

# Keeping babies safe during resuscitation

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## Background

Medication errors during emergencies are common. A recent survey of neonatal medical and nursing staff suggested that team members lacked confidence in appropriate prescription, preparation and administration of drugs with over 50% of respondents involved in medication errors (1).

## Objective

To develop a resource for resuscitation team members that may prevent medication errors during neonatal emergencies to reduce harm.

## Method

A weight-based guide was developed with multi-disciplinary consultation involving team members across the neonatal nursing and medical, pharmacy and paediatric emergency departments.

## Evaluation

A weight-based A4 sized book was developed. Each double page spread corresponds to a single patient weight from 300 grams to 7 kilograms (Figure 1).

Each page features a set of standardised colour-coded tables outlining suitable equipment size and medication doses (including preparation and administration) of commonly used medications in the emergency management of:

- Sedation
- Paralysis
- Shock
- Infection
- Bleeding
- Electrolyte abnormalities
- Seizures

The book also contains algorithms and tables for:

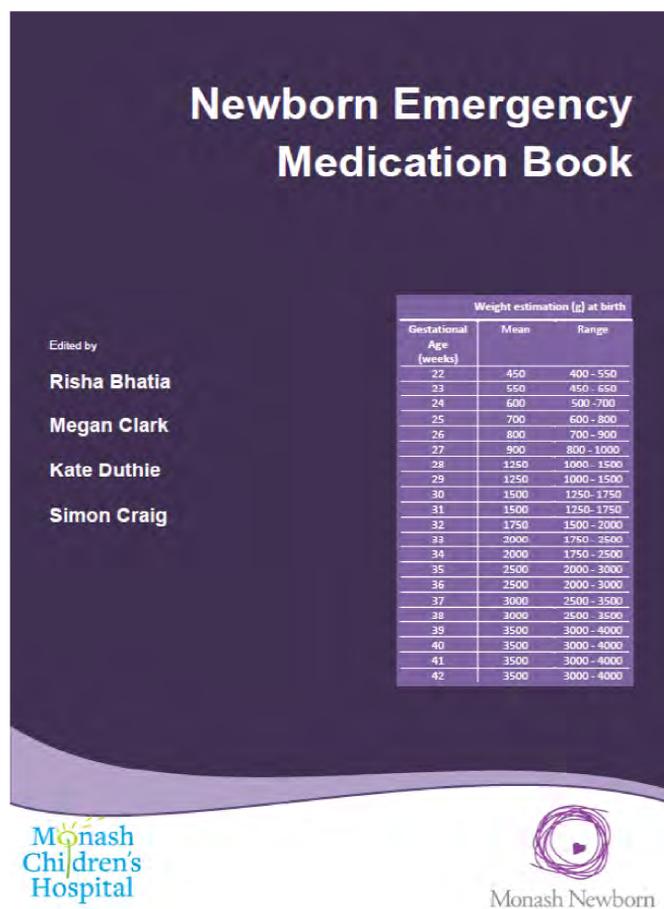
- Newborn life support
- Difficult airway
- Supraventricular tachycardia
- Seizure management
- Medication compatibility

This resource was rolled out to the emergency departments, postnatal wards, birth suites, operating theatres and neonatal units across our health service in February 2022.

Early anecdotal experiences after rollout have described reduced cognitive load for clinicians, and reduced time taken for medication preparation.

## Discussion

This quality improvement initiative may reduce medication errors in high-pressure neonatal resuscitations. Ongoing quality assurance projects are planned following implementation.



3.5 kg	
<b>Resuscitation</b>	
Adrenaline IV	30 microg/kg
Adrenaline ETT	100 microg/kg
<b>Equipment</b>	
ET tube size (uncuffed)	3.5 mm
Depth	9.5 cm to lip
Laryngoscope blade size	1
Supraglottic airway size	1
Suction catheter size	5 or 6 Fr
Nasogastric tube (decompression)	8 Fr
<b>Intubation medication</b>	
Atropine	20 microg/kg
Fentanyl	5 microg/kg
Suxamethonium	2 mg/kg
<b>Bolus sedation</b>	
Morphine	50 microg/kg
Fentanyl	1 microg/kg
Midazolam	50 microg/kg
<b>Ongoing sedation</b>	
Morphine	1 mg/kg
Fentanyl	250 microg/kg
Midazolam	3 mg/kg
<b>Paralysis</b>	
Vecuronium	5 mg/kg
<b>Respiratory medications</b>	
Caffeine citrate	20 mg/kg
Foretact alpha ETT	200 mg/kg
Foretact alpha ETT	100 mg/kg
<b>Management of shock</b>	
Fluid bolus of NaCl 0.9%	10 mL/kg
Adrenaline	600 microg/kg
Nephradrenaline	600 microg/kg
Dobutamine	60 mg/kg
Dopamine	60 mg/kg
Prostaglandin E1 (Alprostadil)	30 microg/kg
Hydrocortisone IV	2 mg/kg
<b>Management of arrhythmia</b>	
Adenosine (1 <sup>st</sup> dose)	100 microg/kg
Adenosine (2 <sup>nd</sup> dose)	200 microg/kg
Adenosine (3 <sup>rd</sup> dose)	300 microg/kg

3.5 kg	
<b>Infection</b>	
Aciclovir	20 mg/kg
Benzylpenicillin	60 mg/kg
Cefazolin	50 mg/kg
Flucloxacillin	50 mg/kg
Gentamicin	5 mg/kg
Meropenem	40 mg/kg
Miconazole	15 mg/kg
Vancomycin	15 mg/kg
<b>Bleeding and blood products</b>	
Packed cells	20 mL/kg
FFP	20 mL/kg
Cryoprecipitate	5 mL/kg
Platelets	15 mL/kg
<b>Electrolyte abnormalities</b>	
Calcium gluconate 10%	0.22 mmol/kg
Sodium bicarbonate 8.4%	1 mmol/kg
Sulfamonomethoxazole	0.2 units/kg/hr
Atacript (insulin)	0.3 units/kg/hr
Potassium chloride	0.3 mmol/kg
Magnesium sulfate 50%	0.2 mmol/kg
IV Glucose 10%	2 mL/kg
IM Glucose	200 microg/kg
<b>Seizures / Neurology (see seizure flowchart)</b>	
Phenobarbital	20 mg/kg
Phenytoin	20 mg/kg
Levetiracetam	40 mg/kg
Midazolam	150 microg/kg
Rectal/anal	200 microg/kg
Clonazepam	0.1 mg
Clonazepam	0.1 mg
Pyridoxine	50 - 100 mg

Figure 1: Newborn Emergency Medication Book - 3.5 kg page

## Reference

1. Nguyen T, Illiparampil R, Wylie L, Cohen NS, Clark M, Bhatia R, et al. Cross-sectional survey of Australian and New Zealand clinical staff to explore attitudes regarding medication prescription and administration during neonatal emergencies. J Paediatr Child Health. 2022 Apr;58(4):641-648.

December 2022. Contact: megan.clark@monashhealth.org



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