Y-SUCTION CATHETER

ETT: 6-8 Fr

Airway: 8-10 Fr

UMBILICAL VEIN CATHETER

Prem: 3.5 Fr

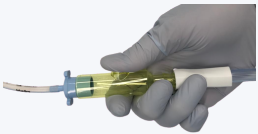
Term: 5 Fr

NEO PUFF SETTINGS

Prem: PIP 25cm H2O
PEEP 6cm H2O

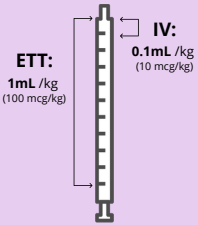
Term: PIP 30cm H2O
PEEP 6cm H2O

MECONIUM ASPIRATOR



Adrenaline 1:10,000

Every 2 mins



1 mL syringe

0.1 mL = 10 mcg

Umbilical vein catheter

1

- Attach 3-way tap
- Prime line

2

- Clean Cord
- Loose tie around base
- Cut atleast 1.5 cm stump

3

- Insert to 5 cm
- Check: aspirate blood
- Tegaderm sandwich to secure

15 mm IO
(only if IVC failed)
Anteromedial tibia only
Monitor for extravasation

Fluid

(if CPR > 30s)

0.9% Normal saline
10-20 mL/kg

Blood

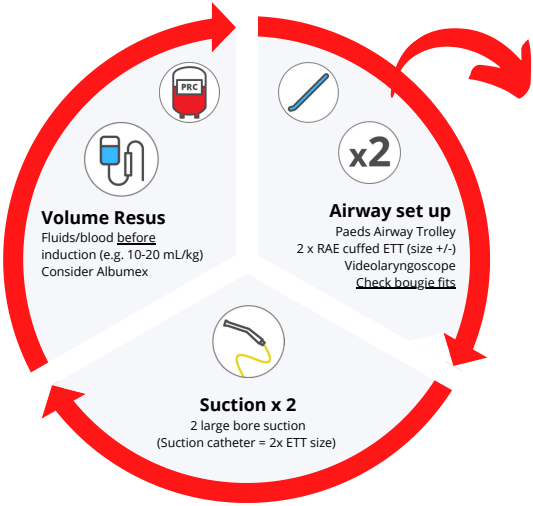
(e.g. Vasa Previa)

O neg 10-20 mL/kg

Bleeding Tonsil

ASCAR

IV Access x 2 (IO in extremis)
VBG / Haemacue. X-match 2 units
IV warmer, Blood Burette, Warm OT
Check airway grade from notes (if time)



Volume Resus
Fluids/blood before induction (e.g. 10-20 mL/kg)
Consider Albumex

Airway set up
Paeds Airway Trolley
2 x RAE cuffed ETT (size +/-)
Videolaryngoscope
Check bougie fits

Suction x 2
2 large bore suction
(Suction catheter = 2x ETT size)

ENT Surgeon scrubbed
CICO kit ready.
Brief eFONA.

Induction

RSI; **Cricoid (Roc/Sux)**
Consider **Ketamine**
Pre-oxygenate

Vasopressor ready:
Metaraminol (10mcg/kg)
Dilute Adrenaline

Giving Blood

Consider **manually syringing from a 3 way tap distal to a blood warmer**

After 20 mL/kg consider **other blood products if ongoing bleeding.**

Airway Brief

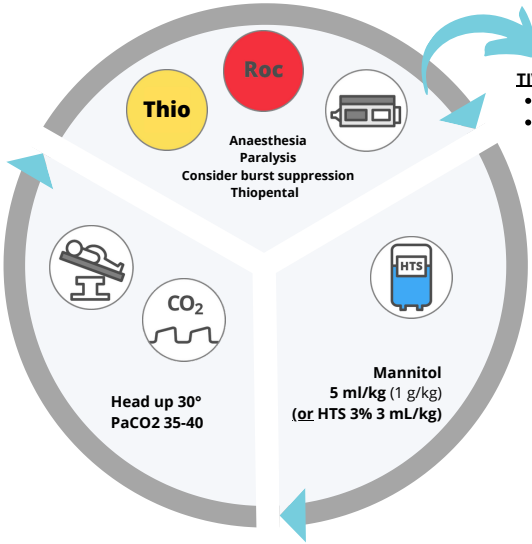
Lead with suction
VL may be compromised by blood, so **direct view** 1st line.

Consider **pushing on chest** and aiming for bubbles.

Paediatric Raised ICP

(for emergency craniotomy)

ASCAR



TIVA transition

- See TIVA pages
- Consider opioid adjunct e.g. **remifentanil 0.1-0.5 mcg/kg/min**

Targets:

- **CPP 45-60 mmHg (see first page)**
- ICP < 20 mmHg
- PO2 > 80 mmHg
- PCO2 35 - 40 mmHg
- BSL 4 - 8 mmol/L
- Normothermia

Anaesthesia

Sevo < 1 MAC or TIVA
Consider Sevo + Opioid
DO NOT USE NITROUS

Increase CPP

MAP 60-80

MAP Target (CPP = MAP-ICP)

22G Art line if 3-50 kg

Pressor

10 mcg/kg metaraminol

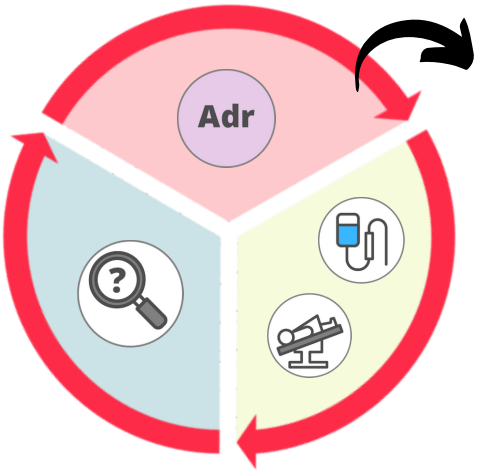
Craniotomy Losses

Intracranial blood loss can be significant for child
X-match blood
Transfuse if needed
10-20 mL/kg boluses

Paediatric Anaphylaxis

ASCAR

Call for Help. Get paediatric anaphylaxis box.
Manage bronchospasm using separate card.



IV 1:10,000
Grade 2: 2 mcg/kg
Grade 3: 4 mcg/kg
Arrest: 10 mcg/kg

in Anaphylaxis Arrest, can be given every 1- 4 mins

If PEA or HR < 60:

CPR and start APLS algorithm
APLS + CPR

IV Adrenaline 1:10,000
0.1 mL/kg
(10 mcg/kg)
Adrenaline

20 mL/kg Crystalloid bolus
Fluid

Remove triggers

Chlorhexidine (IDC, CVC?)
Latex
Dyes
Colloids + other infusions

Consider differential diagnoses

Ensure:

100% O2

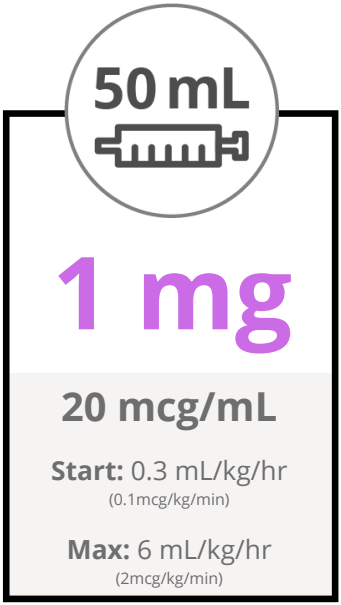
Airway secure

Safe but adequate volatile

Paediatric Anaphylaxis
(dosing & refractory options)

ASCAR

Adrenaline Infusion (child)



E.g:

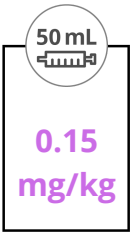
For 10 kg child dose range **3 - 60 mL/hr**

Adjuncts

Salbutamol MDI
< 6 yrs: 6 puffs
> 6 yrs: 12 puffs

IV Glucagon: 40 mcg/kg (max 1 mg)
IV MgSO4 (50%): 0.1 mL - 0.2 mL/kg

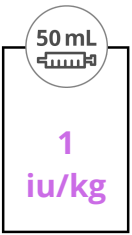
Noradrenaline infusion (child)



Rate:

2 - 40 mL/hr

Vasopressin infusion (child)



Rate:

2 mL bolus then 1-3 mL/hr

Malignant Hyperthermia - Paeds

ASCAR

Call for Help - Send for the MH Box and refrigerated ice
Additional Anaesthetists; delegate MH task cards,
Surgeons - Abandon /complete surgery, insert IDC

Dantrolene = priority

Each **20 mg vial with 60 mL** of sterile water. Call pharmacy for additional Dantrolene.
May need > 36 vials.

Dantrolene
2.5mg / kg q10minly
(**Max:** 10mg/kg)

If > 38.5 C:
Cool IV fluids,
Ice packing
Full exposure
Warmers off
Peritoneal Lavage

Turn off volatiles
100% O2 at 15 L/min
Hyperventilate
TIVA +/- Benzo

Art Line +/-
CVC +/-
Defib pads

ABGs +
Coag, UEC,
X-match, CK,
Urine Myoglobin

DO NOT WASTE TIME CHANGING:

Circuit
Soda Lime
Machine

Hyper K+	CaCl 0.1 mL/kg Insulin 0.15 iu/kg + 0.5 mL/kg DW50
pH < 7.2	Hyperventilate Bicarb 0.5-1 mmol/kg
Arrythmias	Amiodarone IV 3 mg/kg Lidocaine IV 1 mg/kg

References

Houck PJ, Haché M, Sun LS (eds). Handbook of Pediatric Anesthesia. New York: McGraw-Hill; 2015. [Available from: https://accessanesthesiology-mhmedical-com.ezproxy.anzca.edu.au/content.aspx?bookid=1189&sectionid=70362412]

Starship Hospital. Paediatric post-operative nausea and vomiting - prophylaxis and treatment. 2020 [Available from: https://www.starship.org.nz/guidelines/paediatric-postoperative-vomiting-prophylaxis-and-treatment/]

The Association of Paediatric Anaesthetists Great Britain and Ireland. Guidelines on the Prevention of Post-operative Vomiting in Children. 2016 [Available from: https://www.apagbi.org.uk/sites/default/files/inline-files/2016%20APA%20POV%20Guideline-2.pdf]

CHW PICU clinical guideline: Severe traumatic brain injury. 2017. CHW intranet

Chan V, Skowno J. A Practical Approach to Propofol Based Total Intravenous Anaesthesia (TIVA) in Children. 2018 [Available from: https://www.wfsahq.org/components/com_virtual_library/media/0e97e5586360871fc0a53c2f51c157c-atow-392-00-01.pdf]

Sydney Children's Hospital. Massive Tranfusion. 2014 [Available from: http://www.schn.health.nsw.gov.au/_policies/pdf/2014-7000.pdf]

The Royal Children's Hospital Melbourne. Massive transfusion & Blood products. 2020 [Available from: https://www.rch.org.au/uploadedFiles/Main/Content/anaes/Blood%20Transfusion%20Update%202014.pdf and https://www.rch.org.au/clinicalguide/guideline_index/Blood_product_prescription/uPaediatric]

Western Health. Massive Transfusion Protocol. [Available from: http://www.westernhealth.org.au/HealthProfessionals/Other/Blood_Blood_Products/Documents/Paediatric%20Massive%20Transfusion%20Protocol.pdf]

Blain S, Paterson N. Paediatric massive transfusion. BJA Education. 2016;16(8):269–275 [Available from: https://academic.oup.com/bjaed/article/16/8/269/2364823]

ANZAAG-ANZCA Perioperative Anaphylaxis Management Guidelines version 2. May 2016

MHANZ Task Cards revised in 2018

Australian Resuscitation Council Neonatal Guidelines 2016

Anxiolytic Premedication for Children. 2020 BJA Education. S.Heikal and G.Stuart https://doi.org/10.1016/j.bjae.2020.02.006

Dosing information:
Dosing and equipment sizing information has been adapted from multiple sources including Frank Shann's 17th edition (2017), resources from Westmead Children's Hospital (as of 2020) and NETs clinical calculator. This resource has tried to reconcile some differences that exist but does not guarantee accuracy or currency. Dosing and equipment sizing should always be verified with validated resources and cross checked against local guidelines.

Paediatric Adrenaline

Adrenaline Infusion

IV Adrenaline

0.1 mL/kg

1:10,000

IM Adrenaline

0.01 mL/kg

1:1,000

(max 0.5 mL)

ETT Adrenaline

1 mL/kg

1:10,000

Nebulised Adrenaline

0.5 mL/kg

1:1,000

(up to max 5 mL)