



## Air Care & Mobile Care

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### **Procedure Indications Quick Reference**

- Thoracostomy
- Canthotomy
- Escharotomy
- Field Amputation
- Resuscitative Hysterotomy
- Cyanokit Administration
- tPA Administration

## Thoracostomy (Needle or Finger) Indications

### 1. Indications

- a. Spontaneously breathing patient
  - i. Progressive respiratory distress\* with hypoxia
  - ii. At least 2 clinical indicators of a pneumothorax
    1. Chest wall trauma
      - a. Ecchymosis
      - b. Crepitus
      - c. Deformity
      - d. Penetrating injury (gunshot wound, stab wound)
    2. Decreased or absent breath sounds
    3. Jugular venous distension
    4. Tracheal deviation
    5. Ultrasonographic evidence of a pneumothorax

\*Please note that the provider must determine progressive respiratory distress clinically. Respiratory distress following major trauma is common and often multifactorial (rib fractures, pulmonary contusion, anxiety, agitation). Tension pneumothorax is a progressive disease process that should worsen with time.

- b. Intubated patient
  - i. Hypotension\*\* or Shock Index > 1.0
  - ii. At least 2 clinical indicators of a pneumothorax
    1. Chest wall trauma
      - a. Ecchymosis
      - b. Crepitus
      - c. Deformity
      - d. Penetrating injury (gunshot wound, stab wound)
    2. Decreased or absent breath sounds
    3. Jugular venous distension
    4. Tracheal deviation
    5. Ultrasonographic evidence of pneumothorax

\*\*Tension pneumothorax rarely manifests with hypotension in the spontaneously breathing patient. The intubated patient however will usually develop hypotension.

- c. Traumatic cardiac arrest
  - i. Please refer to Air Care traumatic cardiac arrest protocol

### 2. Finger Thoracostomy Considerations

- a. For most patients needle thoracostomy should be sufficient. Finger thoracostomy should be considered for those with refractory pathology, unfavorable body habitus, or in cardiac arrest. Provide Ancef if time permits, analgesia, and place chest seal dressing.

## Lateral Canthotomy and Cantholysis Indications

### 1. Indications

**“Look** for proptosis, **feel** for pressure elevation, **evaluate** for visual dysfunction.”

- a. In the awake patient:
  - i. 2 out of 3 of the following must be present
    1. Proptosis
    2. Elevated IOP (by palpation)
    3. Presence of an APD OR inability to count fingers
- b. In the comatose patient:
  - i. 2 out of 3 of the following must be present:
    1. Proptosis
    2. Elevated IOP (by palpation)
    3. Presence of an APD

### 2. Relative Contraindications

- a. Suspected globe rupture (caution with palpation).
- b. Patient refusal or inability to tolerate procedure due to pain or anxiety.
- c. Other greater life threats (i.e. bigger fish to fry; GCS < 12, hypotension). Do not delay scene time for procedure. May consider doing in flight if time and flight permits.

### 3. Exam Considerations

- a. Assessing for proptosis
  - i. Caution to not mistake lid edema for proptosis. To assess for true proptosis the lids must be opened. This can be challenging when tight and edematous. This can be accomplished with assistance using 4x4s for traction, paperclips, and looking down on the patient’s face from the head of the bed
- b. Assessing elevated intra-ocular pressure
  - i. Gentle palpation of the globe can provide a rough assessment of the intra-ocular pressure. A hard “rock-like” globe is concerning. Avoid palpation if there is concern for globe rupture.
- c. Assessing visual acuity
  - i. An APD (afferent pupillary defect) is not equal to a blown pupil. The APD will still react consensually. Gross visual dysfunction will be evidenced by lack of ability to count fingers.

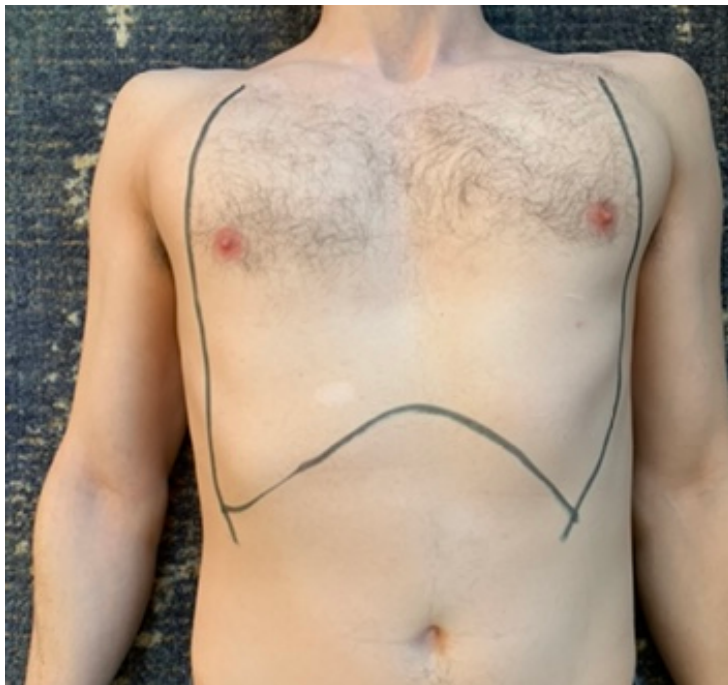
## Chest Wall Escharotomy Indications

### 1. Indications

- a. Chest wall full thickness burns hindering respiratory mechanics with imminent threat to life as evidenced by at-least one clinical indicator AND at-least one objective indicator.
  - i. Clinical Indicators:
    1. Patient feels hard to ventilate with BVM
    2. Lack of visible chest rise
  - ii. Objective Indicators:
    1. High pressures on BVM ( $>40$  mmHg) despite removal of other potential obstructive hindrances (pneumothorax, obstructed ETT, right mainstem intubation).
    2. High peak pressures on ventilator ( $>40$  mmHg) with low tidal volumes without other more probable cause (Asthma/COPD, ARDS, vent dyssynchrony).
    3. Hypoxia ( $SpO_2 < 90\%$ ) refractory to endotracheal intubation and not felt to be secondary to hypotension or another reversible etiology, e.g., a tension pneumothorax.
    4. Persistently elevated  $EtCO_2$  ( $>60$ ) despite adequate respiratory rate and tidal volumes.
    5. Blood gas with evidence of significant respiratory acidosis despite adequate respiratory rate and tidal volumes ( $pH < 7.2$ ,  $pCO_2 > 60$ ).
- b. Chest wall full thickness burns hindering BVM ventilation in a patient in full cardiac arrest undergoing CPR prior to termination of resuscitative efforts.
- c. Receiving physician discretion. If there is doubt about the need for an escharotomy then discussion with the receiving burn surgeon should be requested.

### 2. Relative Contraindications

- a. Burns that are obviously non-compatible with life, i.e., burned beyond recognition
- b. Other greater threats to life needing assessment
- c. Procedure should not be done in flight



## Field Amputation Indications

### 1. Indications

a. Need for rapid removal of patient from environment due to EITHER life threatening patient medical factors (e.g., patient entrapped in MVC and peri-arrest) OR life threatening environment factors.

AND

b. Entrapment of a limb amenable to amputation preventing removal of patient from environment.

### 2. Contraindications

a. Entrapment of limb at a proximal location precluding proper placement of tourniquet to control bleeding.

b. Environmental factors that would make the procedure unsafe for the provider (e.g., car is on fire).

### 3. Considerations

a. If patient is awake MUST obtain consent

b. If any awareness present provide analgesia/sedation with ketamine

c. Call medical control prior to performing

## Resuscitative Hysterotomy Indications

### 1. Indications

- a. Pregnant female > 20 weeks gestation (fundus at umbilicus)  
AND
- b. Cardiac Arrest < 15-20 minutes
  - i. Best outcomes if done within 5 minutes
  - ii. Use crew judgment for 15-20 minutes
  - iii. Strongly consider if any signs of life present
    - 1. Spontaneous movements or breathing
    - 2. Pupillary or gag reflexes present
    - 3. PEA on monitor

### 2. Considerations

- a. As soon as loss of pulses noted, procedure should be started
- b. Crew resource management
  - i. If suspected sick mom then place 2<sup>nd</sup> helicopter on stand by
  - ii. If no pulse then doc starts procedure
  - iii. Nurse or Medic secures airway: iGel or ETT
  - iv. Nurse prepares for newborn resuscitation, 2<sup>nd</sup> team en route

## Cyanokit (hydroxycobalamin) Indications

1. Indications
  - a. Evidence of exposure to smoke from fire in an enclosed space  
OR
  - b. Evidence of exposure to an industrial source of cyanide such as hydrogen cyanide (HCN) or potassium cyanide (KCN)  
AND
  - c. Altered mental status  
OR
  - d. Hemodynamic instability, clinical evidence of shock, lactic acidosis, cardiac arrest
2. Contraindications
  - a. Known anaphylactic reaction to hydroxycobalamin
3. Considerations
  - a. Administer on scene or at facility as soon as possible prior to transport. Do not delay administration to in transport.
  - b. Skin, conjunctiva, mucous membranes, and urine may temporarily turn orange which may interfere with some colorimetric lab tests and pulse oximetry/co-oximetry.

## tPA Indications

### 1. Indications

- a. Cardiac arrest from known PE or STEMI
- b. Cardiac arrest from highly suspected PE or STEMI based on exam, history, rhythm
- c. Massive pulmonary embolism
  - i. Systolic BP <90 or 40 below baseline for 15 minutes  
OR
  - ii. Clinical evidence of shock
- d. Acute ischemic stroke in conjunction with the greater Cincinnati stroke service\*
  - i. \*Air Care crews will not make decision to treat independently, but may administer at recommendation of stroke service

### 2. Contraindications

- a. In cardiac arrest perceived futility of resuscitation based on premonitory state, lack of bystander CPR, or prolonged down time is a relative contraindication.

### 3. Considerations

- a. For cardiac arrest administer 50 mg bolus over 1 minute. Administer early and must continue code for at least 20 minutes to allow effect.
- b. For massive PE administer 100 mg over 2 hours
- c. Any prepared but unused tPA MUST be returned to UCMC pharmacy