Queensland Paediatric Emergency Care

Skill Sheets

Adrenaline (epinephrine) in Cardiac Arrest

Adrenaline (epinephrine) is a drug that is used as a life-saving pharmacological intervention for multiple patient presentation types to the Emergency Department (ED). This skill sheet will focus on it's use in CARDIAC ARREST. It is vital that the correct solution of adrenaline is selected and prepared to the right concentration. Utilisation of the Children's Resuscitation Emergency Drug Dosage (CREDD) is recommended in all emergencies. The methods of preperation and adminstration of adrenaline (epinephrine) provided in this skill sheet, is in accordance with the "mothership-dose" method from the CREDD.

Prior to all episodes of medication administration, the routine safety checks should be completed.

ALERT

In all situations where adrenaline (epinephrine) is administered, the child must be in a high acuity area and on cardiac monitoring. The patients should have continuous monitoring by a senior RN and a senior medical officer should be readily available. If administrating adrenaline (epinephrine) through a peripheral line, ensure that regular IVC site inspections are completed as adrenaline (epinephrine) can be vasoabrasive. It should ideally delivered through a central point of vascular access.

For the management of cardiac arrest, refer to cardiac arrest algorithm that corrosponds with the defibrillator used in your work unit. Algorithms for the Lifepak 20e defibrillator and the Zoll R Series Defibrilltor are available on the QPEC website.

In cardiac arrest, high-concentration adrenaline (epinephrine) is given INTRAVENOUSLY. When administering adrenaline (epinephrine) to children in cardiac arrest, the adrenaline (epinephrine) should be given as a concentration of 1:10 000. A pre-diluted 1:10 000 "mini-jet" may be used. Alternatively, 1:1000 vial (1mL) should be diluted into 10mL (with 0.9% Sodium Chloride), to give a concentration of 1:10 000.

Adrenaline (epinephrine)

1:1000

= 1mg in 1mL

= 1000mcg in 1mL

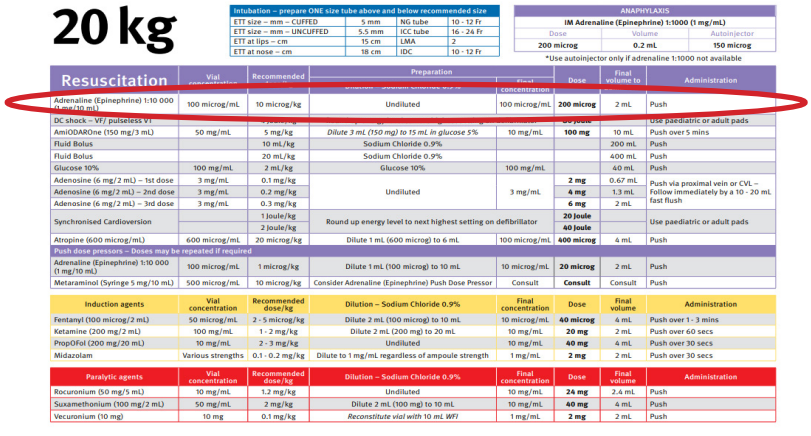
Adrenaline (epinephrine)

1:10 000

= 1mg in 10mL

= 1000mcg in 10mL

CREDD Tip:



20 kg

Intubation – prepare ONE size tube above and below recommended size				
ETT size – mm – CUFFED	5 mm	NG tube	10 - 12 Fr	
ETT size – mm – UNCUFFED	5.5 mm	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	Final concentration	Dose	Final volume to	Administration
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							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

In the CREDD, resuscuitation adrenaline is featured in the RESUSCITATION section in the medications per weight section.

Dosing weights are listed down the right-hand side of the page. In this example, the instructions pertain to a child with an ideal body weight (IBW) of 20kg.

Queensland Government

Adrenaline (epinepherine)in Cardiac Arrest (INTRAVENOUSLY)

1 GATHER EQUIPMENT

Adrenaline (epinephrine)
needs reconstitution to 1:10 000 concentration (see steps below)

Drawing up needle

10mL syringe

3-way tap or syringe connector

Syringe of the appropriate size for administration

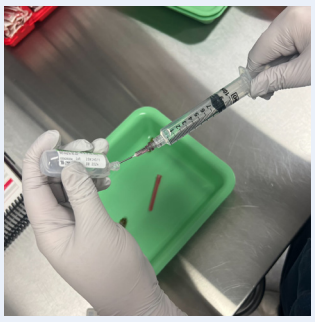
*Intravenous bolus adrenaline at 1:10 000 concentration should ONLY be given in cardiac arrest. It should never be adminstered to a conscious patient.

2 PREPARE

Draw up 1mL of the 1:1000 vial of adrenaline (epinephrine) into a 10mL syringe. If using a 10 000 "mini-jet", you can skip step 1-3.

3

Draw up 9mL of 0.9% Saline into the same 10mL syringe, making a concentration of 1:10 000.

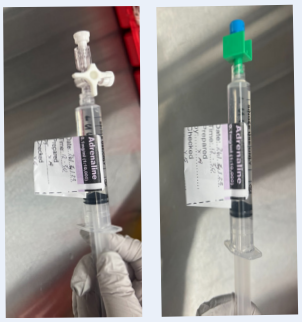


4

Label syringe according to national labelling guidelines.

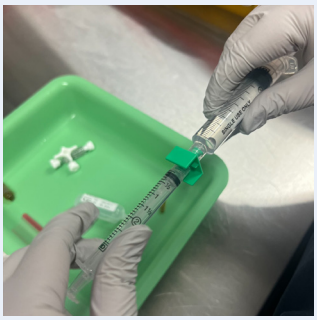
5

Connect syringe to 3-way tap or syringe connector.



6

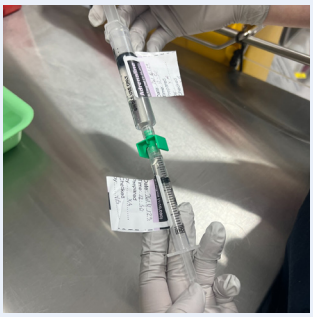
Connect administration syringe to other side of 3-way tap of syringe connector.



7

Fill administration syringe with correct dose (10mcg/kg).

This will equate to 0.1mL/kg with the correct concentration of 1:10 000.

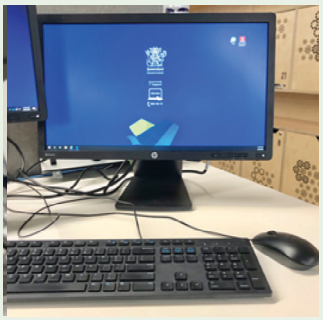


8 PROCEDURE

Post medication safety checks and when directed by medical officer, administer dose into a cannula in a good sized vein or via INTRAOSSEOUS route. Follow with Sodium Chloride 0.9% flush.

9

Ensure that the administration is documented in the medical record.



For further information:

CHQ Paediatric Defibrillation - Lifepak 20e

QCH Paediatric Defibrillation - ZOLL R Series ALS

References:

Children's Health Queensland Hospital and Health Service. (2021, June). Children's Resuscitation Emergency Drug Dosage (CREDD) 2nd Edition. Retrieved from https://www.childrens.health.qld.gov.au/qpec-paediatric-resuscitation-tools/#tab-6ff1bb73468033104a2

Children's Health Queensland Hospital and Health Service. (2020). Paediatric Defibrillation - Lifepak 20e. Retrieved from https://www.childrens.health.qld.gov.au/wp-content/uploads/PDF/qpec/Queensland-paediatric-CPR-algorithm.pdf

Children's Health Queensland Hospital and Health Service. (2020). Paediatric Defibrillation - ZOLL R Series ALS. Retrieved from https://www.childrens.health.qld.gov.au/wp-content/uploads/PDF/qpec/Queensland-paediatric-CPR-ZOLL-algorithm.pdf

This Queensland Paediatric Emergency Skill Sheet was developed by the Emergency Care of Children working group.

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- 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.

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