



Clinical Practice Guidelines: Resuscitation/Special circumstances

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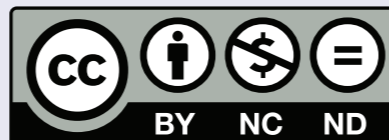
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Resuscitation – Special circumstances

February, 2021

While the vast majority of cardiac arrests are appropriately managed with standard basic and advanced life support, there are some situations that require modification of the standard patient management, or the addition of other treatments or procedures.

This CPG outlines the treatments and procedures that should be considered during resuscitation in special circumstances.

Asthma or COPD

Issue:

- Ventilation in reactive airways can be difficult.
- Positive pressure ventilation can trigger further bronchoconstriction and complications such as breath stacking. This is caused by incomplete expiration, air-trapping and build-up of positive end-expiratory pressure (intrinsic or auto-PEEP).^[1]

Appropriate management:^[2,3]

- Reduce the respiratory rate, apply a smaller tidal volume and prolonged expiratory time:
 - **adult:** 6–8 per minute
 - **paediatric:** 8–15 per minute
- Use the largest ETT appropriate to decrease airway resistance.
- Permissive hypercapnia is usually well tolerated by patients.
- For asthmatics in cardiac arrest, when ventilation is difficult, consider the potential of tension pneumothorax and treat as appropriate.

CPR – Induced Consciousness (CPRIC)^[4]

Issue:

- The importance of high quality cardio-pulmonary resuscitation (CPR) during cardiac arrest has been emphasised in recent years. This has produced an increase in the previously seldom seen phenomenon of CPRIC.
- Improvement in the fundamental characteristics of good CPR: depth, rate, recoil and minimal interruption has meant that the small but critical amount of cerebral blood flow generated occasionally provides sufficient cerebral perfusion pressure to allow the patient to regain some level of consciousness while CPR is being performed.
- CPRIC is far more likely to occur with witnessed cardiac arrest patients, where the elapsed time to commencement of high quality CPR is short and significant hypoxic brain damage has not occurred.
- Documented cases of CPRIC have become more frequent in recent years, with literature describing variations that include physical signs such as spontaneous eye rolling, increased jaw tone, body movement/ combativeness and even speech. Patients often have a gag reflex. The level of awareness during resuscitation is not known.

Appropriate management

- The goal of treatment is to manage the patient's awareness and/or pain so as to facilitate CPR and defibrillation, and other resuscitation interventions to occur safely, effectively and humanely.
- Critical Care Paramedics who encounter adult CPRIC patients may consider administering sedation in accordance with the following protocol:
25 microg fentanyl alternating with 1 mg midazolam every 3–5 minutes PRN.
- Advanced Care Paramedics who encounter adult CPRIC patients that are interfering with appropriate clinical care must contact the *QAS Clinical Consultation and Advice Line* to discuss treatment option.

Decompression illness

Issue:

- When ventilation is difficult, consider the potential for tension pneumothorax and treat as appropriate.

Appropriate management:

- Following ROSC, continue high flow oxygen and provide rapid transport to a definitive care facility with hyperbaric unit if available.

Hypothermia

Issue:

- The lack of signs of life in a hypothermic patient, cannot reliably be used for declaring life extinct.
- As the body temperature decreases, sinus bradycardia tends to give way to atrial fibrillation, followed by VF and then asystole.^[5]

Appropriate management:

- The lack of signs of life in a hypothermic patient cannot reliably be used for recording life extinct.
- Good outcomes have been reported post prolonged resuscitation in hypothermic patients, therefore consider prolonged resuscitation and altered threshold for transport to hospital until core temperature close to normal.
- Consider transfer to a hospital capable of Extra-corporeal warming (i.e. ECMO) for patients in hypothermic arrest or temperature less than 28°C.
- If PEA is the presenting rhythm and the patient's temperature is less than 30°C feel for a pulse for at least 60 seconds and consider EtCO₂/ultrasound to determine if there is any cardiac output, prior to commencing CPR as compressions can precipitate VF.^[5]

- Withhold adrenaline (epinephrine) and other resuscitation drugs until the patient's temperature is approximately 30°C.^[5]
- Between 30°C and 35°C drug intervals should be doubled.^[5]
- Once the patient's temperature is greater than 35°C drug intervals should return to normal.^[5]
- If the patient's temperature is less than 30°C and they are in VF/VT give up to three DCCS at maximum energy setting then withhold further DCCS until their temperature is greater than 30°C.

Morbid obesity

Consider:

- Early activation of additional resources for extrication
- Potential airway management difficulties

Pacemaker/Implantable Cardioverter Defibrillator (ICD) insitu^[6]

Issue:

- When treating a patient with a permanent pacemaker or an ICD insitu, this can interfere with correct placement of defibrillation pads.

Appropriate management:

- The defibrillator pads should be placed on the chest wall ideally 8 cm or more, from the generator position.
- The anterior-posterior and anterior-lateral defibrillation pad placements are both considered acceptable.
- If an unconscious patient has an ICD in-situ, but VF or VT persists, external DCCS(s) should be delivered.

Ambulance clinician witnessed cardiac arrest in adult patients with suspected cardiac aetiology ^[7]

Issue:

- an ambulance clinician witnesses the cardiac arrest of a monitored, well oxygenated adult patient, and the cardiac arrest is suspected to be of cardiac aetiology, the focus of management is on delivering early defibrillation.

Appropriate management:

- If the initial ECG rhythm is VF or pulseless VT, up to three successive (stacked) shocks should be delivered prior to commencing compressions, unless a delay of greater than 20 seconds is expected.
- Rapidly check the monitor for a rhythm change after each defibrillation attempt.
- If a delay to delivering initial defibrillation is expected to be greater than 20 seconds, commence compressions and at the earliest opportunity deliver a single shock (if indicated) without waiting to complete a 2-minute CPR cycle.
- After the initial defibrillation shocks, if the patient remains in VF or pulseless VT, further defibrillation shocks should follow a single shock protocol, with 2 minutes of CPR between shocks.
- If ROSC is attained for greater than 2 minutes, and then the patient suffers another witnessed VF or pulseless VT arrest, up to three successive (stacked) shocks should be delivered.
- If the patient remains in a shockable rhythm, clinicians should call the *QAS Clinical Consultation and Advice Line* for further case specific management guidance.

Pregnancy

Issue:

- There are two patients – *mother* and *foetus*. The best hope for foetal survival is maternal survival.^[1,8,9]

Appropriate management:

- If the pregnancy is at 20 weeks or greater gestation, position the mother to avoid aortocaval compression by moving the gravid uterus to the patient's left side.^[2] If this is not possible or successful, tilt the patient 15° to 30° to the left, supporting the pelvis and thorax with suitable firm padding and ensuring the chest remains supported on a firm surface.
- A higher hand position may be required for chest compressions to overcome elevation of the diaphragm and abdominal contents due to the gravid uterus.^[8]
- Intubation should be attempted as soon as possible to overcome increased intra-abdominal pressure and ensure adequate ventilation.
- Due to potential airway oedema, consider using an ETT that is 0.5–1 mm smaller than usual.^[2]

Tracheostomy patients ^[10]

Issue:

- These patients cannot be effectively ventilated using a BVM and face mask.

Appropriate management:

- Ventilation through the stoma is achieved by attaching the BVM directly onto the tracheostomy tube if compatible, otherwise consider using a neonate face mask to create a seal over the stoma. An alternative is to consider placing a LMA with inflated cuff over the stoma to achieve a seal. Occlude the mouth and nose if upper airway leaks occur.
- If an air leak from the upper airway is present while ventilating through the stoma, upper airway techniques and adjuncts can be attempted to minimise further damage or complication of the lower airway. Occlude the stoma when ventilating via the upper airway.
- Do not remove an in situ tracheostomy tube if ventilation is possible.