

Neuroprotection Checklist

This checklist has been adapted from the Queensland Children's Hospital (QCH) "[Management of severe brain injury in the paediatric intensive care unit](#)" guideline. It has been adapted for the Emergency Department.

Airway/Breathing/C-spine

- SpO₂ target of 92%
- CO₂ target of 35-40mmHg
- Protect C-spine (sandbags are preferred)
- Consider soft collar
- Log roll

Circulation

- Ensure adequate SBP or MAP >50th percentile for age (see table 1)
- Adrenaline may be required. Refer to [CREDD](#) for dosing.
- Consider the placement of an arterial line for invasive BP monitoring

Brain

- Head up at 30 degrees, head midline
- Ensure that ETT is secured in a way that does not restrict circulation
- Adequate analgesia and deep sedation
- Hourly pupil checks

Temperature Control

- Aim for normothermia (36-37 degrees celsius)
- Avoid HYPERTHERMIA

Fluids/Medications

- Plan for use of 3mL/kg 3% Saline
- Aim for Na of 140-160mmol/L
- BSL 6-10mmol. If hypoglycemic, treat 2mL/kg 10% Glucose
- Give levetiracetam loading dose and maintenance (see [CREDD](#) for dosing)
- Consider if IV antibiotics are required
- Use 0.9% Saline as the diluent in the preparation of medications to be infused.

Age	MAP Centiles		
	50	75	95
0-3 months	55	63	77
3-6 months	61	69	86
6-9 months	66	74	93
9-12 months	69	78	97
12-18 months	70	79	99
18-24 months	70	80	98
2-3 years	71	80	98
3-4 years	72	81	98
4-6 years	73	82	99
6-8 years	75	84	101
8-12 years	76	86	103
12-15 years	78	88	105
15-18 years	78	88	104

TABLE 1: Adapted from Eytan, Goodwin, Greer, Guerguerian, Lauren (2017).



ALERT

BLOWN PUPIL

- 3mL/kg 3% Saline bolus
- Bolus of sedation infusion
- Hyperventilate, titrating to CO₂ of 30-35mmHg or reversal of pupil dilation
- Urgent CT and neurosurgical involvement

Any intervention should not delay patient transfer to neuroimaging once the child is safe to attend with an escort.



For further information:

[Children's Resuscitation Emergency Drug Dosage Guide \(CREDD\)](#)

[QCH Guideline: Management of severe traumatic brain injury in the paediatric intensive care unit](#)

References:

Children's Health Queensland. (2020). Management of severe traumatic brain injury in the paediatric intensive care unit. Retrieved July 27, 2022 from https://qheps.health.qld.gov.au/__data/assets/pdf_file/0031/1807645/gdl-80114.pdf

Eytan, D., Goodwin, A. J., Greer, R., Guerguerian, A.-M., Laussen, P. C. (2017). Heart rate and blood pressure centile curves and distributions by age of hospitalized critically ill children. *Frontiers in Pediatrics*, 5. <https://doi.org/10.3389/fped.2017.00052>

This Queensland Paediatric Emergency Skill Sheet was developed and revised by the Emergency Care of Children working group. Initial work was funded by the Queensland Emergency Department Strategic Advisory Panel.

Skill Sheet Legal Disclaimer

The information contained in these Queensland Paediatric Emergency Care skill sheets is for information purposes only. It was developed to inform emergency nursing care, but can also be applied by other clinicians acting within their scope of practice. The information has been prepared using a multidisciplinary approach with reference to the best information and evidence available at the time of preparation. No representation, warranty or assurance is given that the information is entirely complete, current, or accurate in every respect. The skill sheets are not a substitute for clinical judgement, knowledge and expertise, or medical advice. Variation from the skill sheets, taking into account individual circumstances may be appropriate. This does not address all elements of standard practice and accepts that individual clinicians are responsible for the following:

- Providing care within the context of locally available resources, expertise, and scope of practice.
- Supporting consumer rights and informed decision making in partnership with healthcare practitioners including the right to decline intervention or ongoing management.

- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary.
- Ensuring informed consent is obtained prior to delivering care.
- Meeting all legislative requirements and professional standards.
- Applying standard precautions, and additional precautions as necessary, when delivering care.
- Documenting all care in accordance with mandatory and local requirements.

Children's Health Queensland disclaims, to the maximum extent permitted by law, all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs incurred for any reason associated with the use of this skill sheet, including the materials within or referred to throughout this document being in any way inaccurate, out of context, incomplete or unavailable.

