Sepsis – Emergency management in children – Flowchart

**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
- Attach cardiorespiratory monitoring
- Administer antibiotics IV
- Take bloods:
  - CBC = Blood Culture
  - UEC = Urea, Electrolytes & Creatinine

**First 15 minutes**

**Establish vascular access**
- Insert IO if two attempts at IV fail
- 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
  - 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 50 mg)

**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/neutropaenia/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/Amoxyclillin IV 50 mg/kg
  - PLUS Cefotaxime IV 50 mg/kg
- Sepsis (source unknown but bacterial meningitis excluded):
  - Cefotaxime/Amoxyclillin 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: 7.5 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

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

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

For more information refer to CHQ-GDL-60010 - Sepsis – Emergency management in children