PAEDIATRIC ACUTE CARE GUIDELINE	
Serious Illness	
Scope (Staff):	All Emergency Department Clinicians
Scope (Area):	Emergency Department

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Serious Illness

General

- A child who presents with a life threatening condition or collapse is a relatively uncommon event but often causes anxiety and presents a major challenge to clinicians.
- A structured approach will enable a clinician to manage these emergencies.
- This structured approach initially focuses on identifying and treating immediate threats to life.
- Following this initial **primary survey** and resuscitation, the structured approach is again used as a **secondary survey** to identify other key symptoms and signs which require emergency treatment to stabilise the patient.
- Most children, however, will not present with a life threatening condition but may show signs and symptoms of serious illness.
- The use of the structured approach will identify a deteriorating condition potentially avoiding pre-arrest and arrest situations.
- In the hospital setting, assessment of critically ill children should ideally involve a team of doctors and nurses with defined roles and responsibility.
- There should be an experienced team leader who allocates roles and delegates tasks while maintaining situational awareness.
- It is recommended that all healthcare workers who work with children undertake an Advanced Paediatric Life Support Course (or similar) to provide the skills needed to assess and manage seriously ill children.

Assessment

- A structured, systematic approach is essential when assessing seriously ill children.
- Early recognition and treatment of seriously ill patients may prevent deterioration and potential arrest situations.

- Primary survey using the “ABCD” approach is a simple and highly effective method in resuscitation situations.

History

- Cardiorespiratory arrest in children is rarely due to primary cardiac disease.
- In children, it is most commonly due to hypoxia and respiratory failure (secondary to foreign body, bronchiolitis, asthma, pneumonia, aspiration). Circulatory failure (due to septic shock, anaphylaxis, severe dehydration, congenital heart disease) and central neurological failure (raised intracranial pressure, meningitis, seizures) may also lead to cardiorespiratory arrest.
- Therefore, recognition of impending respiratory failure, circulatory failure or central neurological failure is paramount in preventing arrest situations in children.
- This is the basis of paediatric early warning scores which have been introduced in various hospitals, including PMH. See ED Guideline: EDOES.

Recognition of the Deteriorating Child

A structured approach should identify a deteriorating child and any impending respiratory, cardiovascular or central neurological failure

Airway	
Assess for airway patency and signs of airway obstruction • Stridor • Stertor/snoring • Hoarse voice • Neck swelling/bruising • Airway foreign body	**Resuscitation** • Suction if necessary • Basic airway manoeuvres • Airway adjuncts: oro-pharyngeal or naso-pharyngeal airways • Endotracheal intubation • Surgical airway
Breathing	
Assess effort, efficacy and effects of breathing (adequacy of gas exchange) **Effort** • Respiratory rate – tachypnoea/bradypnoea/apnoea • Nasal flaring • Grunt • Tracheal tug • Subcostal/intercostal recession **Efficacy** • Air entry • Chest expansion • Oxygen saturations **Effects** • Heart rate • Skin colour (cyanosis is a late sign) • Mental status	**Resuscitation** • High flow oxygen via non rebreathing mask with reservoir bag **Support ventilation**: • Positive End Expiratory Pressure (PEEP) • Bag valve mask ventilation • Consider intubation and positive pressure ventilation
Circulation	

Assess for adequate cardiovascular function and tissue perfusion. Ensure adequate circulating intravascular volume and control haemorrhaging. • Heart rate – tachycardia, bradycardia • Pulse volume • Central capillary return • Blood pressure (hypotension is a late sign) **Effects of inadequate circulation:** • Respiratory rate and character • Skin appearance and temperature • Mental status **Signs of cardiac disease/heart failure:** • Gallop rhythm • Raised JVP • Hepatomegaly	**Resuscitation** • High flow oxygen • Intravenous or intraosseous access • Bolus of 0.9% saline (20ml/kg) and repeat as necessary • Control external bleeding **Cardiopulmonary resuscitation** and Advanced Life Support if there is **no** cardiac output
Disability **Hypoxia and shock can cause a decrease in conscious level. Any ABC problem should be addressed before assuming a primary neurological problem.**	
Assess level of consciousness, pupils, posture and blood glucose level. • Conscious level: **A V P U** scale • Pupil size, symmetry and reactivity • Abnormal posturing (decorticate, decerebrate) • Seizure activity • Bedside glucometer reading	**Resuscitation** • Response to **P**ain or **U**nresponsive – consider intubation • Treat raised intracranial pressure – 20% Mannitol or 3% saline • Correct hypoglycaemia – 2ml/kg of 10% glucose IV • Treat status epilepticus (see ED Guideline: Status Epilepticus)
Exposure	
Fully expose child and **assess** temperature, rashes and signs of injury • Check core temperature • Look for non blanching rashes or purpura • Urticaria or angioedema	**Resuscitation** • Rewarm or cool as indicated • Antibiotics if suspected infection • Treat anaphylaxis if likely cause of illness

Further management

Secondary Assessment

The primary survey is an initial assessment aimed at detecting immediate life threatening problems that can compromise basic life functions. The secondary assessment focuses on ongoing reassessment and management. It is important to perform an additional assessment with a focused history and physical examination in stable patients. The secondary survey is intended to detect less immediate threats to life and has several specific objectives:

- Obtaining a complete history, including mechanism of injury or circumstances of the illness
- Performing a detailed physical examination
- Establishing a clinical diagnosis
- Performing appropriate laboratory investigations and imaging

Ongoing Assessment

Always reassess the patient. The purpose is to assess the effectiveness of the emergency interventions provided and identify any missed injuries or conditions. This should be performed in every patient after the detailed physical examination and after ensuring completion of critical interventions.

Once stabilised, patients should have the following monitored:

- ECG monitoring
- Pulse rate
- Respiratory rate
- Oxygen saturations
- Blood pressure
- Temperature

Consider $ETCO_2$, venous blood gas, urine output (Foley's catheter), invasive BP monitoring (arterial line), CVP monitoring, ICP monitoring.

Tags

accessory muscles, airway, arrest, arrhythmia, asystole, avpu, breathing, cardiac, circulation, critical, critically, disability, febrile, fever, grunt, grunting, hypoglycaemic, hypovolaemic, hypoxia, hypoxic, ill, increased icp, mottled, nasal flaring, non blanching, pallor, primary, pu, rash, recession, resus, resuscitation, secondary, seizures, serious, serious illness, shock, survey, tachycardic, toxic, unresponsive, unwell

References

• Advanced Paediatric Life Support: The Practical Approach. 5th ed Australia and New Zealand Version. Wiley-Blackwell, 2011.
• Textbook of Pediatric Emergency Medicine. 6th ed. Fleisher GR, Ludwig S. Philadelphia: Lippincott Williams & Wilkins, 2010.

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