

Sedation: PO

- **Midazolam:** 0.5mg/kg – onset 20mins (max 20mg/kg – consider 15mg/kg)
 - (bitter, S/Es paradoxical agitation, OSA, nasal burning IN)
- **Ketamine:** 5-10mg/kg – onset 10-20 mins
 - 5mg/Kg IM, 3-5 mins onset for severe behavioural disturbance
 - (avoid <2yo, S/Es hyper-salivation, dissociation)
- **Clonidine:** 1-4mcg/kg – onset 45mins-1hr
 - (prolonged duration – 6 hours, S/Es sedation, bradycardia, hypotension)
- Chloral hydrate 50-75mg/kg 45-60mins pre procedure.
 - Can split 30mg/kg then 20mg/kg 30mins later. Seek consultation if <3 months corrected age
- Neonates: Sucrose 0.1-0.5ml

Note: midazolam can be given with ketamine or clonidine to overcome taste however dose reduction needed.

Induction agents (IV)

- **Propofol** 1-2.5 mg/kg IBW (adult), child 2.5-3.5mg/kg
- Ketamine 1.5-2 mg/kg IBW (anaesthesia) (5-10mg/kg IM)
 - Procedural sedation 1-1.5mg/kg, analgesia 0.1-0.3mg/kg
- Etomidate 0.3-0.4 mg/kg TBW
- Fentanyl 2-10 mcg/kg TBW
 - Not ventilated 1-2mcg/kg, ventilated 5-10mcg/kg, IN 1.5mcg/kg titrated to response
- Midazolam 0.1-0.3 mg/kg TBW (LITFL)
- Thiopental 2-5 mg/kg TBW (slow stat, beware hypotension)

Neuromuscular blockers:

- Suxamethonium neonate 3mg/kg, child 2mg/kg, adult 1mg/kg (IM =2x IV dose)
- Rocuronium 0.6-1.2 mg/kg IBW
- Vecuronium 0.15-0.25 mg/kg IBW
- Atracurium 0.6mg/kg IBW
- Pancuronium 0.1mg/kg IBW

Reversal

- Sugammadex 2mg/kg spont. recovery, 4mg/kg PTC 1-2, 16mg/kg for immediate reversal
- Neostigmine 50mcg/kg,
 - + Glycopyrrolate 20mcg/kg,
 - + atropine 20mcg/kg (max 0.6mg)

Antibiotics (surgical prophylaxis doses unless specified)

- Cephazolin 50mg/kg
- Ben pen 50mg/kg up to 2.4g
- Flucloxacillin 50mg/kg up to 2g
- Metronidazole 15mg/kg up to 500mg
- Vancomycin 25mg/kg IV over 90 mins ending just prior to procedure – seek advice
- Gentamicin 3-5mg/kg up to 240mg – variable dose in kids, seek advice
- Clindamycin 10mg/kg up to 600mg
- Erythromycin 10mg/kg up to 500mg – seek advice
- Cefotaxime 25mg/kg up to 1g

Analgesia

- Parecoxib 1mg/kg IV
- Paracetamol 15mg/kg q 4-6hrly PO/IV (load 20mg/kg stat) (max 4g/d, dose reduce neonate)
- Ketorolac 0.2mg/kg PO
- Fentanyl 1-3mcg/kg IV, Intranasal 1.5mcg/kg
- Alfentanil 10-20mcg/kg IV
- Morphine/Oxycodone 0.1-0.2mg/kg IV intra-op. 0.1-0.2mg/kg PO q4-6hr
- Tramadol 1-2mg/kg (load 2-3mg/kg stat then 1-2mg/kg) q4-6hr
- Clonidine 1-3mcg/kg orally (3-5 as an oral premed)
- Naloxone 10mcg/kg

Special Analgesia

- Ketamine Infusion 0.05-0.3mg/kg/hr
- Morphine infusion: 0.5mg/kg dose added to 50ml saline, =10mcg/kg/ml concentration, 10-40mcg/kg/hr (1-4ml/hr) or bolus 10-20mcg/kg (1-2ml)
- Fentanyl: 20mcg/kg dose added to 50ml saline = 0.4mcg/kg/ml, loading dose 0.5-1mcg/kg, infusion rate: 0.4-1.6mcg/kg/hr = 1-4ml/hr, bolus = 0.4-0.8mcg/kg = 1-2ml
- Hydromorphone see guideline, note 1mg = 4mg oxycodone
- See EPIC for PCA guidelines – based on pt's weight
- Dexmedetomidine 1-2mcg/kg loading over 10 mins then 2mcg/kg/hr for sedation.
 - Drug Doses App: 0.5-1mcg/kg load over 20 mins then 0.6 (0.2-1) mcg/kg/hr

Antiemetic

- Granisetron 0.02-0.04mg/kg (max 1g daily)
- Ondansetron 0.1mg/kg (0.15mg/kg drug dose app), treatment 0.2mg/kg
- Metoclopramide 0.015-0.2mg/kg
- Dexamethasone 0.15-0.6mg/kg
- Droperidol 10-15mcg/kg (Drug app: 0.02-0.25mg/kg)
- Cyclizine 0.5-1mg/kg

Cardiovascular

- Metaraminol 10mcg/kg

- Ephedrine 0.25 – 1mg/kg
- Adenosine 0.1-0.3mg/kg
- Atropine 20mcg/kg
- Amiodarone 5mg/kg up to 400mg (3mg/kg non arrest)
- Esmolol 0.5mg/kg
- Hydralazine 0.1-0.2mg/kg (Adult 5-10mg)
- CaCl 0.1-0.2ml/kg
- CaGluc 2.2mmol (0.3ml/kg)
- Dopamine 5mcg/kg/min chronotropy and inotropy. 10mcg/kg/min more vasoconstriction and chronotropy

Transfusion

- TXA 10mg/kg bolus plus 10mg/kg/hr infusion. Trauma 15mg/kg IV administered in < 3 hrs from trauma
- PRBCs: see below. FFP: 10-15ml/kg, cryo 5ml/kg, platelets 5-10ml/kg

Extra:

Paediatric formulae:

Body weight:

- Infants: (age in months + 9) / 2
- 1-10yo = (age + 4) x 2
- >10yo = age x 3 (large variation for adolescents)

A:

Airway sizing

- Uncuffed: (age/4) + 4 (uncuffed over 2yo)
- Cuffed: 0.5 size less = (age/4) + 3.5

ETT length

- Position at vocal cords: ID size of ETT
- Oral ETT length (at lips in cm) = (Age/2) + 12
- Nasal ETT length (at nostril in cm) = (Age/2) + 15 (size same as oral in children)
- Neonates:
 - oral ETT length (at lips in cm) = weight (kg) + 6
 - Nasal ETT length (at nares in cm) = (weight kg x 1.5) + 7

Age	Weight (Kg)	Microcuffed ETT ID(mm)	Ventilation Settings	LMA Sizing	Paediatric Formulae
Prem.	2	2.5-3.0 (uncuffed)			Est. Weight (kg)
Newborn	3	3.0	Rate 30/min	Size 1: 0-5Kg	<12m: [months/2]+4
8mths-2yrs	>4.5	3.5	Rate 20-25/min		1-6 yr: [years x2]+8
2-4	15	4.0		Size 1.5: 5-10Kg	6-12yr: [years x3]+7
4-6	17	4.5			
6-8	21	5.0	Rate 16/min	Size 2: 10-20 Kg	Cuffed ETT ID≈ [Age/4]+3
8-10	25	5.5			
10-12	31	6.0	V _T 7-10mls/Kg PaW 10-20cmH ₂ O	Size 2.5: 20-30 Kg Size 3: >30Kg	ETT Length Oral: [Age/2]+12 Nasal: [Age/2] +15

https://blogs.cmdn.dundee.ac.uk/acutecareguide/files/2015/02/Paeds_Drug_Chart.pdf

B:

Ventilation – 6ml/kg (5-8ml/kg)

FiO2 – aim for room air

C:

Fluids: 4:2:1 rule – reduce in severe illness

4ml/kg first 10kg

+ 2ml/kg for next 10 kg

+ 1ml/kg for remaining weight

Minimum 10% dextrose infusion for neonate day 1 (4mg/kg/min) in ml/hr = $2.5 \times \text{weight in kg}$ e.g. 3kg neonate = 7.5ml/h 10% dextrose

Blood transfusion

Blood volume estimation:

- child = $(70 \times \text{weight in kg}) \text{ mls}$
- infant = $(80 \times \text{weight in Kg}) \text{ mls}$
- 10ml/kg of packed cells increases Hb by 3g/dL or 4ml/kg of packed cells increases Hb by 1g/dL
- Allowable blood loss = $\frac{(\text{Initial Hb} - \text{final Hb}) \times \text{blood volume}}{\text{Initial Hb}}$

Disease state medications:

Asthma

- Salbutamol 5mg neb, IV 10mcg/kg (max 500mcg) over 2 mins, infusion 5-10mcg/kg/min first hour then reduce to 1mcg/kg/min
- Ipratropium bromide .25mg neb (every 20mins for 3 doses)
- Mg Sulphate 49.3% 0.1ml/kg = 50mg/kg over 20 mins (max dose 2.5g=5ml)
- Aminophylline 10mg/kg (max 500 mg) over 1 hr (don't give if on theophylline)
- Hydrocortisone 2-4mg/kg up to 50-100mg

Seizures

- Midazolam 0.1mg/kg IM OR IO + repeat at 10mins (0.2mg/kg IM, buccal 0.5mg/kg)
- Keppra 40mg/kg (1g) over 5 mins
- Phenytoin 20mg/kg (1g) over 20 mins
- Sodium valproate 30mg/kg over 10 mins
- Phenobarbitone 20mg/kg over 20mins
- If seizing despite three agents then RSI

EMERGENCY

- Adrenaline doses:

IF Paediatric CARDIAC ARREST Pulseless Electrical Activity, PEA

- ALS GUIDELINES for non-shockable rhythms
- 0.1 mL/kg of 1:10,000 (10 mcg/kg) I.V. Adrenaline
- Repeat 1-4 minutely prn
- Immediately start CPR. 20 mL/kg Crystalloid

- Arrest: 10mcg/kg = 0.1ml/kg of 1:10,000 IV adrenaline solution, q1-4min prn – following ALS guidelines
- Infusion =

Paediatric Adrenaline Infusion
Commence infusion as soon as possible
Can be administered peripherally

1 mg Adrenaline in 50 mL (20 mcg/mL)
Commence at 0.3 mL/kg/hr (0.1 mcg/kg/min)
Titrate to max. 6 mL/kg/hr (2 mcg/kg/min)

- DC shock energy - 4j/kg - rounded to figures commonly found on defibrillators

○ Anaphylaxis:

D	Adrenaline Bolus Repeat as needed Prepare Infusion	
	<p>I.M. Adrenaline (Paediatric) No I.V. access or haemodynamic monitoring OR awaiting Adrenaline Infusion 1:1000 1mg/mL lateral thigh < 6 years = 0.15 mL (150 mcg) 6-12 years = 0.3 mL (300 mcg) Every 5 minutes prn</p>	
Initial I.V. Adrenaline Bolus (Paediatric) Dilution 1 mg in 50 mL = 20 mcg/mL <ul style="list-style-type: none">• Give dose below every 1-2 minutes prn• Increase dose if unresponsive		
Moderate (Grade 2)		Life Threatening (Grade 3)
0.1 mL/kg 2 mcg/kg		0.2-0.5 mL/kg 4-10 mcg/kg

- Actrapid (hyperkalemia) 0.15units/kg and 0.5ml/kg 50% dextrose
- Salbutamol – 2.5-10mg nebulized
- Amiodarone: mg (5 mg/kg)
- Lidocaine (lignocaine) 1%: mL (1mg/kg)
- Sodium bicarbonate 8.4%: mL (1 mmol/kg)
- Hypoglycaemia may be treated with 0.25g/kg glucose by IV or IO infusion with any hyperosmolar solution, for example, 0.5mL/kg of 50% (only via a central venous line) or 2.5mL/kg of 10%
- Burns (1st 24 hrs = Parkland Formula): Maintenance Plus Hartmann's 4mls/kg X %Burn – 1/2 over 8hrs – 1/2 over 16hrs – refer to guideline

NOTE: RCH RSI induction drugs:

https://www.rch.org.au/clinicalguide/guideline_index/Emergency_airway_management/

Induction agent	<ul style="list-style-type: none"> • All induction agents can precipitate acute hypotension if used at “normal” doses in unwell children; significant dose titration is required. • Ketamine (0.5-2mg/kg) is the preferred default induction agent for emergency intubation at RCH.
Muscle relaxant	<ul style="list-style-type: none"> • Higher dose may be required in unwell children to achieve normal onset of action. • Rocuronium (1.2-1.6mg/kg) is the preferred default muscle relaxant for emergency intubation at RCH.

References:

Drug Doses – RCH App + guidelines from RCH and EPIC

Sims and Johnson, Your Guide to Paediatric Anaesthesia

LITFL – RSI inductions <https://litfl.com/rapid-sequence-intubation-rsi/>

ANZCOR Guideline

ANZAAG: http://www.anzaag.com/Docs/PDF/Management%20Guidelines/Paediatric_Immediate_Management_Card_2016.pdf

Suggest:

https://www.rch.org.au/clinicalguide/guideline_index/Emergency_Drug_Doses/

<https://anesthesia.ucsf.edu/sites/anesthesia.ucsf.edu/files/wysiwyg/pdfs/PediRefCard.pdf>

Credit: adapted from resources by Dr F Shan, Dr C Nickson,