Clinical Practice Guidelines: Resuscitation/Resuscitation – Traumatic

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<td>Purpose</td>
<td>To ensure consistent management of Resuscitation is provided in Traumatic arrest.</td>
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<td>Scope</td>
<td>Applies to all QAS clinical staff.</td>
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Resuscitation – Traumatic

The traumatic arrest refers to the patient presenting in cardiac arrest, or peri-arrest, due to trauma (force). There are three common causes of preventable early death in trauma which are the focus of traumatic resuscitation interventions:

Reversible causes of traumatic arrest include:
- Airway obstruction and inadequate ventilation
- Tension pneumothorax
- Hypovolaemia

The response to these interventions is time critical and success depends on a well-established chain of survival, including advanced prehospital and specialised trauma centre care. The key areas of traumatic arrest interventions are:

**Control catastrophic external haemorrhage**

The priority in the traumatic arrest patient is the control of any catastrophic external bleeding through the use of techniques such as direct pressure, and arterial tourniquets.

**Control airway and maximise oxygenation**

Hypoxia in the traumatic arrest patient is often the result of airway obstruction (partial or complete), asphyxia, and respiratory failure due to a lack of ventilatory drive. Efforts to correct this should focus on the placement of a definitive airway (ETT or LMA), with the most experienced clinician, responsible for this task.

**Bilateral chest decompression**

A tension pneumothorax can be responsible for a critical reduction in cardiac output and is a common factor associated with traumatic arrest, necessitating its rapid identification and reversal.

**Fluid resuscitation and haemorrhage control**

The correction of hypovolaemia secondary to bleeding must be approached in a two-step manner. The first step involves aggressive fluid resuscitation of 20 ml/kg normal saline or preferably packed red blood cells with the aim of restoring circulating blood volume. Further fluid boluses of 5-10 mL/kg should be given if hypovolaemia is suspected as ongoing cause of persistent cardiac arrest. This step should be done in conjunction with approaches to prevent or minimise further blood loss including the application of bandages, pressure dressings and splints.
Clinical features

- **No signs of life:**
  - Unresponsive
  - Abnormal breathing
  - Pulse cannot be palpated within 10 seconds, OR

- **Signs of inadequate perfusion:**
  - Unresponsive
  - Pallor or central cyanosis
  - Pulse less than:
    - 60 bpm in an infant
    - 40 bpm in a paediatric 1–12 years/adult

Risk assessment

- Unless there are injuries or wounds that are incompatible with life, attempted resuscitation of all patients presenting with traumatic arrest should be attempted.

Additional information

**Injuries inconsistent with traumatic arrest**

A small minority of trauma patients will have a medical cause that precipitated the cardiac arrest. If the severity of injuries appears inconsistent with traumatic arrest, a medical cause (e.g. AMI) should be suspected and managed according to the general resuscitation guidelines.

**External chest compressions**

In cardiac arrest due to trauma, all the interventions are aimed at the correction of the underlying causes. There is no benefit from external cardiac compressions until blood volume is returned to a minimally sufficient quantity. However, if there are sufficient available resources, and there is no interference with essential interventions, CPR can occur simultaneously.

**Adrenaline**

There is no recommendation for the use of adrenaline within the context of the traumatic cardiac arrest until after the control and correction of reversible causes. Hypotension in the setting of ROSC is usually the result of hypovolaemia and should be initially treated with ongoing volume replacement. In the late phases of post-arrest care, vasodilation or myocardial depression may require adrenaline or other vasoactive agents.

**Cessation of resuscitation**

Continuation of advanced life support should continue in the traumatic cardiac arrest patient for up to 20 minutes following the satisfactory management of airway and ventilations, chest decompression, and haemorrhage control and volume replacement. After such time if there is no return of spontaneous circulation, all resuscitation efforts should cease.
Note: Officers are only to perform procedures for which they have received specific training and authorisation by the QAS.

These interventions are prioritised according to likely aetiology of the cardiac arrest and if possible should be performed simultaneously by a multimember team.

BLS/ALS can occur simultaneously with the listed interventions if this does not interfere with treatment priorities and sufficient resources are available.

Control external catastrophic haemorrhage
Consider:
- Arterial tourniquet
- Arterial compression

Control airway and maximise oxygenation
Consider:
- LMA/ETT

Bilateral chest decompression

Fluid resuscitation and haemorrhage control
- IV/IO access
- 20 mL/kg PRBC or normal saline
- Further 5–10 mL/kg fluid boluses if indicated
- Pelvic binder
- Fracture immobilisation and splinting

ROSC

Transport to hospital Pre-notify as appropriate

Manage as per:
- CPG: ROLE

Consider:
- CPG: Resuscitation – Adult
- CPG: Resuscitation – Paediatric

* Reversible causes
- Hypoxia
- Hypothermia
- Hypovolaemia
- Tamponade

Continue resuscitation for 20 minutes after reversible causes have been addressed

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