

Sepsis – Recognition and emergency management in children

Purpose

This document provides guidance for all staff involved in the care and management of children presenting to an Emergency Department (ED) with suspected or proven sepsis in Queensland.

This guideline has been developed by senior ED clinicians and Paediatricians across the state with specialist input from PICU and Infectious Disease staff, Queensland Children's Hospital, Brisbane. It has been endorsed for use across Queensland by the Statewide Emergency Care of Children Working Group in partnership with the Queensland Emergency Department Strategic Advisory Panel and the Healthcare Improvement Unit, Clinical Excellence Queensland.

Key points

- Sepsis is a medical emergency: early recognition and treatment is imperative for survival.
- Consider sepsis in every child with acute illness or new onset of organ dysfunction.
- Certain groups including very young children and children of Aboriginal / Torres Strait Islander / Pacific Islander / Maori origin have a higher risk of sepsis.
- Diagnosis is based on clinical judgement supported by laboratory findings.
- Management includes rapid fluid resuscitation, early consideration of inotropes and administration of appropriate antibiotics; ideally within 15 minutes of presentation.
- Early paediatric critical care involvement (onsite or via Retrieval Services Queensland (RSQ)) is essential.

Introduction

Despite advances in prevention and treatment of invasive bacterial infections, sepsis remains a leading cause of childhood morbidity and mortality in Australia.¹ The mortality rate for untreated septic shock is more than 80% and even with treatment is estimated at 15-20% in children.¹⁻⁷ The initial presentation can be vague and non-specific, particularly in neonates, making early diagnosis challenging. Management includes rapid fluid resuscitation, early consideration of inotropes and administration of appropriate antibiotics; ideally within the first 15 minutes of presentation.⁸ Early paediatric critical care involvement (onsite or via Retrieval Services Queensland (RSQ)) is essential.⁸⁻¹⁰

Definitions

Paediatric sepsis is defined as 'the systemic inflammatory response syndrome in the presence of, or as the result of, suspected or proven infection'.¹⁰ It is a syndrome shaped by both pathogen and host factors.¹¹⁻¹² The most common type of pathogens are bacteria (viruses and fungi can result in a similar presentation), which vary according to host factors, including age, comorbidity and geographic location.¹³



Septic shock is a subset of sepsis in which profound circulatory, cellular, and metabolic abnormalities are associated with a greater risk of mortality.¹⁴ It is identified by sepsis and cardiovascular organ dysfunction, acknowledging that hypotension is a late sign in children.¹⁰

Assessment

Diagnosis

Early recognition of sepsis and prompt treatment is necessary to avoid organ failure and death.¹³ Consider sepsis in any child with an acute illness, or in any high-risk group (see box below), if there is any change from the patient's normal pattern of observations.¹⁵

A diagnosis of sepsis is made using clinical judgement, supported by laboratory testing. There is no single clinical finding or test that is diagnostic. Careful clinical examination with particular attention to vital signs, perfusion and mentation should be conducted. If suspected, initiate investigations and treatment until sepsis is excluded. Validated triage tools for paediatric sepsis are currently being developed but are generally based on the identification of risk factors, abnormal vital signs and/or suggestive clinical features.¹⁵

Children at high risk for sepsis

- neonates and premature infants
- children of Aboriginal / Torres Strait Islander / Pacific Islander / Maori origin
- unimmunised or incomplete immunisation status
- malignancy and/or chemotherapy
- immune deficiency
- asplenia (surgical or functional e.g. sickle cell disease)
- long-term steroid use
- immunosuppressant drug therapy
- recent surgical procedure (within six weeks)
- intravenous recreational drug use
- indwelling lines or catheters (e.g. VP shunt or CVAD)

Sepsis presentation varies with age. Infants and neonates commonly present with non-specific symptoms and signs, such as feeding difficulties and/or apnoea. Older children may present with a focus of infection and/or a constellation of features including fever or hypothermia, vomiting, inappropriate tachycardia, altered mental state and reduced peripheral perfusion.^{13,15} Deviations from pre-existing trends in vital signs (see table below) can be a red flag.

Toxic features include:

- altered mental state
- tachypnoea, increased work of breathing, grunt, weak cry
- marked/persistent tachycardia
- moderate to severe dehydration
- seizures

It is important to pay attention to concerns expressed by the caregiver, particularly changes in usual behaviour of the child.



Normal range for vital signs by age			
Age	Heart Rate (bpm)	Minimum Systolic BP (mmHg)	Respiratory Rate (bpm)
Term	100-180	60	40-60
6 months	100-180	70	30-50
1 year	100-170	70	20-40
2 years	100-160	70	20-30
4 years	80-130	75	20-30
8 years	70-110	80	16-25
12 years	60-110	90	16-25
16 years +	60-100	90	10-16

Septic Shock

Septic shock is the progression of sepsis and can present as either cold or warm shock¹⁶ (see table below). Children with septic shock may have normal blood pressure.



ALERT – Hypotension is a late, and often terminal, sign in paediatric septic shock.



Initiate treatment and urgently contact paediatric critical care (onsite or via RSQ) for child in septic shock

Paediatric septic shock presentations	
Cold Shock	Warm Shock
<ul style="list-style-type: none"> • More common in infants and young children • Constricted peripheral systemic vasculature: cold peripheries and prolonged capillary refill time • Tachycardia is usually present • Blood pressure can be maintained until late • Underlying problem is a low cardiac output state, secondary to impaired myocontractility 	<ul style="list-style-type: none"> • More common in older children (and adults) • Characterised by vasoplegia, in which the systemic vascular resistance is low: brisk capillary refill time ('flash' capillary refill) and pulses are usually felt to be full or bounding • Tachycardia is usually present • Hyperdynamic or high cardiac output state associated with shock due to enlargement of the circulation exceeding cardiac output • Pulse pressure is high, often due to a low diastolic blood pressure • Hyperdynamic or high cardiac output state associated with shock due to enlargement of the circulation exceeding cardiac output • Progression to low cardiac output can occur anytime



Clinical findings consistent with insufficient end-organ perfusion:

- **Mental status:** progressive lethargy, drowsiness or obtundation. Alternatively, restlessness and/or agitation are often seen and can be mistaken for “a vigorous child” but reflects compromised cerebral perfusion due to shock. Infants tend to have irritability and/or apnoeas.
- **Skin:** temperature gradient from core to extremities (note that either hyperthermia or hypothermia can be present), mottled colour, prolonged capillary refill time (more than 2 seconds but note that brisk capillary refill time can be seen in warm shock), petechial or purpuric rash. Purpura fulminans is a widespread non-blanching purpuric rash classically seen in meningococcaemia but may also be associated with severe sepsis from *Pneumococcus*.
- **Cardiovascular:** tachycardia is usually one of the earliest signs. Mean arterial pressure (MAP) can be maintained and the pulse pressure typically is narrow (vasoconstriction to maintain MAP) but may be high (vasodilation in “warm shock”). There may be evidence of cardiac failure (hepatomegaly, gallop rhythm and jugular venous distension) with myocardial depression. A classic pitfall in the recognition of shock is attributing difficulty in obtaining non-invasive blood pressure due to technical issues rather than recognising the presence of hypotension/hypoperfusion.
- **Respiratory:** rate is increased to compensate for metabolic acidosis including lactic acidosis (Kussmaul breathing). Acute respiratory distress syndrome (ARDS) may develop with progressive worsening of respiratory distress (tachypnoea, increased work of breathing) and focal chest signs (reduced breath sounds, inspiratory crepitations, and expiratory wheeze).
- **Renal:** reduced urine output

Toxic Shock Syndrome

Toxic shock syndrome is a potentially life-threatening subset of paediatric sepsis, caused by superantigens from toxin-producing strains of *Staphylococcus aureus* or *Streptococcal pyogenes*.¹⁷ Symptoms may include high fever, vomiting, diarrhoea, myalgia, confusion, collapse and usually a widespread erythematous rash. It can occur in any patient. It is important to distinguish this entity as treatment requires the addition of Lincomycin IV and possibly Intragam IV for their antitoxin properties.

Meningitis (see [Meningitis Guideline](#))

Meningitis should be considered in children with suspected sepsis as it can result in serious complications, such as raised intracranial pressure (ICP). More specific features may include photophobia, headache, nuchal rigidity, seizures, posturing and, in infants less than three months, a bulging fontanelle. Possible signs of raised ICP include fluctuating consciousness despite resuscitation, hypertension, bradycardia, abnormal pupils, posturing, seizures or focal neurology.

Investigations

No single laboratory test will confirm or exclude sepsis. There is currently no evidence to support the use of a specific biomarker in sepsis diagnosis.¹³ Biomarkers may be of more use to determine the need for antibiotics after 48 hours. Clinical findings and host factors should direct specific microbiological sampling. However, despite adequate microbiological sampling, in some children with sepsis the pathogen is not identified (culture-negative sepsis).¹⁸



ALERT – Do not delay antibiotic administration for specimen collection or testing.



Investigations in paediatric sepsis	
Investigation type	Findings in paediatric sepsis
Blood culture	<p>Prioritise over other blood tests. Ideally, blood sample should be collected prior to antibiotics but not delay treatment for collection.</p> <p>Culture sensitivity increases with blood volume. Recommended volume for aerobic culture:</p> <ul style="list-style-type: none"> • 4 mL (green top bottle) • for neonates, 1 mL (yellow top bottle) <p>Collection of anaerobic blood culture is not needed.</p> <p>If the child has a CVAD, blood cultures should be taken from each lumen as per protocol.</p>
Blood gas (usually venous in ED setting)	<p>Markers of possible sepsis:</p> <ul style="list-style-type: none"> • base deficit more than 5.0 mEq/L • lactate more than 2.4 mmol/L <p>Do NOT attribute increased lactate to difficult venepuncture.</p> <p>Glucose < 3 mmol/L associated with glycogen depletion and stress response.</p>
Full blood count	<p>WCC can be high or low in early sepsis but not sensitive or specific.</p> <p>Platelet count < 80,000 uL in sepsis or disseminated intravascular coagulation (DIC).</p>
C reactive protein	<p>More readily available but less specific than procalcitonin.</p> <p>Low value does not exclude early sepsis.</p>
Electrolytes and creatinine	<p>Often deranged, raised creatinine in sepsis related renal failure.</p>
Liver function tests	<p>Increased bilirubin or alanine aminotransferase (ALT).</p>
Coagulation studies	<p>Derangement in the context of sepsis and thrombocytopenia indicative of DIC.</p>
Urine sample	<p>Collection may not be possible until after fluid resuscitation.</p>
Lumbar puncture	<p>Only perform in alert child with no signs of raised ICP or coagulopathy.</p> <p>Usually contraindicated in established sepsis until stable.</p> <p>Can do WCC and PCR for meningitis diagnosis on CSF from delayed LP.</p>
Radiography	<p>Consider CXR for respiratory distress or signs on examination. Other imaging as directed by the focus of infection e.g. septic joint.</p>



Management

Refer to the flowchart in Appendix 1 for a summary of the recommended emergency management of sepsis.

Failure to recognise sepsis and the delay in appropriate treatment are common themes in reviews of sepsis related mortality in children.²⁰ Early aggressive treatment should ensue once sepsis is suspected, with the aim of decreasing tachycardia, improving peripheral perfusion and restoring a normal level of consciousness.



Seek senior emergency/paediatric advice as per local practice if sepsis is suspected



Seek urgent paediatric critical care advice (onsite or via RSQ) for a septic child with insufficient response to fluids or needing inotropes or intubation (see box with triggers for escalation)

Interventions within the first 15 minutes:

- Deliver supplemental oxygen and respiratory support with an appropriate device.
- Obtain immediate intravenous or intraosseous access and send bloods. (consider umbilical line access in newborns up to 2 weeks of life).
- Initial bloods should include blood cultures, venous blood gas and glucose.
- Obtain further bloods if possible, including full blood count, C reactive protein, biochemistry and coagulation profile.
- Urgently administer broad-spectrum antibiotics IV or IO - if no IV or IO access within 15 minutes, administer Ceftriaxone 50 mg/kg IM (maximum 2 grams) and seek assistance.
- Once IV access is obtained, administer full antibiotic doses (see [antibiotic guidelines](#) and [antibiotic dosing for neonates](#)).
- If greater than three months of age and meningitis is suspected, give Dexamethasone IV 0.15 mg/kg **prior to** or **just after** the first dose of antibiotics. If not given at this time, corticosteroids can be given up to an hour after initial antibiotic dose. Do not delay antibiotics.
- Provide immediate fluid resuscitation starting with 20 mL/kg of sodium chloride 0.9% (normal saline) to be pushed in less than five minutes using 50 mL syringe with a staff member dedicated to pushing fluids, with the goal to restore normal circulating volume and physiological parameters.
- Titrate to response: decrease in heart rate and the improvement of end-organ perfusion. Repeat as necessary, evaluating for signs of fluid overload.
- Commence inotropes if normal physiological parameters are not restored after giving more than 40 mL/kg of fluids or anytime if hypotension is present.
- Echocardiography can guide fluid administration and commencement of inotropes.

Triggers for escalation to paediatric critical care (onsite or via RSQ)

- tachycardia not improving after 40 mL/kg fluid boluses
- reduced level of consciousness
- hypotension
- coagulopathy/DIC
- lactate > 4 mmol/L
- inotropes



Ongoing care

Airway and Breathing

- Give high concentration supplemental oxygen.
- Initial delivery can be via a Hudson mask non-rebreather with escalation as required.
- Maintain the patient's airway with positioning and airway adjuncts.
- Consider high-flow nasal cannulae as an alternative transitory support in awake and responsive patients.
- Give PEEP through a T-piece (anaesthetic) bag while preparing for intubation for children that are grunting, obtunded, or hypoxic despite supplemental oxygen.
- Consider inserting a nasogastric tube for gastric distension, which can otherwise impede ventilation.
- Intubation may be required for additional respiratory support or airway protection in a child with reduced conscious state, and children in shock (to facilitate the insertion of lines, and support of cardiac function). Refer to the [Management of Paediatric Septic Shock Guideline](#) (access via QH intranet).



ALERT – Child may arrest from cardiovascular collapse on RSI /intubation

Avoid drugs with negative inotropy (such as Midazolam or Propofol) and have arrest dose of Adrenaline IV ready.

- Adequately pre-oxygenate child and have haemodynamics optimised with concomitant fluid resuscitation and inotrope infusion prior to intubation.
- Reduce the induction drug dose in a child with significant cardiovascular compromise (i.e. 50% of weight-based dose).
- Ketamine (0.5 – 1 mg/kg) and/or Fentanyl (1-2 microgram/kg) for induction (less cardiodepressant) and Rocuronium (1.2 mg/kg) for muscle relaxation are generally a suitable combination for rapid sequence induction.

Circulation

Profound fluid loss from the intravascular space occurs due to capillary leak from the systemic inflammatory response. Fluid resuscitation is aimed at restoring normal physiological parameters, particularly heart rate and blood pressure.²¹

Fluids for rapid infusion

Recommended:

- sodium chloride 0.9% (normal saline) - preferred as is readily available
- Hartmanns solution
- colloids e.g. human albumin 4% - possible advantage but insufficient evidence to support routine use²²

Hypotonic fluids should **never** be used as bolus therapy.

- Administer fluids as a rapid bolus (20 mL/kg) and repeat as necessary being mindful of the development of fluid overload (inspiratory crepitations, hepatomegaly, and/or gallop rhythm).



- Consider inotropes in fluid-refractory shock, to be started as early as within 15 minutes of presentation (has been shown to improve outcomes).²²⁻²³
 - First-line choice: Adrenaline starting at 0.05-0.1 microgram/kg/min (up to a maximum of 1 microg/kg/min), which can be administered temporarily via a peripheral IV or IO line before central access is gained in a suitable environment.
 - Alternative choice: Dopamine starting dose 5-10 microg/kg/min.
- Aliquots of Adrenaline IV can be given as 1 microgram/kg (i.e. 0.1 mL/kg of a 1:100,000 Adrenaline solution) if infusion is being prepared and the patient remains in shock. A 1:100,000 Adrenaline solution can be prepared by diluting 1 mL of 1:10,000 Adrenaline solution (i.e. 100 micrograms of Adrenaline) with 9 mL of sodium chloride 0.9%.

Other considerations

- Administer Hydrocortisone IV (1 mg/kg) in child with suspected or proven adrenal insufficiency.^{8,25} Consider for fluid and inotrope resistant shock (limited data on efficacy).
- Consider alternative diagnoses in all patients, especially neonates who may have a metabolic or cardiogenic (congenital duct dependent lesions or acquired cardiac failure e.g. myocarditis) cause of their shock
- Electrolyte disturbance (e.g. hypocalcaemia) is common in critically-ill children with sepsis and can contribute to poor cardiac function. Replacement should be in accordance with local guidelines.

Escalation and advice outside of ED

Clinicians can contact the services below to escalate the care of a paediatric patient as per local practices. Transfer is recommended if the child requires care beyond the level of comfort of the treating hospital.



Child is critically unwell or rapidly deteriorating

Includes the following children with sepsis or suspected sepsis (as a guide):

- tachycardia not improving after 40 mL/kg fluid boluses
- reduced level of consciousness
- hypotension
- pain or distress disproportionate to clinical findings
- coagulopathy/DIC
- lactate more than 4 mmol/L
- requiring inotropes
- physiological triggers based on age (see below)

Less than 1 year	1-4 years	5-11 years	Over 12 years
<ul style="list-style-type: none"> • RR >50 • HR <90 or >170 • sBP <65 • SpO2 <93% in oxygen or <85% in air • GCS ≤12 	<ul style="list-style-type: none"> • RR >40 • HR <80 or >160 • sBP <70 • SpO2 <93% in oxygen or <85% in air • GCS ≤12 	<ul style="list-style-type: none"> • RR >40 • HR <70 or >150 • sBP <75 • SpO2 <93% in oxygen or <85% in air • GCS ≤12 	<ul style="list-style-type: none"> • RR >30 • HR <50 or >130 • sBP <85 • SpO2 <93% in oxygen or <85% in air • GCS ≤12



Reason for contact	Who to contact
For immediate onsite assistance including airway management	<p>The most senior resources available onsite at the time as per local practices.</p> <p>Options may include:</p> <ul style="list-style-type: none"> • paediatric critical care • critical care • anaesthetics • paediatrics • Senior Medical Officer (or similar)
Paediatric critical care advice and assistance	<p>Onsite or via Retrieval Services Queensland (RSQ).</p> <p>If no onsite paediatric critical care service contact RSQ on 1300 799 127:</p> <ul style="list-style-type: none"> • for access to paediatric critical care telephone advice • to coordinate the retrieval of a critically unwell child <p>RSQ (access via QH intranet)</p> <p>Notify early of child potentially requiring transfer.</p> <p>Consider early involvement of local paediatric/critical care service.</p> <p>In the event of retrieval, inform your local paediatric service.</p>

Related documents

Guidelines

- [Febrile illness](#)
- [Management of Paediatric Septic Shock](#)
- [Management of Fever in a Paediatric Oncology Patient](#)

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Guideline approval

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Disclaimer

This guideline is intended as a guide and provided for information purposes only. The information has been prepared using a multidisciplinary approach with reference to the best information and evidence available at the time of preparation. No assurance is given that the information is entirely complete, current, or accurate in every respect. We recommend hospitals follow their usual practice for endorsement locally including presenting it to their local Medicines Advisory Committee (or equivalent) prior to use.

The guideline is not a substitute for clinical judgement, knowledge and expertise, or medical advice. Variation from the guideline, taking into account individual circumstances may be appropriate.

This guideline does not address all elements of standard practice and accepts that individual clinicians are responsible for:

- 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

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0 minutes

Recognition

- Fever greater than 38.5°C or hypothermia
- Looks sick or toxic (**Box A**)
- Irritable or drowsy
- Poor perfusion/purpura/petechiae
- Close attention to vital signs and risk factors (**Box B**)



First 5 minutes

Immediate actions

- Attach cardiorespiratory monitoring
- Assess airway and administer oxygen
- Initial assessment

First 15 minutes

Establish vascular access

- Insert IO if two attempts at IV fail
- Consider UVC in neonate under 2 weeks of life
- Take bloods:
 - BC, VBG with lactate and glucose (priority)
 - FBC, CRP, UEC, LFT, +/- Coags, +/- Grp and hold
- Administer antibiotics IV (**Box C**)
 - Ceftriaxone IM 50 mg/kg (max 2 g) if delayed
 - Give full dose/s of antibiotic/s IV once access established

First 30 minutes

IV fluid administration with Sodium Chloride 0.9%

- 20 mL/kg bolus over ~ 5 min
- Repeat 20 mL/kg boluses to a maximum of 40-60 mL/kg within first hour
- Each time reassess response
- Aim: improved HR, mentation, perfusion
- Overload: hepatomegaly, crepitations
- Prepare Adrenaline – both infusion and 1:100,000 solution for aliquot doses

First 60 minutes

Inotropes & further considerations

- Seek Paediatric Critical Care input as per **Box D**
- Adrenaline infusion:
 - 1 mL 1:1,000 with 49 mL Glucose 5%, commence 0.05-0.5 microgram/kg/min (can be initially low dose via peripheral IV)
- If delay in infusion: Adrenaline bolus 0.1 mL/kg of 1:100,000 (1 microgram/kg)
- Consider further IV fluid boluses
- Consider early intubation (**Box E**)
- Correct hypoglycaemia (2 mL/kg Glucose 10%)/hypocalcaemia
- Consider Hydrocortisone IV 1 mg/kg (max 50mg)



Discuss ECMO in refractory shock with PICU

Seek urgent senior emergency/paediatric advice as per local practice

Contact Retrieval Services Queensland (RSQ) on 1300 799 127 if no Paediatric Critical Care facility onsite

Box A: Toxic features

- Altered mental state
- Tachypnoea, increased WOB, grunt, weak cry
- Marked/persistent tachycardia
- Moderate to severe dehydration
- Seizures

Box B: Risk factors for sepsis

- Age less than 3 months
- Indwelling medical device
- Aboriginal/Torres Strait Islander/Pacific Islander/Maori
- Immunocompromised/asplenia/neutropenia/incomplete immunisation
- Recent trauma or surgery/invasive procedure/wound within 6 weeks
- Chronic disease or congenital disorder

Box C: Initial antibiotic doses

Age less than 2 months

Sepsis where meningitis possible or bacterial meningitis:

Ampicillin/Amoxycillin IV 50 mg/kg
PLUS Cefotaxime IV 50 mg/kg

Sepsis (source unknown but bacterial meningitis excluded):

Ampicillin/Amoxycillin IV 50 mg/kg
PLUS Gentamicin IV:
Birth to 1 month: 5 mg/kg
1 to 2 months: 7.5 mg/kg

Age greater than 2 months

Sepsis with or without bacterial meningitis:

Cefotaxime IV 50 mg/kg (maximum 2 g)
OR Ceftriaxone IV 100 mg/kg (maximum 4 g)

If documented cephalosporin anaphylaxis:

Ciprofloxacin IV 10 mg/kg (maximum 400 mg)
PLUS Vancomycin IV 15 mg/kg (maximum 750 mg)

If septic shock requiring inotropes:

Cefotaxime IV 50 mg/kg (max 2 g) (OR Ceftriaxone IV 100 mg/kg (max 4 g))
PLUS Vancomycin IV 15 mg/kg (maximum 750 mg)
PLUS Gentamicin IV
1 month to 10 years of age: 7.5 mg/kg (maximum 560 mg)
More than 10 years of age: 7 mg/kg (maximum 640 mg)

If risk factors for nmMRSA:

ADD Lincomycin IV 15 mg/kg (maximum 1.2 g)

If risk factors for multi-resistant MRSA:

ADD Vancomycin IV 15 mg/kg (maximum 750 mg)

Consult CHQ Antibiocard for ongoing doses. Review and rationalise antimicrobial therapy based on clinical condition and microbiology results.

Box D: Triggers for escalation to Paediatric Critical Care

- No improvement after 40 mL/kg fluid administration
- Inotropes
- Reduced level of consciousness
- Hypotension
- Lactate > 4 mmol/L



Box E: Intubation/RSI

- Potential for deterioration/cardiac arrest
- Prepare Adrenaline bolus dose 1mL of 1:10,000 made up to 10 mL with Sodium Chloride 0.9% at dose 0.1 mL/kg
- Use RSI drugs to optimise physiology
- Ketamine IV 0.5 – 1 mg/kg
- +/- Fentanyl IV 1 – 2 microgram/kg
- Rocuronium IV 1.2 mg/kg

Abbreviations

IO = Intra Osseous
UVC = Umbilical Venous Catheter
BC = Blood Culture
VBG = Venous Blood Gas
FBC = Full Blood Count
CRP = C Reactive Protein

UEC = Urea, Electrolytes & Creatinine
LFT = Liver Function Tests
IV = Intravenous
HR = Heart Rate
WOB = Work of Breathing
RSI = Rapid Sequence Induction

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CHQ Antibiocard: www.childrens.health.qld.gov.au/health-professionals/ams-aim-gdl/

