Lee County
Common Treatment Guidelines

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ACKNOWLEDGEMENT

2024

These guidelines are of little value in the absence of great training processes in each Department that will utilize them, and the Quality Improvement (QI) processes that ensure their effective and safe use.

We acknowledge that the dedicated, devoted, and consistent efforts of the protocol sub-committee members, who shepherded these guidelines and their updates through the Medical Care Council. The committee sought the contributions of the emergency, pediatric, trauma, obstetric and critical care physicians in the Lee Health system, and those in Charlotte and Hendry and Collier counties, who collectively sought the input of their partners. It is an ongoing effort for these contributors to bring new developments to confirm the best practices from around the country.

We acknowledge the protocols of EMS systems like MedStar in Fort Worth, TX and Austin Travis County, TX for their guidance and material for our consideration and application.

We as an emergency care community move forward with gratitude to those who will make devoted efforts to breathe life into these guidelines perhaps, sometimes literally for the well-being of our patients and for the benefit of our entire community.

Annotated Updates 2024

March 2024

- All documents
  - Updated date to 2024
  - Removed crystalloid from all treatment guidelines (except hypo/hyperthermia, hyperactive delirium, sepsis, and diabetic emergencies) and moved it to the perfusion guideline
  - Removed AP medic from all treatment guidelines and aligned treatment to the Paramedic level to better align and avoid conflict with national and state scope of practice
  - Replaced Universal Care and Patient Safety Guidelines with "Theory and Operational" Guidelines and "General Guidelines" to incorporate all guidelines under these sections into each of these documents
- Added ALS – Escharotomy Procedure
- Added NCH North Naples as STEMI receiving
- Corrected Levetiracetam dosing in pharmacology reference
- Table of contents
  - "Forward Guideline" name changed to "Theory and Operational Guidelines"
  - Table of contents updated
- Spinal motion restriction guideline – replaced lacks decisional capacity with altered mental status to align with NEXUS criteria
- Pain and anxiety guideline
  - added Ketamine as an anxiolytic for procedural compliance
  - added procedural anxiety to indications
- Chest pain / ACS – added a max dose for Nitro under the BLS level.
- Procedural sedation
  - removed non-invasive oxygenation / ventilation from indications
  - added pediatric IM/IN dosing for Ketamine
- Hyperactive delirium – added RASS language into the guideline
- Death in the Field
  - updated termination of resuscitation to provide better clarity to the process
- Added perfusion guideline
- Added pseudo PEA guideline
- Added push dose epinephrine to pharmacology reference
- Updated pit crew guideline to reflect new training standard
- Added PEARL to pain management and abdominal pain guideline to not withhold medication in fear of masking injury or illness
- Added nausea/vomiting guideline to the abdominal pain guideline
- Specified RASS scale as sedation scale in the universal care guideline
- Added PEARL about RASS in the procedural sedation guideline

- Removed “C” and “T” from stroke alert destinations. Stoke receiving destinations will now be marked by a check mark only
- Traumatic Injury Guideline – added PEARL for POCUS confirmation prior to decompression if available
- Vaginal Bleeding – added postpartum hemorrhage in the differentials
- Changed PEARL in Pre-eclampsia guideline to reflect a SBP > 140 or DBP > 90
- Added standardized dosing to for adults to the DAI guideline
- Added time consideration for DSD in the medical cardiac arrest guideline

September 2023

- Airway, Ventilation, & Oxygenation Management
  - updated indications for endotracheal intubation
- Procedural Sedation
  - updated dosing for Midazolam IM & IN
- Allergic Reaction & Anaphylaxis
  - removed the max pressure support setting
  - added pediatric duoneb
- Reactive Airway Disease
  - removed the max pressure support setting
  - added pediatric duoneb
- Overdose & Poisoning
  - removed the max pressure support setting
- Seizure
  - Levetiracetam dosing corrected for Adults and Pediatrics
- Tachycardia Management
  - PEARL added for Amiodarone administration
  - corrected magnesium sulfate dose
  - added energy settings
  - formatting update
- Congestive Heart Failure & Pulmonary Edema
  - removed the max pressure support setting
- Medical Cardiac Arrest
  - removed the “for suspected hyperkalemia” from Calcium
  - corrected DSD language
  - added PEARL to define refractory v-fib
- Pit Crew
  - corrected vector change language
- Benadryl
  - removed nausea from motion sickness from indications

Annotated Updates 2024

July 2023

- Guideline rewrite completed

Table of Contents

2024

Table of Contents

2024

Theory and Operational Guidelines

2024

Intent and Usage

2024

The delivery of Emergency Medical Services (EMS) is, by nature, inherently dynamic. Because of this, the Lee County Common Treatment Guideline (LCCTG) is designed to be a clinical job aid and not intended to be an educational document. The LCCTG is a standardized approach to best practice patient care that encompass evidence-based guidelines (EBG). The focus of the LCCTG is patient-centric and supports the evolution of new EMS research. The LCCTG serves as a resource to clinical medicine while maximizing patient care and ensuring patient safety and outcome regardless of existing resources or capabilities.

It is impractical to write a guideline for every condition or specific case. As such, the LCCTG outlines care for a typical case or condition. As a guideline continues, the assumption can be made that previous steps were ineffective, or the patient condition changed. The order of treatment listed may not be appropriate for all situations. In fact, not all procedure options may be indicated in every situation. The provider's clinical judgment, and ability to consult with medical control as needed, must be relied upon to determine which authorized treatment procedure is appropriate for a given condition or situation.

The care concepts and patient safety guidelines are included in each clinical guideline. This reduces the need for reiteration of basic principles, history and physical exam, and other considerations. One fundamental goal of the LCCTG is to promote critical thinking of all pre-hospital providers: thus, developing technicians into clinicians. This development begins with a framework and the most basic element in medicine – History and Physical Exam (H&P). Without this, the provider cannot reasonably determine which guideline to follow. All providers should work collaboratively with the patient's interest at the forefront of every decision.

The organizations that drive the LCCTG are the American Heart Association (AHA), National Association of EMS Physicians (NAEMSP), American College of Emergency Physicians (ACEP), American College of Osteopathic Emergency Physicians (ACOEP), American College of Surgeons–Committee on Trauma (ACS-COT), Lee Health, and regional county EMS agencies.

Universal Care 2024

Goals:

To facilitate appropriate initial assessment and management of any EMS patient and link to appropriate specific guidelines as dictated by the findings within the universal care guideline

The following represents age classification:

- Adult: Age >13 years or signs of puberty
  - Pediatric: Age 1 – 13 years or signs of puberty
  - Infant: Age 1 month – 1 year
  - Neonate: Age birth – 1 month

PEARL | *For purposes of admission criteria, Lee Health considers any patient less than 18 y/o to be "pediatric"*

PEARL | *For purposes of Trauma Alert criteria, adult is age 16 and above, pediatric is age 15 and below*

General Actions:

Response

1. Review dispatch information
2. Consider need for additional resources

Scene Arrival and Size-Up

1. Use appropriate body substance isolation (BSI)
2. Use appropriate personal protective equipment (PPE)
3. Evaluate and ensure scene safety
4. Determine number and location of persons involved versus patients
5. Consider need for additional resources

Patient Approach

1. Determine mechanism of injury (MOI) and/or nature of illness (NOI)
2. If appropriate, begin triage and initiate mass casualty incident (MCI) procedures – RAMP Triage

Primary Assessment and Life-Saving Interventions

1. General Impression – Sick versus Not Sick:
   A. Appearance
   B. Work-of-Breathing
   C. Circulation to Skin
2. Mental Status:
   A. Awake/Alert
   B. Responds to Verbal Stimuli (RVS)
   C. Responds to Painful Stimuli (RPS)
   D. Unconscious/Unresponsive

(continued)

C-A-B, D-E Assessment

3. **C**irculation Status:
   - Central and Peripheral Pulses – present or absent, regular or irregular, rate & quality
     - Absent, Hypotensive or Hypoperfused? Proceed to appropriate Guideline
   - Major Hemorrhage
     - Hemorrhaging? Proceed to appropriate Trauma Guideline
   - Skin - color, temperature, condition

4. **A**irway Status:
   - Natural
   - Artificially Secured
   - Compromised
     - Proceed to Airway | Ventilation | Oxygenation Management Guideline
   - Obstructed
     - Proceed to Airway | Ventilation | Oxygenation Management Guideline

5. **B**reathing Status:
   - Work-of-Breathing
   - Respirations – present or absent, regular or irregular, rate & quality
   - Auscultate Lung Sounds
     - Adventitious? Proceed to appropriate Guideline

6. **D**isability Status:
   - Determine Baseline or Variation from Baseline Mentation
   - Gross Motor/Sensory Function:
     - Moves all extremities? Focal loss/defect? Eyes? Facial symmetry?
   - Blood Glucose
   - Cervical Motion Restriction
   - Pupil Response
   - Glasgow Coma Score

7. **E**xposure:
   - Evaluate illness or injury, remove clothing as necessary
   - Medic Alert bracelets or identification

PEARL | *Critically ill or injured patients shall receive initial stabilization and resuscitative measures prior to movement*

SAMPLE History and Physical Examination

1. Obtain a SAMPLE and OPQRST History:

Signs/**S**ymptoms		**O**nset
Allergies		**P**rovocation and **P**alliation
Medications		**Q**uality
Pertinent Medical History		**R**egion, **R**adiation, or **R**eferred

Last Oral Intake		**S**everity
Events Leading To Present Illness or Injury		**T**iming

2. Conduct an Adult: Head-to-Toes exam or Pediatric: Toes-to-Head exam
3. Conduct a focused, detailed or ongoing systems exam:
    A. Neurological
        - AVPU
        - Stroke Assessment
        - Pain Scale
        - Richmond Agitation-Sedation Scale (RASS)
    B. Pulmonary
        - Auscultate Lung Sounds
    C. Cardiovascular
    D. Gastrointestinal & Genitourinary
    E. Integumentary
    F. Musculoskeletal (Trauma Exam)
4. Assess Vital Signs:
    A. Pulse
    B. Blood Pressure
    C. Respirations
    D. Skin Color, Temperature and Condition
    E. Capillary Refill
5. Non-Invasive Monitor Assessment (as applicable or indicated):
    A. Cardiac
        - Limb lead monitoring
        - 12 Lead ECG
    B. Blood Pressure
    C. Capnography
    D. Pulse Oximetry
    E. Blood Glucose
    F. Temperature
6. Collect and transport documentation related to patient's history (e.g., emergency information form, medical records, Medic Alert, DNR form, etc.)

Impression

1. Develop a triple differential impression of the case
    - e.g., Altered Mental Status: *Hypoglycemia vs. Stroke vs. Organic Brain Syndrome*
    - e.g., Acute Coronary Syndrome: *STEMI vs. Unstable Angina vs. Pulmonary Emboli*
    - e.g., Shoulder Injury: *Shoulder Fracture vs. Shoulder Dislocation vs. Shoulder Contusion*

Treatment

- Refer to appropriate clinical guideline(s)
- General control measures and principles:
    A. Establish an airway as prescribed by the Airway | Ventilation | Oxygenation Management Guideline

(continued)

B. Ensure adequate ventilation as prescribed by Airway | Ventilation | Oxygenation Management Guideline
    - Ventilation target: etCO2 35mmHg – 45mmHg; normal capnograph
C. Administer oxygen as prescribed by Airway | Ventilation | Oxygenation Management Guideline
    - Oxygenation target: SpO2 ≥ 92% in COPD patients and ≥94% for all other patients
D. Correct tension pneumothorax with pleural decompression
E. Correct open pneumothorax with an appropriate vented occlusive dressing
F. Establish vascular access as appropriate and indicated for condition
   PEARL | *No medications will be administered directly via medication port or saline lock*

Assign Clinical Priority

1. Priority 1 (Red) — unstable advanced life support patient; requiring immediate emergent medical attention for a life and/or limb threatening illness or injury
2. Priority 2 (Yellow) — stable advanced life support patient; requiring medical attention but not immediately endangering patient's life
3. Priority 3 (Green) — basic life support patient; requiring non-emergent medical attention

Determine Disposition

1. Mode—Consider mode of transport (air, land, water, etc.)
2. Status—Evaluate need for emergent (lights and sirens) versus non-emergent transportation

Communications

1. Notification to the receiving hospital should be made for all patient transports
2. Medical Control consultation (on a recorded line) is encouraged for any out-of-the-ordinary cases

Reassessment

1. Re-vital sign unstable patients at appropriate intervals or at least every 5 minutes
2. Re-vital sign stable patients at a minimum of every 15 minutes
3. A minimum of 2 assessments are required for every patient transport

Patient Safety 2024

Goal(s):

To provide a consistent and standardized foundation for patient, provider, department and system safety.

General Actions:

Providers will:

- maintain a heightened situational awareness for patient and provider safety
- perform only those procedures for which they are educated (trained to perform), certified (competent to perform), licensed (legal authority to perform), and credentialed (medical director authorized to perform)
- be aware of legal issues and patient rights as they pertain to and impact patient care (e.g., Patients with functional needs, Children with special needs, Baker & Marchman Act patients)
- ensure that stretcher safety restraints, side rails, and cot fastener systems are used in accordance with manufacturer recommendations
- be prepared to adjust management and medications based on patient age, ideal body weight, and co-morbid factors (e.g., adrenal and catecholamine deficiencies, autoimmune disorders, heart failure, end-stage renal disease or renal insufficiency, end-stage liver disease, etc.)
- ensure six (6) medication rights before the administration of any medication:
    1) Right patient
    2) Right drug
    3) Right dose
    4) Right route
    5) Right time
    6) Right documentation
- perform a partner cross-check before the administration of any medication and/or critical procedure
- most medications (unless specified differently) in this reference should be dosed (when applicable) based on ideal body weight. Ideal body weight categories can be found in the Handtevy reference where pediatrics is categorized by age and adults are categorized as small adult, large adult. Maximum dose of medication should not exceed the adult dose except where specifically stated in a patient care guideline
- report any medication errors, clinical misadventures, near miss events, or unanticipated patient outcomes immediately to the receiving physician and respective department supervisor(s)

Airway, Ventilation, & Oxygenation Management 2024

Goal(s):

To provide evidence-based and reasoned logic core principles for Progressive Airway, Ventilation and Oxygenation management.

General Actions:

AIRWAY

Airway management is a clinical mindset and a constellation of skills, tools and techniques that are deployed to establish and/or manage non-natural airways. Airway management is not one treatment modality; it is a progression of interventions ranging from least invasive (BLS) to the most invasive (ALS) as necessary to achieve sufficient ventilation and adequate oxygenation. Maintenance of the airway throughout the prehospital time, including when the patient is moved, is a critical element of care, and is a priority management item for all personnel, not just the paramedic. Loss of the airway due to mechanical displacement of an airway; change in patient condition; aspiration of blood, gastric content, or other fluids; and swelling along the airway, should be anticipated and monitored.

PEARL | *When placing an advanced airway, every effort must be made to avoid iatrogenic hyper/hypocapnea, hypotension, bradycardia and SpO2 desaturation events*

PEARL | *Waveform capnography (etCO2) and pulse oximetry are required for all advanced airway/ventilation cases – colormetric etCO2 device may be used for initial CO2 detection when continuous waveform capnography is not immediately available*

Indications for prehospital endotracheal intubation can be narrowed to the following:

- respiratory failure,
- inability to manage secretions with conventional methods,
- inadequate gag reflex resulting in an inability to protect the airway,
- suspicion for laryngeal edema

PEARL | *Airway axis alignment is crucial to endotracheal intubation – the "ear hole, to sternal notch" position substantially increases the likelihood of obtaining a better laryngeal view*

PEARL | *Video Laryngoscopy (VL) is preferential to Direct Laryngoscopy (DL), however all providers should be familiar with the abilities and limitations of both devices*

PEARL | *An endotracheal intubation attempt is defined as passing the laryngoscope blade and/or endotracheal tube beyond the teeth with the intent to intubate the trachea*

PEARL | *Paramedics should confirm placement of advanced airways that are not performed in their presence*

VENTILATION AND OXYGENATION – AN IMPORTANT RELATIONSHIP

Ventilation is the mechanical aspect of breathing in which air moves into the lungs and CO2 (normal byproduct of metabolism) moves out of the lungs. Proper ventilation requires both adequate tidal volume and respiratory rate. Oxygenation is defined as, "The addition of oxygen to any system, including the human body. Oxygenation may also refer to the process of treating a patient with oxygen, or of combining a medication or other substance with oxygen."

With ventilation serving as the mechanical means of adding oxygen to the body, the patient must have sufficient oxygen, and the ability for that oxygen to be utilized (O2/CO2 exchange). While ventilatory volume and rate are the key components, other factors can affect whether the patient is being adequately oxygenated. Even if the ventilation volume and rate are adequate, every patient must be evaluated for the need to have supplemental oxygen delivered and the most appropriate mechanism for that to occur. Considerations in determining a patient's need for supplemental oxygen are determined from the patient's presenting condition coupled with History and Physical Exam.

The lack of adequate CO2 causes a drop in the acid levels resulting in alkalosis. Iatrogenic hyperventilation by prehospital providers is very controversial for the following reason. CO2 is a potent vasodilator. When CO2 drops because of iatrogenic hyperventilation (aggressive positive pressure ventilation), blood vessels constrict. When arterial vessels constrict, blood flow to vital organs is minimized. In the case of a brain injured patient, iatrogenic hyperventilation will reduce blood flow to the injury/ischemic zone resulting in an increase in morbidity/mortality and poor patient outcome.

When inadequate oxygenation is recognized, it is essential to supplement the patient's oxygen intake. Primary treatment goals for patients suffering from inadequate oxygenation include:

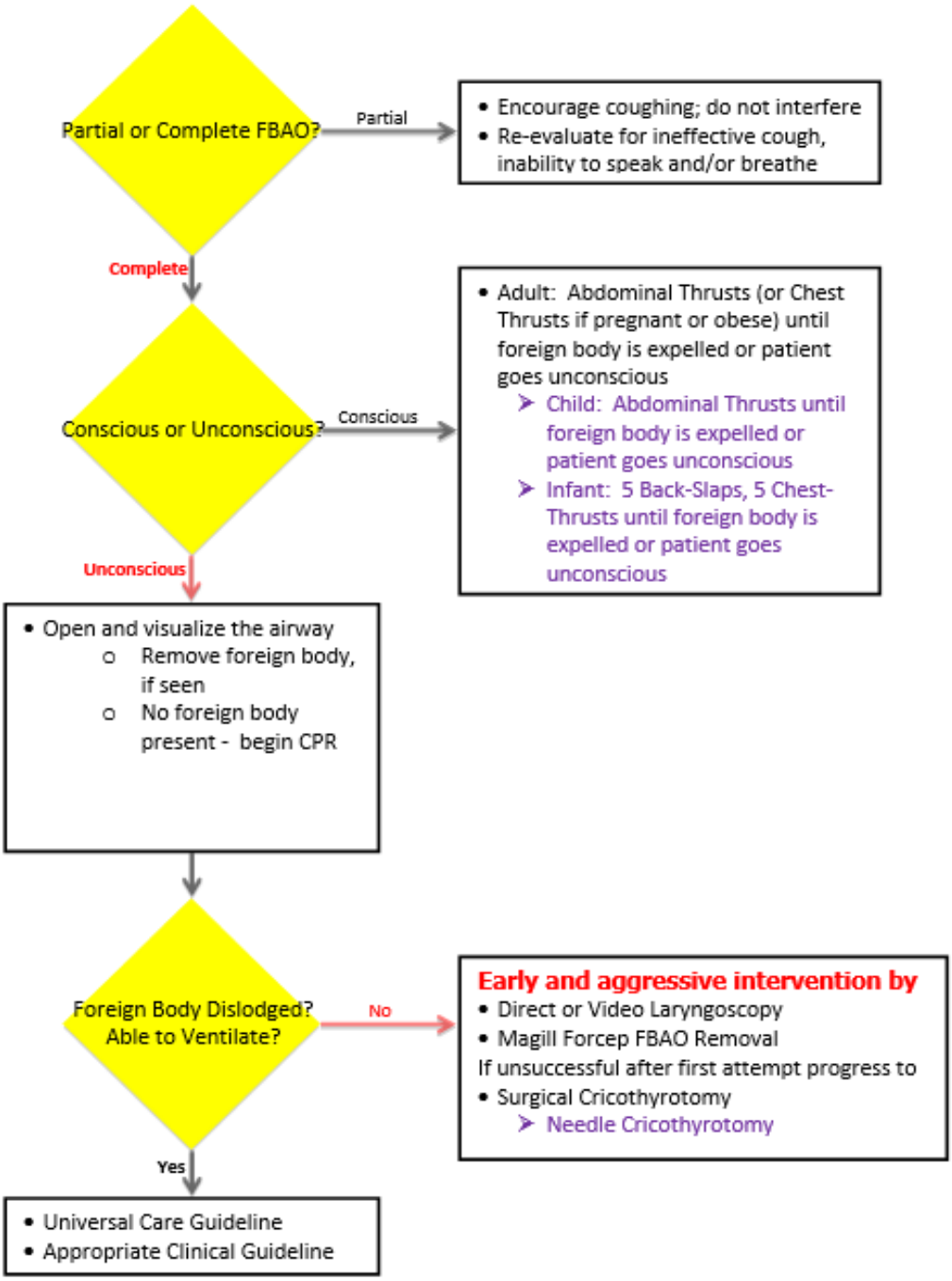
- Preventing or correcting hypoxia
- Optimizing etCO2 and SpO2
- Minimizing the effects of secondary and/or iatrogenic injury
- Decreasing airway resistance

Positive End-Expiratory Pressure, or PEEP, is an effective way to improve oxygenation in patients that are non-invasively or invasively ventilated. In patients who have respiratory embarrassment and increased work-of-breathing, PEEP stents open closed alveoli and recruits lung thus increasing surface area for gas exchange. PEEP also increases functional residual capacity (FRC) which improves pulmonary reserve between breaths. In prehospital care, the range of PEEP is generally 5 – 15cmH2O. Providers should routinely start low and titrate as needed. PEEP is not a "if a little is good, more must be better" theory. To that end, tight-lung patients (reactive airway disease) typically do better at 5cmH2O while wet-lung patients (congestive heart failure/pulmonary edema) may require 7.5 – 15cmH2O. PEEP greater than 15cmH2O can result in an increase in intrathoracic pressure thus causing a decrease in venous return and cardiac output.

VENTILATION/PERFUSION – YET ANOTHER CRITICAL RELATIONSHIP

A common pitfall in ventilation is to over-ventilate patients by providing too much tidal volume (Vt) or too fast a minute rate (Vf)**.** The physics that allow mammals to move air in and out of the lungs can also have a major impact on blood circulation. When a normally breathing patient takes a breath, intrathoracic pressure decreases allowing air to be drawn into the lungs because of the pressure gradient. In patients that receive positive pressure ventilation (PPV), intrathoracic pressure is increased as the lungs are inflated. This increase can squeeze the heart and impair filling and forward blood movement. Unregulated PPV will have a dramatic adverse effect on circulation/perfusion. When attention is not paid to PPV volume and rate, the patient can be harmed because of an imbalance between alveolar ventilation and pulmonary capillary blood flow. This imbalance is known as ventilation/perfusion (V/Q) mismatching. Iatrogenic V/Q mismatching can be mitigated using controlled mechanical ventilation (CMV) devices or automated transport ventilators (ATVs). Ventilation volume and rate should be guided using waveform capnography or etCO2 in concert with American Heart Association Guidelines.

Foreign Body Airway Obstruction



Perfusion Theory

2024

Goal(s):

- Correct reversible conditions that compromise perfusion
- Obtain and/or maintain systemic perfusion that sufficiently maintains vital organs

General Actions:

- There are various causes of perfusion deficits. Consider the most appropriate therapeutic intervention for the underlying pathophysiology
    - Distributive shock treatment should focus on correcting the underlying cause and administering pressors
    - Obstructive shock treatment should focus on correction of the obstructive phenomenon when possible (decompression of tension phenomenon) and rapid transport for causes that cannot be corrected (cardiac tamponade, pneumothorax embolism, etc.)
    - Hypovolemic shock treatment should focus on replenishing fluid deficits.
    - Cardiogenic shock treatment should focus on optimizing cardiac output through volume optimization and pressors and correction of arrhythmias
- A mean arterial pressure (MAP) above 65 is effective for most patients to obtain critical organ perfusion. Hemodynamic interventions are generally not necessary under these circumstances.
    - Consider that slow infusions do not have any significant effect on volume expansion, whereas bolus infusions will have a rapid effect on increasing perfusion. Perform reassessment between boluses
    - Vasopressors applied to a hypovolemic system are far less effective than those applied under euvolemic conditions
    - IV fluids may serve to disrupt clot formation and dilution of clotting factors; therefore, permissive hypotension (maintaining SBP greater than 100 and a MAP greater than 65, or to maintain peripheral pulses) should be considered in the setting of bleeding (traumatic and non-traumatic)
    - A single hypotensive episode in the context of trauma carries with it an increased risk of mortality
- Various medications that the patient may already be on or that we may administer cause hemodynamic changes; use caution as appropriate
- Hypoperfusion may be the cause or the effect of an underlying cardiac etiology including inotropic or electrophysiologic deficit
- Consider the potential for positive pressure ventilation to decrease venous return to the heart, thus causing a reduction in cardiac output. Patients undergoing positive pressure ventilation should be watched closely for signs of deterioration from this phenomenon

Patient Autonomy 2024

Goal(s):

- Respect patient autonomy to provide legal and ethical treatment
- Obtain the most appropriate level of consent for treatment given or withheld
- Determine situation-specific patient cognition, competency, and capacity when needed

General Actions:

Definitions

- ***Patient***: A patient shall be defined as an individual who meets one or more of the following criteria:
  1) Any individual with a medical or traumatic complaint
  2) Any individual with an illness or injury
  3) Any individual with a new altered mental status
  4) Any individual in the same event as a significantly ill and/or injured party (e.g., motor vehicle crash, structural collapse, explosion, toxic fume environment, etc.)
  5) Any individual who, at the discretion of the highest medical authority providing direct patient care, demonstrates a high index of suspicion for illness or injury (EMT or Paramedic judgment)

- ***Responsible Party***: A designated decision maker (DDM) when a patient is not of decisional capacity or has legally transferred their healthcare decision making to another party (parent, legal guardian, power of attorney, healthcare surrogate, etc.)

Patient Decision Making Ability

Patients have the right to determine if and the details of how they receive healthcare, including pre-hospital care (informed consent). Patients who have appropriate cognition, competency, and capacity to make decisions must be allowed to do so

- **Cognition:** the ability to acquire knowledge and understanding through thought
  - Determined by the ability to answer questions of fact
- **Competency:** the legal right to make a decision
  - Determined legally. Adult (18 y/o or older) or legally emancipated patients are assumed to have legal competency unless it has been removed by a court
  - A parent or legal guardian (responsible party) who refuses care on behalf of their minor child (or children).
  - Legal competency can be revoked for individual patients due to an underlying disease process or revoked for an entire class of individuals (children, prisoners, suicidal individuals, etc.)
- **Capacity:** the ability to weigh the integrated aspects of a decision and express a choice
  - Requires the simultaneous understanding of:
    - The current situation
    - The available choices, including the choice to do nothing (alternatives)
    - The predictable outcomes of each available choice (risks and benefits)

Factors Used to Assess Capacity

Capacity is best assessed by non-leading open-ended questions.

- **Orientation**: All patients undergoing the refusal process must be awake, alert and oriented x4 (person, place, time and situation) with the ability to understand the nature and consequences of their actions by refusing evaluation, treatment, and/or transportation
- **Gait and/or Coordination**: Staggering gait, or inability to stand and ambulate may indicate an impairment that alters decision making capacity
- **Speech Pattern**: Slurred, incoherent or otherwise inappropriate speech patterns may indicate an impairment that alters decision making capacity
- **Insight and Judgment**: Patients must express good insight into the nature of their condition, and convey a reasonable plan to deal with their condition
- **Psychiatric Decompensation**: Patients experiencing suicidal or homicidal ideations or gestures, audio or visual hallucinations, and/or other forms of delusional behavior that alters decision making capacity

Implied Consent

- If a patient is determined to be incompetent and/or lacks decisional capacity, they may be evaluated, treated, and transported under "implied consent" (what the reasonable individual would consent to under the same circumstances)
- If the patient is evaluated, treated and transported on the basis of implied consent, providers should use reasonable measures to ensure safe transport to the closest appropriate facility
- Patients who lack one or more aspect of autonomous decision making must have a responsible party identified to make choices on their behalf. If no one else is present (or if those present are unable or unwilling), the EMS provider shall fill the role of decision maker. This is implied consent
- Patients who are unable (or unwilling) to engage in the necessary interaction to determine cognition, competency, and capacity will not be allowed to make autonomous decisions
- Any time actions are taken against a patient's will, the absence of cognition and/or competency and/or capacity must be clearly documented
- Healthcare systems, services, and individual providers are not obligated to offer or provide care that they believe is harmful to the patient (the risk outweighs the benefit to the patient). However, every effort should be made to respect the patient's wishes
- Special situations
    - In the case of patients who do not have legal competency because their rights have been revoked by a specific court, the individual designated by the court shall be the designated decision maker, and that person must be able to demonstrate situational cognition and capacity (give informed consent).
    - In the case of patients who do not have legal competency because they are children, the parent/guardian/responsible party is the designated decision maker, and that person must be able to demonstrate situational cognition and capacity.
    - In the case of patients who do not have legal competency because they are prisoners (or are under arrest), the responsible law enforcement officer is the designated decision maker, and the law enforcement officer must be able to demonstrate situational cognition and capacity.
    - A person with Designated Healthcare Power of Attorney (DPOA) rights may make decisions for a patient but may only do so if the patient is unable to meet the requirements of autonomous

decision making on their own. A patient able to make their own decisions is not subject to the decision making of a DPOA.
    - When bystanders report that legal paperwork exists but is not readily available, EMS Providers should trust that this information is correct, unless there are situational cues to suggest that they are being misled.
  - Occasionally a patient will put their decision making into writing (especially near the end of life) in the form of legal documents or other paperwork/forms. They may also have conversations with family/friends about how they would like to be treated in various situations. When such wishes are expressed through formal paperwork (DNRO form), these wishes should be immediately respected. When patient wishes are expressed through other forms of communication (other written advanced directives – POLST, 5 Wishes, etc., or through family/friends), it is the responsibility for the EMS providers to contact medical direction for consult.
- Substance use (alcohol, drugs, etc.) does not independently eliminate the possibility that a patient can have intact decision-making abilities. However, all necessary components of autonomous decision making must be clearly demonstrated if that patient is to be permitted to make decisions
- All levels of EMS providers are empowered to make the determinations outlined in this care concept but should exercise caution as the complexity and/or severity of the situation escalates in regards to risks, benefits, and alternatives. Consult with a higher-level provider as needed

Emancipation

- Medical: A female less than 18 years of age who is unmarried, pregnant and/or has a minor child may consent to medical care relating to her pregnancy and can make medical decision on behalf of the unborn or born child
- Legal: A person less than 18 years of age but at least 16 years of age who is married, enlisted in military service or has been declared emancipated by court order

PEARL | *No minor less than 16 years of age can be emancipated in Florida; pregnant minors still have consent and autonomy related to her pregnancy or her child*

Care Disposition

2024

Goal(s):

- To provide guidelines and definitions for treatment and transport.
- To establish a guideline for the management and documentation of situations in where patients or potential patients refuses evaluation, treatment, and/or transportation to a hospital in accordance with state and local statute

General Actions:

Definitions

- ***Unable to Locate or No Patient Found***: Unit arrives in the vicinity of a given location but no event or Person Involved (PI) could be found could be located
- ***No Care Required***: Unit arrives on-scene and the Person Involved (PI) does not meet "patient" criteria
- ***Treated, No Transport***: Unit arrives on-scene, makes contact with the Person Involved (PI), the PI is determined to be a Patient, an evaluation and/or intervention is performed and the Patient or DDM ultimately declines to be transported to a hospital (Patient Refusal Form required)
- ***Treatment and Transport Refused***: Unit arrives on-scene, makes contact with the Person Involved (PI), the PI is determined to be a Patient or DDM ultimately refuses evaluation, treatment and declines to be transported to a hospital (Patient Refusal Form required)

Disposition Determination

There are three components to a valid refusal of care and/or transport. In the absence of any of these components, the refusal can be deemed legally invalid; thus, resulting in high liability for the providers, their respective Department, and their respective medical director. The three components are competence, capacity, and informed decision.

- Informed Decision as defined by:
  - Patients or Responsible Party must be fully informed about their medical condition; the risks and benefits associated with the proposed treatment or transportation; and the risks associated with refusing evaluation, treatment, and/or transportation.

Patients Able to Refuse Care

- Must be competent
- Must have decisional capacity
- Must be informed of the risks associated with their desired disposition

Patients NOT Able to Refuse Care

- Incompetent – less than eighteen (18) years of age or not legally emancipated
- Lacks Decisional Capacity as defined

Refusal of Care Procedure

- Perform a Primary Assessment, History and Physical Examination, including Vital Signs

- Fully inform the patient (or Responsible Party) about his/her medical condition, the risks and benefits associated with the proposed treatment and the risks associated with refusing evaluation, treatment, and/or transportation

PEARL | *Providers should use the Lee Control three-way recorded phone-patch when a Responsible Party is not on-scene for an incompetent (minor) refusal event – initiate via 239.337.2000*

- Ensure the patient or responsible party fully understands the potential consequences of their decision.

PEARL | *This is best assessed via non-leading open-ended questions: "Can you explain back to me the potential risks of refusing transport to the emergency room?"*

- Attempt to convince the patient or responsible party to consent; including enlisting the help of family, friends, or supervisor.
- If the patient is persistent in refusing EMS transport, assist them with an alternative plan for care
- Where it is possible, patients will be left in the care of family, friends, or responsible parties
- Document the patient care/transport refusal completely and accurately

Refusal of Care Documentation

- Document the patient's condition
- Document a full assessment and/or specific assessments that were refused
- Document facts demonstrating legal competency and decisional-making capacity
    - Include steps used to determine decision-making and medical capacity
    - Include the understanding of the consequences of refusing care/transport
- Document the strategies used by the provider(s) to convince the patient to make the most appropriate treatment/transport decision
- Document how the patient was informed to seek immediate medical attention or call 9-1-1 if they need EMS or if their condition changes or worsens. Document their acknowledgement.
- The patient's alternative to EMS transport shall be documented (POV, primary physician, etc)
- Patient (or DDM) must sign the patient refusal form
    - If the patient (or DDM) refuses to sign, document the circumstances
- The primary provider must sign the patient refusal form
- A witness must sign the patient refusal form

Death in the Field 2024

Goal(s):

This guideline is divided into three separate sections that cover the different situations involving death in the field. All patients found in cardiac arrest will receive cardiopulmonary resuscitation unless an exception is met as outlined in the following sections:

- Advanced Directives/Do Not Resuscitate Orders (DNRO)
- Determination of Death
- Termination of Resuscitation

General Actions:

ADVANCED DIRECTIVES/DO NOT RESUSCITATE ORDERS (DNRO)

Legislative authority; under Florida Administrative Code (FAC)

64J-2.018 Do Not Resuscitate Order (DNRO) Form and Patient Identification Device.

- An EMT or paramedic shall withhold or withdraw cardiopulmonary resuscitation:
  - Upon the presentation of an original or a completed copy of DH Form 1896, Florida Do Not Resuscitate Order Form, December 2004, which is incorporated by reference and available from DOH at no cost, or, any previous edition of DH Form 1896; or
  - Upon the presentation or observation, on the patient, of a Do Not Resuscitate Order patient identification device.
- The Do Not Resuscitate Order:
  - Form shall be printed on yellow paper and have the words "DO NOT RESUSCITATE ORDER" printed in black and displayed across the top of the form. DH Form 1896 may be duplicated, provided that the content of the form is unaltered, the reproduction is of good quality, and it is duplicated on yellow paper. The shade of yellow does not have to be an exact duplicate;
  - Patient identification device is a miniature version of DH Form 1896 and is incorporated by reference as part of the DNRO form. Use of the patient identification device is voluntary and is intended to provide a convenient and portable DNRO which travels with the patient. The device is perforated so that it can be separated from the DNRO form. It can also be hole-punched, attached to a chain in some fashion and visibly displayed on the patient. In order to protect this device from hazardous conditions, it shall be laminated after completing it. Failure to laminate the device shall not be grounds for not honoring a patient's DNRO order, if the device is otherwise properly completed.
- The DNRO form and patient identification device must be signed by the patient's physician. In addition, the patient, or, if the patient is incapable of providing informed consent, the patient's health care surrogate or proxy as defined in Section 765.101, F.S., or court appointed guardian or person acting pursuant to a durable power of attorney established pursuant to Section 709.08, F.S., must sign the form and the patient identification device in order for them to be valid.
- An emergency medical technician or paramedic shall verify the identity of the patient who is the subject of the DNRO form or patient identification device. Verification shall be obtained from the patient's driver license, other photo identification, or from a witness in the presence of the patient.
- During each transport, the EMS provider shall ensure that a copy of the DNRO form or the patient identification device accompanies the live patient. The EMS provider shall provide comforting, pain-relieving and any other medically indicated care, short of respiratory or cardiac resuscitation.
- A DNRO may be revoked at any time by the patient, if signed by the patient, or the patient's health care surrogate, or proxy or court appointed guardian or person acting pursuant to a durable power of attorney established pursuant to Section 709.08, F.S. Pursuant to Section 765.104, F.S., the

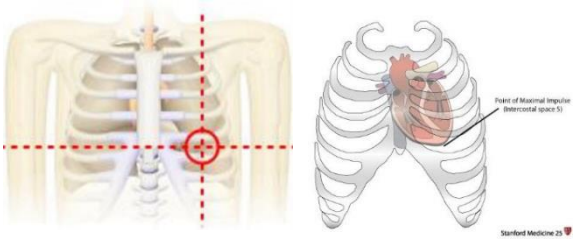
revocation may be in writing, by physical destruction, by failure to present it, or by orally expressing a contrary intent.

Rulemaking Authority 381.0011, 401.45(3) FS. Law Implemented 381.0205, 401.45, 765.401 FS. History–New 11-30-93, Amended 3-19-95, 1-26-97, Formerly 10D-66.325, Amended 2-20-00, 11-3-02, 6-9-05, Formerly 64E-2.031.

DETERMINATION OF DEATH

The EMT or paramedic may determine that the patient is dead/non-salvageable and decide not to resuscitate the patient under the following guidelines.

- The patient may be determined to be dead/non-salvageable and will not be resuscitated or transported if all five (5) presumptive signs of death and at least one (1) conclusive sign of death are identified.
    - The five presumptive signs of death that MUST be present are:
        - Unresponsiveness
        - Apnea
        - Pulseless
        - Absent heart tones auscultated by stethoscope (*60 seconds at Point of Maximal Impulse*) or absent cardiac movement confirmed by ultrasound
        - Absent pupillary reflexes



    - In addition to the five presumptive signs of death, at least one (1) of the following conclusive signs of death MUST be present:
        - Injuries incompatible with life (e.g., decapitation, massive crush injury, incineration, multiple penetrating injuries to head/torso, or penetrating or blunt injury with evisceration of brain, heart, or lung)
        - Tissue decomposition
        - Rigor mortis (post mortem rigidity)
        - Livor mortis (post mortem lividity)
        - Algor mortis (post mortem coldness)

PEARL | *Patients with suspected hypothermia, barbiturate overdose, or electrocution require resuscitation, unless they have injuries incompatible with life or tissue decomposition*

- Providers may contact medical control for a "determination of death" whenever support in the field is desired. Clearly state the purpose for the contact as part of the initial hailing.

PEARL | *The local law enforcement agency that has jurisdiction will be responsible for the body once death has been determined. The body is to be left at the scene until a disposition has been made by the Medical Examiner's Office or the local jurisdiction.*

TERMINATION OF RESUSCITATION (TOR)

- Resuscitation that is started in the field by EMS personnel cannot be discontinued without an order from medical direction except where specified. EMS personnel are not obligated to continue resuscitation efforts that were started inappropriately by others at the scene.

PEARL | *Place of business (e.g., retail stores, restaurants, etc.) or public place (e.g., beach, park, places of worship, stadium, etc.) resuscitations will not be terminated in the field unless deemed a crime scene*

PEARL| *Generally, providers should not discontinue resuscitation in the back of the unit*

PEARL | *Maternal resuscitations (pregnancy >20weeks) will not be terminated in the field*

- When there is a delay in presenting a DNRO to EMS personnel, resuscitation must be started.

- A paramedic may terminate resuscitation efforts, provided the following criteria are met:
  - Appropriate BLS and ALS intervention without restoration of circulation and breathing have been attempted for at least 20 minutes by medical personnel (some patients may require a longer resuscitation)
  - Considered and addressed any H's and T's
  - Absent heart tones auscultated by stethoscope (*60 seconds at Point of Maximal Impulse*) or absent cardiac movement confirmed by POCUS

PEARL | *Medical Control Orders are required for termination of a final rhythm that is either a shockable rhythm, or PEA, or the below PEARL cannot be met*

PEARL | *Medical Control Orders are not required for termination of a patient that has been in a non-shockable rhythm for the duration of the arrest with the final rhythm being asystole and EtCO2 of less than 10mmHg*

- Provide compassionate care and appropriate grief counseling/support to the patient's immediate family, bystanders, or others at the scene.
  - Provide family members with appropriate referral information
- Deceased patient preparation:
  - Once death has been determined and resuscitation will not continue, cover the body with a sheet or other suitable item. If the death is a suspected homicide (crime scene), do not cover the body. Do not remove any property from the body or the scene for any purpose.
  - Immediately notify the appropriate law enforcement agency (if not done already), and remain on scene until their arrival.

PEARL | *The local law enforcement agency that has jurisdiction will be responsible for the body once death has been determined. The body is to be left at the scene until a disposition has been made by the Medical Examiner's Office or the local jurisdiction.*

  - Contact the Medical Examiner's office:

    State of Florida, Office of the District 21 Medical Examiner *(Serving: Lee, Hendry, and Glades Counties)*
    Telephone: 239.533.6339 – Primary contact number
    Telephone: 239.931.3748 – Secondary/After Hours contact number
  - Complete an electronic patient care report (ePCR) as soon as possible, documenting the previously mentioned criteria, and post or upload the ePCR for retrieval by the Medical Examiner's Office.
  - If the Medical Examiner's Office accepts jurisdiction, all disposable medical devices and equipment will remain in place. This includes, but not limited to, artificial airways, breathing circuits, ECG electrodes/defibrillator pads, vascular access, solution bags, etc.)

PEARL | *Generally speaking, any medical device placed in or applied to the deceased will be left in or on the deceased – when in doubt, ask the Medical Examiner's Office Investigator*

Transport Destinations 2024

Goal(s):

- First consideration: patients shall be transported to a local facility of their choice
  PEARL | *Informed consent is key to delivering the right patient, to the right facility the first time*
- Second consideration: patients should be transported to the closest appropriate facility for treatment of their primary illness and/or injury

General Actions:

- Mode of transport is determined by the highest medical authority providing direct patient care; it should not be determined by any other emergency responder(s), bystander(s), or family member(s)

- Status of transport (lights and siren use) is determined by the EMS Transport Provider with the highest medical authority providing direct patient care. The decision to run lights and sirens should be justified by the need for time sensitive medical intervention that is beyond the capabilities of the transport unit.

- **CardioPulmonary Arrest:** *Patients, regardless of age, who are transported in CardioPulmonary Arrest or deteriorate to CardioPulmonary Arrest in transit, shall be transported to the closest facility*
- **Cardiac:** *STEMI Alert, Acute Coronary Syndrome (ACS), and Return of Spontaneous Circulation (ROSC) patients should be transported to the closest STEMI/Percutaneous Coronary Intervention (PCI) facility*
- **Stroke:** *Stroke Alert patients should be transported to the closest Comprehensive Stroke Center (CSC) or Thrombectomy Capable Stroke Center (TSC)*
- **Trauma:** *Trauma Alert patients, regardless of age or pregnancy status, shall be transported to the closest trauma center*
- **Trauma Arrest:** Patients in trauma arrest shall be transported to a trauma center if the trauma center is within a 20-minute transport window. Go to the closest main campus hospital if transport times are greater than 20-minutes.
- **Sepsis:** *Sepsis Alert and severe patients shall be transported to any admit facility*
- **Obstetrical/Gynecology:** *Obstetrical patients ≥20 weeks gestation shall be transported to an OB/GYN receiving facility; high-risk obstetrical patients shall be transported to a neonatal intensive care receiving facility*
- **Pediatric:** *Children that may require admission should be taken to the children's hospital.*
- **Hazmat:** *Patients exposed to hazardous materials can be transported to any facility following appropriate prehospital decontamination. If there are multiple contaminated patients, they should be removed to the least number of hospitals that can manage them, to avoid contaminating multiple facilities.*
- **Hyperbaric:** *Patients with a high probability for hyperbaric oxygen therapy can be transported to any facility*
- **Envenomation:** *Venomous snake and spider bites/stings can be transported to any facility. Mammal and marine bites/stings can be transported to any facility.*

Main Campus Hospitals

Lee County	STEMI Alert/PCI	Stroke Alert	Trauma Alert	Pediatric Admit	OB/GYN	Neonate	Oncology Admit	Helipad
Lee Memorial Hospital D1 | ED Phone: 239.343.2329								✓
Golisano Children's Hospital of SWFL D2 | ED Phone: 239.343.6258				✓		✓		✓
Lehigh Regional Medical Center D3 | ED Phone: 239.368.4410								✓
Cape Coral Hospital D4 | ED Phone: 239.424.2222					✓			✓
Gulf Coast Medical Center D5 | ED Phone: 239.343.0434	✓	✓	✓L2				✓	✓
HealthPark Medical Center D7 | ED Phone: 239.343.6279	✓				✓			✓

Collier County	STEMI Alert/PCI	Stroke Alert	Trauma Alert	Pediatric Admit	OB/GYN	Neonate	Oncology Admit	Helipad
Naples Community Hospital - Baker DT D6 | ED Phone: 239.624.2611	✓	✓					✓	✓
Physicians Regional Medical Center - PR D13 | ED Phone: 239.304.4737	✓	✓						✓
Naples Community Hospital - North D14 | ED Phone: 239.552.7709	✓			✓	✓	✓		✓
Physicians Regional Medical Center - CB D15 | ED Phone: 239.354.6191								✓

Charlotte County	STEMI Alert/PCI	Stroke Alert	Trauma Alert	Pediatric Admit	OB/GYN	Neonate	Oncology Admit	Helipad
Fawcett Memorial Hospital D9 | ED Phone: 941.627.6131	✓	✓					✓	No
ShorePoint Health Punta Gorda D10 | ED Phone: 941.637.2529							✓	✓
ShorePoint Health Port Charlotte D11 | ED Phone: 941.766.4255	✓			✓	✓	✓		✓

Sarasota County	STEMI Alert/PCI	Stroke Alert	Trauma Alert	Pediatric Admit	OB/GYN	Neonate	Oncology Admit	Helipad
Englewood Community Hospital D8 | ED Phone: 941.473.5810	✓							✓
Sarasota Memorial Hospital D16 | ED Phone: 941.364.5591	✓	✓	✓L2	✓	✓	✓	✓	✓
Sarasota Memorial Hospital - Venice D17 | ED Phone: 941.364.5591					✓		✓	✓

Freestanding Emergency Departments

Lee County	STEMI Alert/PCI	Stroke Alert	Trauma Alert	Pediatric Admit	OB/GYN	Neonate	Oncology Admit	Helipad
Coconut Point (Lee Health) 23450 Via Coconut Point, Estero, FL D31 | ED Phone: 239.468.0100								✓
NCH Bonita (NCH Healthcare System) 24040 S. Tamiami Trial, Bonita Springs, FL D32 | ED Phone: 239.624.6924								No
ShorePoint Cape Coral 2521 Del Prado Blvd N., Cape Coral, Fl D35 | ED Phone: 239.242.1357								No
HCA Freestanding Cape Coral 322 SW Pine Island Rd, Cape Coral, Fl D36 | ED Phone: 941.249.6858								No

Collier County	STEMI Alert/PCI	Stroke Alert	Trauma Alert	Pediatric Admit	OB/GYN	Neonate	Oncology Admit	Helipad
NCH Northeast (NCH Healthcare System) 15420 Collier Blvd, Naples, FL D34 | ED Phone: 239.624.8728								No

Sarasota County	STEMI Alert/PCI	Stroke Alert	Trauma Alert	Pediatric Admit	OB/GYN	Neonate	Oncology Admit	Helipad
North Port ER (Sarasota Memorial Hospital) 2345 Bobcat Village Center Rd, North Port, FL D33 | ED Phone: 941.257.2800				✓	✓		✓	✓

Air Medical Transport 2024

Goal(s):

- To provide a guideline for the use of air medical transport

General Actions:

Procedure & Criteria

- Place "air medical transport" on standby when:
  - Call information obtained by dispatch suggests the need for air medical transport
- Request "air medical transport" within the first 2 minutes of patient contact for:
  - Priority 1 patients that exceed a ground transport time of 30 minutes unencumbered (not entrapped or otherwise in need of extrication) or,
  - Priority 2 patients that are inaccessible by roads

Notes

1. Any on-scene first responder may request air medical transport
2. Any supervisor, on-scene or not, may request air medical transport based on available information at that time
3. Lee Control may provide information to air medical transport and request an auto-launch
4. Air medical crews may request information from Lee Control and decide to auto-launch
5. After initial assessment, the highest medical authority providing direct patient care should cancel air medical transport if the patient's condition does not warrant the service or meet the criteria

PEARL | *The following patients are not appropriate for air medical transport:*

- Cardiopulmonary Arrest patients (CPR in-progress)
- HAZMAT patients (regardless of decontamination status)
- Priority 3 patients
- Imminent OB delivery

Landing Zones (LZ)

1. Fire department personnel are responsible for preparing/securing LZs and assuming the LZ Controller role
   A. All LZs should be a minimum of 100' x 100' (day or night)
      - LZs must be illuminated at the corners with strobe and/or a steady-burn light source
      - Hard surface LZs (highway, parking lots, etc.) are preferential to soft surface LZs
   B. Once established, the LZ Controller will ensure LZ security the duration of the event
   C. When requested by the pilot, the LZ Controller will provide a LZ report; this report should include the type of LZ (hard versus soft surface), wind direction and speed and any potential hazards that may be identified from the ground (wires, fences, signs, etc.)
   D. After the patient has been loaded in the aircraft, the pilot will advise the LZ Controller that the aircraft is ready to depart; the LZ Controller should clear the aircraft for take-off by looking around the LZ and to the sky for any other aircraft traffic in the vicinity

PEARL | *If at any time the LZ becomes unsafe for takeoff or landing, the LZ Controller will transmit "ABORT, ABORT, ABORT" over the radio and halt the operation until the unsafe condition is corrected*

Mass Casualty Incident Triage

2024

Goal(s):

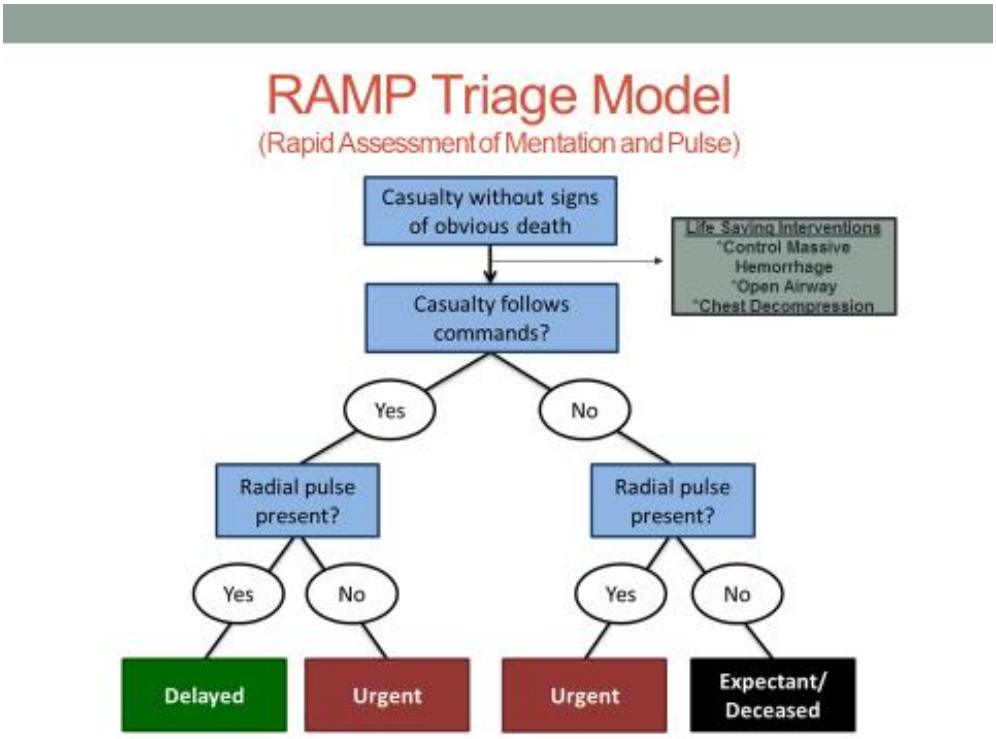
To provide a consistent and standardized foundation for triage, treatment, and transportation of victims of multiple/mass casualty incidents (MCI) that reasonably aligns with the Florida Operations Guide (FOG).

General Actions:

- If first on-scene, ensure radio transmitted scene size-up prior to exiting vehicle
- Establish Incident/Unified Command
- Establish TAC Communications
- Perform a Needs Assessment based upon:
  - Level 1 MCI: 5 – 10 Victims
  - Level 2 MCI: 11 – 20 Victims
  - Level 3 MCI: 21 – 100 Victims
  - Level 4 MCI: 101 – 1000 Victims
  - Level 5 MCI: 1000+ Victims
- Perform RAMP Triage: Rapid Assessment of Mentation and Pulse
  - R – Rapid
  - A – Assessment of
  - M – Mental Status and
  - P – Pulse (radial)

PEARL | *Due to the nature and inherent complexity of MCIs, it may become necessary to suspend or modify additional guidelines to address the needs of the incident*

PEARL | *For ASHER events, patient transports should be prioritized using the ACE acronym (abdominal, chest, extremity)*



Emergency Services Personnel Rehabilitation 2024

Goal(s):

- To establish procedures for Emergency Services Personnel Rehabilitation
- Primary consideration: Emergency operations require significant physical activity, but no personnel will be required to perform emergency operations beyond safe levels of physical or mental endurance
- Purpose: This guideline is intended to examine and evaluate the physical and mental status of emergency services personnel working on an emergency incident or a training exercise and determine which treatment, if any, is necessary/ indicated

General Actions:

Responsibilities

- Emergency Services Personnel (ESP):
    1) Are responsible for reporting to the Rehab Group when ordered to do such by a commanding officer
    2) Are to advise the commanding officer when any member of his/her crew is in need of rehab
- Incident Commander (IC)/Unified Command (UC): Must ensure all personnel receive the proper rest, refreshments, medical evaluation, monitoring, and clearance
- Rehab Supervisor (RS):
- Is ideally led by a paramedic
- Reports directly to the IC/UC and the Incident Safety Officer (ISO).
- Function includes:
    - Report to the IC/UC and obtain rehabilitation requirements
    - Locate and establish a rehab site
    - Identify the EMS requirements and request additional personnel to assist as required
    - Provide required resources for rehabilitation
    - Check vital signs, monitor for heat stress, and signs of medical issues
    - Document medical monitoring on Lee County Common Incident Rehab Worksheet
    - Provide medical care and transportation to medical facilities as required
    - Inform the IC/UC and ISO when personnel require transportation to the treatment at a medical facility
    - Ensure documentation of any medical care provided
        - Any and all injuries will require a Patient Care Report to be completed

Establishment of the Rehab Group

- Location:
    - If a specific location has not been designated, the RS shall select an appropriate location based on site characteristics and designations such as fire apparatus, ambulance, nearby garage, or make-shift rehab structure.
- The RS shall notify the IC/UC where the rehab area has been established
- Site Characteristics:
    - Preferably upwind
    - Far enough away from hot zone/tactical area that members may safely remove their Personal Protective Equipment (PPE)
    - Large enough to accommodate the number of personnel expected with a separate area for members to remove PPE
    - Preferably shaded; protected from elements

  - Away from exhaust fumes
  - Provide access to SCBA/SCUBA replenishment/refill equipment
  - Easy ingress and egress for ambulance traffic
  - Able to accommodate prompt re-entry back into the operation upon complete rehabilitation
  - Away from spectators and the media
- Resources:
  - Fluids/food – potable drinking water, sports beverages, ice, food, and snacks
  - Medical monitoring equipment
  - Tarps
  - Water supply for active cooling (wet towels, misting fans, ice vests, forearm immersion chairs)
  - Blankets and warm, dry clothing for winter months
  - Chairs (if available)

Rehab Procedure

- Decon prior to rehab
  - No PPE that has been exposed to an immediate dangerous to life or health (IDLH) atmosphere is allowed in the rehab area. Full decon including removing all PPE and wiping face, neck, and hands with wipes
- Entry:
  - Collect accountability passport(s)/tags and place on status board
  - Log names on the Lee County Common Incident Rehab Worksheet
  - Dress-down incoming personnel
  - Assign to the seating area
- Initiate Medical Monitoring:
- Normal Parameters as noted on the Lee County Common Incident Rehab Worksheet

PEARL | *Have high index of suspicions for and be prepared to act on Life Threatening Signs & Symptoms*

- Ask member about any symptoms of illness or injury, and if any medical care will be needed
- Any member who is displaying altered level of consciousness, or is reported by another member as acting abnormally, will be evaluated rapidly and completely for an emergency condition. This is particularly important for individuals who may be suffering a heat emergency or cold emergency. Consideration should be made for converting that member to a “patient”.
- Initiate Cooling:
- Passive
  - Remove to a cooler environment
- Active
  - Cold packs
  - Cool, wet towels
  - Forearm immersion buckets/tubs
  - Misting fans
  - Ice vests
  - Immersion cooler
- Begin Hydration:
  - Water/fluids (if fluid is too cold it could cause stomach cramp and vomiting)

PEARL | *Avoid caffeine and carbonated beverages*

- Rest time:
  - Minimum: 10 minutes

- Normal Vital Signs, may be released
- Abnormal Vital Signs, 10 additional minutes in rehab
- Abnormal Vital Signs, move to Medical Treatment Area

- Release:
- ESP that cannot be cleared shall be reported to the IC/UC and ISO

PEARL | *The RS and ISO retain final authority to ground any ESP*

- All ESP departing rehab shall retrieve their Passports from the RS
- Completed Lee County Common Incident Rehab Worksheets shall be given to the IC/UC or ISO

Lee County Common Incident Rehab Worksheet

INCIDENT LOCATION: _____ INCIDENT NUMBER: _____ DATE: _____

Name						
Assigned Unit						
Initial Evaluation Time						
Blood Pressure						
Pulse Rate						
Respirations						
Temperature [tympanic] [core] [oral] Circle						
SpO2 Level						
SpCO Level**						
SpMet Level**						
Injuries	Y N	Y N	Y N	Y N	Y N	Y N
C/O illness	Y N	Y N	Y N	Y N	Y N	Y N
FF Hydrated?	Y N	Y N	Y N	Y N	Y N	Y N
Treatment Given*	Y N	Y N	Y N	Y N	Y N	Y N
2nd Eval. Time (10 minutes from Initial)						
Blood Pressure						
Pulse Rate						
Respirations						
Tympanic Temp.						
SpO2 Level						
SpCO Level**						
SpMet Level**						
3rd Eval. Time (20 minutes from Initial)						
Blood Pressure						
Pulse Rate						
Respirations						
Tympanic Temp.						
SpO2 Level						
SpCO Level**						
SpMet Level**						
Return to Work Time						
[Initials of IC refusing recommendations]						

*If Medical Tx given see Patient Care Report
**If Equipment Available

Symptoms Requiring Transport to ER
Chest Pain
SOB
Dizziness
Altered Mental Status
Nausea

Parameters that must be met to be released
Temperature: ≤100.6°F
Heart Rate: <100bpm
Respiratory Rate: Between 12-20/min
Blood Pressure: Systolic <160 and Diastolic <100
Pulse Oximetry (SpO2): >91% on room air
CO Levels (SpCO): <10% of baseline

Any signs or symptoms outside these paramete shall be sent to Treatment Area

***NO PERSON SHOULD BE RELEASED FROM REHAB UNTIL CLEARED BY THE REHAB OFFICER

* As Incident Commander I am overriding the recommendations made by the Rehab Officer by initialling above and tak full responsibility of my actions by signing here: _____ print: _____

Rehab Officer: (Print) _____ (Signature) _____ Page ___ of ___

Lee County School Board Accident Waiver 2024

Goal(s):

- To establish a guideline for the management and documentation of accidents/crashes involving a Lee County School Board vehicle with Lee County School Board students and/or employees on-board

General Actions:

Definitions

- ***Lee County School Board Administrator/Representative:*** An administrator/representative of the Lee County School Board who is dispatched to the scene of all accident/crashes involving a Lee County School Board vehicle and is responsible for and assumes custody of the students on the bus
- ***Lee County School Transportation Accident-Student Responsibility Affidavit:*** The authorized 2-part form used for non-patient deemed students who will be remaining in the custody of the Lee County School Board
- ***Legal Custodian:*** 1) School Administrator/Representative, 2) Parent or legal guardian (responsible party)
- ***Patient***: a patient shall be defined as an individual who meets one of more of the following criteria:
  - ❖ Any individual with a medical or traumatic complaint
  - ❖ Any individual with an illness or injury
  - ❖ Any individual with a new altered mental status
  - ❖ Any individual in the same event as a significantly ill and/or injured party (e.g., motor vehicle crash, structural collapse, explosion, toxic fume environment, etc.)
  - ❖ Any individual who, at the discretion of the highest medical authority providing direct patient care, demonstrates a high index of suspicion for illness or injury (EMT or Paramedic judgement)
- ***No Care Required***: Unit arrives on-scene and the Person Involved (PI) does not meet "patient" criteria as prescribed above

Procedure

1) All Lee County School Board students and employees involved in an accident/crash while on a Lee County School Board vehicle shall be evaluated as prescribed by the Lee County Common Treatment Guidelines
2) Students that do not meet patient criteria, in accordance with the definition, may be left in the custody of a legal custodian
3) Students that are not patients or transported shall have their names printed on the Lee County School Transportation Accident-Student Responsibility Affidavit form
4) The Lee County School Transportation Accident-Student Responsibility Affidavit form will be filled out completely; including the bus number and school name
5) A legal custodian on-scene shall print their name and sign the form at the bottom acknowledging custody of the students
6) If multiple Lee County School District vehicles are involved, a separate Lee County School Transportation Accident-Student Responsibility Affidavit form shall be completed for each vehicle
7) All Lee County School Transportation Accident-Student Responsibility Affidavit forms shall be scanned and attached to an electronic patient care report (ePCR) for the department/service handing the event – Disposition: No Care Required
8) Any Lee County School Board student and employee that is deemed to be a patient, shall have a separate ePCR completed – regardless of the disposition (Transport, No-Transport or Refusal of Care)

Lee County School Board Accident Waiver 2024

Agency_____ PCR/RUN #_____ Date _____

School _____ Bus # _____

The students listed below have been evaluated by Emergency Responders and it has been determined that no complaints or injuries were found present at the time of exam, thus the need for transport to an Emergency Department by ambulance was deemed unnecessary.

The below signed takes legal custody of students listed below and hereby releases and holds harmless Emergency Medical Service (EMS), The EMS Care Providers, The EMS Medical Director(s), the responding Lee County Fire/Rescue Districts(s), the Lee County Board of County Commissioners, the City of Cape Coral, the City of Ft. Myers, and the Medical Control Physician(s) from any liability for any medical consequences, which may result in any way related to the non-transport of listed students.

1.	21.
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SCHOOL BOARD REPRESENTATIVE	RESCUE SERVICE REPRESENTATIVE
Printed Name _____	Witness _____
Signature _____	Signature _____

Patient Restraint 2024

Goal(s):

- To establish a guideline for the management and documentation of restraining patients
- Primary consideration: The use of patient restraints is authorized in all instances where a patient's behavior may jeopardize the safety of the patient or crew
- Secondary consideration: Restraints may be used when a patient lacks decisional capacity to make rational decisions and exhibits behavior that may disallow necessary medical treatment

General Actions:

- Crew safety
- Request law enforcement

PEARL | *Carefully evaluate the risk-benefit of mechanical patient restraint versus chemical/pharmacological restraint*

- When appropriate, attempt less restrictive means of management including, verbal de-escalation

Patient Positioning

- Patients will be restrained in the supine, head-up position
- Patients may be restrained in a lateral recovery, head-up position as an alternative
- Patients will be mechanically restrained using a commercial soft restraint system or, if in custody, hand-cuffs or shackles as deemed appropriate by law enforcement (handcuffs on patients require law enforcement presence)
- Patients will never be restrained in the prone position

Assessment and Documentation

- When a patient is restrained, the restraints shall be placed only tight enough to secure the extremity without compromising neurovascular function. Providers will provide ongoing monitoring of the patient, so that breathing status is not compromised. Distal neurovascular function shall be checked and documented after application and every 10 minutes thereafter using the following test procedures:
  - Pulse – upper and lower extremities must result in peripheral perfusion: distal pulses and capillary refill time of less than 2 seconds
  - Motor – Grip strength and the ability to move distally should be equal and strong on most patients
  - Sensation – upper and lower extremities must have good sensation and absence of numbness
- The reason for restraining a patient and the results of all the above tests shall be documented in the patient care report
- Grip strength, sensation and capillary refill tests are to be performed and the results documented every 10 minutes
- In the event of a short transport time, the results of a minimum of 2 sets are to be documented with one set to be completed upon arrival at the receiving facility

Hospital Notification

- The receiving facility shall be notified prior to arrival that a patient is in restraints

General Guidelines

2024

Pain & Anxiety Management 2024

Differential Impressions:

- Musculoskeletal Pain
- Skin/Integumentary Pain
- Abdominal Pain
- Procedural anxiety
- Neurogenic Pain
- Sickle Cell Crisis
- Intraosseous Device Pain
- Severe Anxiety

Clinical Management Options:

EMT

- Theory and Operational Guidelines
- Ice pack therapy (for simple Musculoskeletal & Skin/Integumentary Trauma Pain)

MEDIC

PEARL | *Pain medication should not be held in fear of masking an injury/illness*

- Acute opiate pain analgesia

Primary option		Substitute 1		Substitute 2
Fentanyl 1mcg/kg IV, IO, IM, IN q10 minutes PRN **Pediatric: 1mcg/kg IV, IO, IM, IN**; q10 minutes PRN	**OR**	**Hydromorphone 1mg IV, IO, IM, IN** q20 minutes **Pediatric: 5mcg/kg IV, IO, IM, IN** q20 minutes	**OR**	**Morphine 0.2mg/kg IV, IO, IM, IN** q20 minutes **Pediatric: 0.1mg/kg IV, IO, IM, IN** q20 minutes

- Acute non-opiate pain analgesia

Option 1		Option 2
Ketamine 0.2mg/kg IV, IO, IM, IN q20 minutes **Pediatric: 0.2mg/kg IV, IO, IM, IN** q20 minutes	**OR**	**Ketorolac 15mg IV, IO, IM** **Pediatric: 0.5mg/kg IV, IO, IM max 15mg**

- Intraosseous Device Comfort:

Lidocaine 40mg IO over 2minutes; allow to dwell in IO space for 60 seconds
Pediatric: 0.5mg/kg (40mg maximum) IO over 2minutes; allow to dwell in IO space for 60 seconds

- Procedural anxiolytic

Ketamine 0.2 mg/kg IV, IO

- Severe Anxiety:

Midazolam 2mg IV, IO, IM, IN; repeat q 10minutes PRN

Medical Control Actions/Orders/Requests:

- Consult as needed/indicated
- Pediatric severe anxiety

Procedural Sedation Management 2024

Clinical Indications:

- Synchronized Cardioversion
- Complex Extremity Entrapment/Extrication
- Combative Closed Head Injury/Traumatic Brain Injury
- Transcutaneous Pacing

Clinical Management Options:

EMT

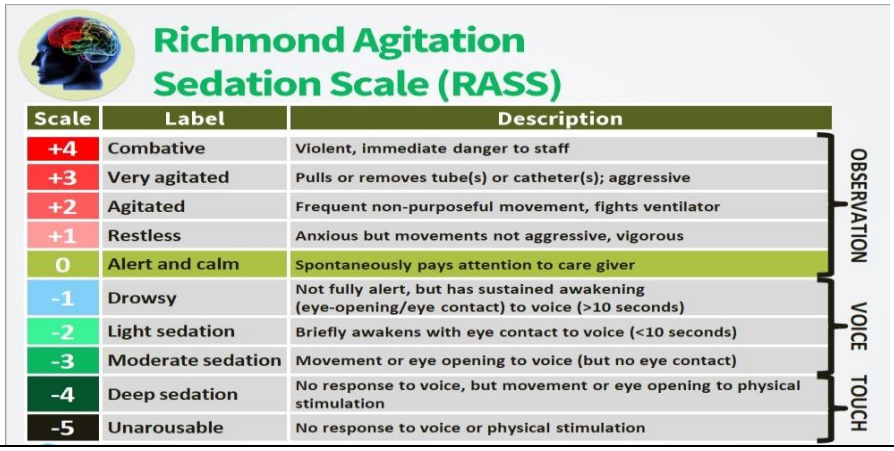
- Theory and Operational Guidelines

MEDIC

- Sedation

Option 1	OR	Option 2
Ketamine 1mg/kg IV, IO, q10 minutes PRN or **Ketamine 2mg/kg IM, IN** **Pediatric: 1mg/kg IV, IO,** q10 minutes PRN Or **2mg/kg IM, IN**		**Midazolam 5mg IV, IO,** Or **Midazolam 10mg IM, IN** q5 minutes PRN. **Pediatric: 0.2mg/kg IV, IO, IM, IN max of 2mg** q5 minutes PRN

PEARL | *Just like another vital sign, RASS should be considered as well as documented multiple times whenever someone is sedated (from medication or medical condition) or aggressive. This should also be considered assessment of your intervention.*



Medical Control Actions/Orders/Requests:

- For Ketamine emergence phenomenon
  Midazolam 2-5mg IV, IO, IM, IN
  Pediatric: 0.2mg/kg IV, IO, IM, IN

Nausea & Vomiting Management 2024

Differential Impressions:

- Central Nervous System origins
- Digestive Tract disorder
- Food poisoning/Alcohol use
- Gastrointestinal distress
- Genitourinary origins
- Infectious origins
- Metabolic origins
- Medication/Toxin induced
- Neurological origins
- Oncology origins
- Pregnancy
- Psychological disorders
- Sepsis
- Stroke
- Traumatic Brain Injury
- Viral origins

Clinical Management Options:

EMT

- Theory and Operational Guidelines
- Alcohol pad sniff to reduce nausea, if tolerated
- **Ondansetron 4mg ODT**
  Pediatric: 2mg ODT

MEDIC

- Antiemetic

Primary option		Substitute 1		Substitute 2
Ondansetron 4mg IV, IO, IM repeat at 10 minutes if no relief **Pediatric: 0.1mg/kg IV, IO, IM**	**OR**	**Promethazine 25mg IV**	**OR**	**Droperidol 1.25 mg IV, IM**

Medical Control Actions/Orders/Requests:

- **Pediatric Promethazine and Droperidol**

Drug-Assisted Airway Management 2024

Goals:

- Safely and effectively facilitate intubation.
- Optimize first pass intubation success rates by implementing best practices of airway management including patient selection, assessment, pre and post intubation oxygenation, ventilating, and monitoring.

Clinical Management Options:

EMT

MEDIC

- Theory and Operational Guidelines
  - Airway, Ventilation, Oxygenation
    - Patient positioning (airway axis alignment – "ear hole to sternal notch")
    - Preoxygenation (apneic oxygenation for a minimum of 3-5 min)
      - NRB at 25 L/min with NC under mask using separate O2 source at 6 L/min
      - For apneic patients, BVM at 15 L/min with NC at 15 L/min under mask with NPA/OPA

PEARL| *Continuous patient monitoring (HR, BP, SpO2, EtCO2, ECG) pre and post procedure required. Avoid critical values and be prepared to abort procedure and provide BVM ventilations if any critical values occur.*

Advanced Procedures

PEARL | *A minimum of two paramedics should be on scene for procedure*

- Pre-Intubation Sedation

Option 1	OR	Option 2
Ketamine 100mg	**OR**	**Etomidate 20mg**

PEARL| *Providers should attempt to optimize oxygenation (SpO2 >95%) for 3 minutes prior to intubation attempt*

- Intubation Paralysis

Option 1	OR	Option 2
Rocuronium 100mg	**OR**	**Succinylcholine 150mg**

- Post-Intubation Sedation

Option 1	OR	Option 2
Re Bolus Ketamine 100mg repeat dose at 15 minutes PRN	**OR**	**Fentanyl 1mcg/kg with Midazolam 5mg IV, IO repeat dose at 15 minutes PRN**

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated
- Pediatric Drug Assisted Airway Management

Hypo & Hyperthermia

2024

Differential Impressions:

- Environmental Hypothermia
- Infection
- Serotonin Syndrome
- Environmental Hyperthermia
- Anticholinergic Syndrome
- Salicylate Overdose

Clinical Management Options:

EMT

MEDIC

- Theory and Operational Guidelines
- Hypothermia (adults & pediatrics)
  Passive External Rewarming
  Remove from cold environment, remove wet clothing
  Hibler's Method of Thermopreservation
  PEARL | *Handle gently to reduce lethal arrhythmias*
- Hyperthermia (adults & pediatrics)
  Cold water immersion
  PEARL | *Cold water immersion should not be delayed*
  Passive External Cooling – fans, misting, and/or ice packs to groin, axilla and neck
  PEARL | *Withdrawal cooling as core temperature approaches 102.0°F*

- Hypothermia
  Warm Crystalloid Resuscitation 20mL/kg IV, IO as necessary/indicated
  Pediatric: Warm Crystalloid Resuscitation 20mL/kg IV, IO as necessary/indicated
  PEARL | *Rough patient handling may cause ventricular fibrillation*
  PEARL | *Hypothermia is susceptible to progressive bradycardias*
- Hyperthermia
  Cool Crystalloid Resuscitation 20mL/kg IV, IO as necessary/indicated
  Pediatric: Cool Crystalloid Resuscitation 20mL/kg IV, IO as necessary/indicated
  PEARL | *Withdrawal cooling as core temperature approaches 102.0°F*

Advanced Procedures

- Drug assisted airway management

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Perfusion 2024

Indications:

- Hypoperfusion

Clinical Management Options:

EMT

- Theory and Operational Guideline
- Patient positioning (supine or Trendelenburg)

MEDIC

- **Crystalloid Resuscitation 20mL/kg IV,IO** as necessary/indicated
  Pediatric: 20mL/kg IV, IO as necessary/indicated
- Pressor to maintain MAP > 65 mmHg:

Option 1	OR	Option 2	OR	Option 3
Norepinephrine • **0.1 – 0.5 mcg/kg/min IV, IO** • **0.03 – 0.05 mcg/kg/min IV, IO**		**Epinephrine** (use if HR <50) • **0.1 - 0.5 mcg/kg/min IV, IO** • **0.03 – 0.2 mcg/kg/min IV, IO**		**Push dose Epinephrine** (0.01mg/mL) • **0.5 – 2 mL aliquots titrated to effect** • **0.1mL/kg up to 10Kg then for every 10 kg add 1mL**

PEARL | Push dose epinephrine may be administered while infusion is prepared

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Medical Guidelines 2024

Abdominal Pain

2024

Differential Impressions:

- Acute Abdominal Syndrome
- Cholecystitis
- Colitis
- Crohn's Disease
- Diverticulitis
- Pancreatitis
- Peptic Ulcer Disease
- Pelvic Inflammatory Disease
- Renal Colic
- Urinary Tract Infection
- Abdominal Aortic Aneurysm
- Appendicitis
- Bowel Obstruction
- Ectopic Pregnancy
- Incarcerated Hernia
- Rupture Ovarian Cyst
- Traumatic injuries

Clinical Management Options:

EMT

MEDIC

- Theory and Operational Guidelines
- General Guidelines

  PEARL | *Pain medication should not be held in fear of masking an injury/illness*
- Nausea and Vomiting Guidelines

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Diabetic Emergencies 2024

Differential Impressions:

- Hypoglycemia (blood glucose <60mg/dL)
- Hyperglycemic Insult
- Iatrogenic Hypoglycemia
- Hyperglycemia (blood glucose >300mg/dL)
- Diabetic Ketoacidosis (DKA)
- Hyperosmolar Hyperglycemia State (HHS)

Clinical Management Options:

EMT

- Theory and Operational Guidelines
- General Guidelines
- bG <60mg/dL:
  Oral Glucose 30gm PO
  Pediatric: 15gm PO

MEDIC

- bG <60mg/dL

Primary option		Substitute 1		Substitute 2
Dextrose 10% 125 – 250mL (12.5 – 25gm) IV titrated to return of normal mental status **Pediatric: 5mL/kg IV** titrated to return of normal mental status	**OR**	**Dextrose 50% 12.5 – 25gm IV** **Pediatric: 0.5gm/kg IV**	**OR**	**D5W 250 – 500mL IV** titrated to return of normal mental status **Pediatric: 5mL/kg IV** titrated to return of normal mental status

PEARL | *Consider complex carbohydrates after correcting hypoglycemia and patient returns to normal mentation*

PEARL | *If hypoglycemia resolves but repeat BGL drops within 10 minutes, consider sulfonylurea toxicity/OD which can be lethal for pediatrics*

- bG >300mg/dL with vascular access:
  Crystalloid Resuscitation 20mL/kg IV, IO; repeat PRN
  Pediatric: 20mL/kg IV, IO; repeat PRN

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Behavioral Emergencies 2024

Differential Impressions:

- Mental Illness
- Psychiatric Emergencies
- Substance Abuse
- Baker Act
- Marchman Act

General Actions:

- Theory and Operational Guidelines
- General Guidelines
- Hyperactive Delirium Guideline as necessary/indicated
- Baker Act consideration:

  Florida Statute Chapter 394, Part I, is also known as the Florida Mental Health Act. The Baker Act provides legal procedures for patients with known or suspected mental illness. This includes mental health examinations and treatment and provides authorization to police, physicians, mental health professionals and the courts to dictate certain medical care for persons who pose a threat of harm to themselves or to others.

  PEARL | *Baker Act is not intended for patients who are competent, are without mental illness, have decisional capacity, and have been informed yet still desire to refuse care against medical advice*

  PEARL | *Law enforcement will provide EMS with a Baker Act Form (3052a), and as required for EMS safety, will accompany or follow the ambulance to the hospital*

- Marchman Act consideration:

  Florida Statute Chapter 397, Part V, provides legal procedures for patients with known or suspected conditions involving substance abuse. This includes mental health examinations and treatment and provides authorization to police, physicians, mental health professionals and the courts to dictate certain medical care for persons who are impaired and pose a threat of harm to themselves or to others or is so impaired that he is incapable of appreciating his/her need for substance abuse services.

  PEARL | *Marchman Act is not intended for patients who are competent, have decisional capacity, and have been informed yet still desire to refuse care against medical advice*

- Florida Statute 401.455, Emergency examination and treatment of incapacitated persons protects providers for caring for patients if:
  - The patient at the time of examination or treatment is intoxicated, under the influence of drugs, or otherwise incapable of providing informed consent as provided in s. 766.103;
  - The patient at the time of examination or treatment is experiencing an emergency medical condition; and
  - The patient would reasonably, under all the surrounding circumstances, undergo such examination, treatment, or procedure

  PEARL | *Neither a Baker Act or Marchman Act removes the need for medical treatment and assessment and should be completed as soon as possible*

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Hyperactive Delirium

2024

Differential Impressions:

- Hyperactive delirium
- Conditions that result in agitated behavior that pose imminent threat or danger to self or others

Clinical Management Options:

EMT

- Theory and Operational Guideline
- General Guideline

MEDIC

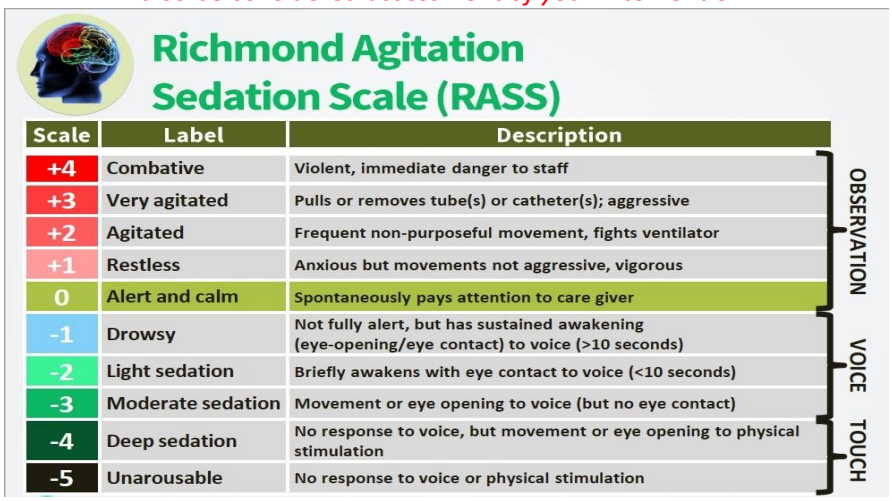
- Dissociation

Primary		Option 1		Option 2
Ketamine 4mg/kg IM max dose of 500mg	**OR**	**Droperidol 5mg IM, IV, IO**	**OR**	**Midazolam 5mg IV or 10mg IM**

PEARL | *First-line therapy; no absolute contraindications*

PEARL | *Patients shall never be placed prone*

PEARL |*There is a gradient between sedated and aggressive, and this scale is an extremely helpful tool. Just like another vital sign, RASS should be considered as well as documented multiple times whenever someone is sedated (from medication or medical condition) or aggressive. This should also be considered assessment of your intervention.*



- For Dissociation Emergence – unlikely and rare event:

Primary		Option 1		Option 2
Ketamine 1mg/kg IV, IO max dose of 500mg	**OR**	**Droperidol 5mg IM, IV, IO**	**OR**	**Midazolam 5mg IV or 10mg IM**

PEARL | *Administered 5 – 10 minutes after initial dose for inadequate dissociation*

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated
- Pediatric: Contact Medical Control

Allergic Reaction & Anaphylaxis 2024

Differential Impressions:

- Localized Allergic Reaction
- Systemic Anaphylaxis Reaction
- Anaphylactic Shock
- Angioedema
- Systemic Anaphylactoid Reaction
- Anaphylactoid Shock
- Transfusion Reaction

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines
- **EpiPen IM**
  Pediatric: EpiPen, Jr. IM
  or
- **Epinephrine (1mg/mL | 1:1,000) 0.5mg (0.5mL) IM lateral thigh;** may repeat once
  Pediatric: 0.01mg/kg max of 0.3mg IM lateral thigh; may repeat once
- Bronchodilator (if indicated)

Primary option		Substitute
Albuterol 2.5mg AT **Pediatric: 2.5mg AT**	**OR**	**Levalbuterol 0.63mg AT** **Pediatric: 0.31mg – 0.63mg AT**

- **CPAP 5 – 15cm/H20 PEEP or CPAP with Pressure Support**

MEDIC

- **Diphenhydramine 50mg IV, IO, IM**
  Pediatric: 1mg/kg IV, IO, IM
- **DuoNeb: Albuterol 2.5mg & Ipratropium 0.5mg AT** (if indicated)
  Albuterol 2.5mg & Ipratropium 0.5mg AT (as indicated)
- Steroid

Option 1		Option 2
Methylprednisolone 125mg SIVP, IM **Pediatric: 2mg/kg SIVP, IM (max 125mg)**	**OR**	**Dexamethasone 10mg IV, IO** **Pediatric: 0.6mg/kg IV, IO, PO (max 16mg)**

Advanced Procedures

- Drug-assisted airway management

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Reactive Airway Disease 2024

Differential Impressions:

- Asthma and Asthma-Like Syndrome
- Chronic Obstructive Pulmonary Disease
- Toxic Inhalation (vapor, fume, or smoke)
- Upper Respiratory or Pulmonary Viral Infection

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines
- Bronchodilator (as indicated)

Primary option		Substitute
Albuterol 2.5mg AT **Pediatric: 2.5mg AT** May repeat PRN	**OR**	**Levalbuterol 0.63mg AT** **Pediatric: 0.31mg – 0.63mg AT**

- Severe respiratory distress pending respiratory failure
  Epinephrine (1:1000) 0.5mg IM; may repeat once
  Pediatric: 0.01mg/kg max of 0.3mg IM may repeat once
- **CPAP 5 – 7.5cm/H20 PEEP or CPAP with Pressure Support**

- **DuoNeb: Albuterol 2.5mg & Ipratropium 0.5mg AT** (as indicated)
  Albuterol 2.5mg & Ipratropium 0.5mg AT (as indicated)
- Steroid

Option 1		Option 2
Methylprednisolone 125mg SIVP, IM **Pediatric: 2mg/kg SIVP, IM (max 125mg)**	**OR**	**Dexamethasone 10mg IV, IO** **Pediatric: 0.6mg/kg IV, IO, PO (max 16mg)** PO preferred if an IV, IO isn't needed for another reason

PEARL | *Oral steroids in pediatrics is a highly effective treatment option with a similar onset of action as IV and is preferred by Golisanos*

- **Magnesium Sulfate 2gm in 100mL D5W IV, IO Infusion over 10 minutes**
  Pediatric: 50mg/kg in 100mL D5W IV, IO Infusion over 10 minutes
- Croup
  Pediatric: Nebulized Epinephrine 0.5mg 1:1,000 in 4mL of normal saline AT

Advanced Procedures

- Drug-assisted airway management

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Seizure 2024

Differential Impressions:

- Epilepsy
- Cardiac arrest or dysrhythmias
- Closed Head/Traumatic Brain Injury
- Infectious origins (i.e., Febrile)
- Metabolic origins
- Medication/Toxin induced
- Neurological origins
- Oncology origins
- Pregnancy (i.e., Eclampsia)
- Psychological disorders
- Stroke
- Viral origins

Clinical Management Options:

EMT

- Theory and Operational Guidelines
- General Guidelines
- Diabetic Emergencies Guideline

MEDIC

- Anti-convulsant

Primary option		Substitute 1		Substitute 2
• **Midazolam 5mg IV, IO;** may repeat q 5 minutes PRN **Pediatric: 0.2mg/kg IV, IO (max of 5mg);** repeat q 5 minutes PRN • **Midazolam 10mg IM, IN;** may repeat q 5 minutes PRN **Pediatric: 0.2mg/kg IM, IN (max of 10mg);** repeat q 5 minutes PRN	**OR**	**Lorazepam 2mg IV** **Pediatric: 0.1mg/kg IV (max of 2mg per dose) repeat q5 minutes PRN**	**OR**	**Diazepam 5mg IV** **Pediatric: 0.2mg/kg IV (max of 5mg per dose) repeat q5 minutes PRN**

Advanced Procedures

- Drug-assisted airway management
- **Levetiracetam 1G IV, IO infusion**
  Pediatric: 40mg/kg (max of 1G) IV, IO infusion
  PEARL: *Levetiracetam should be second line use for prolonged seizures*

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Stroke 2024

Differential Impressions:

- Ischemic Stroke
  - Thrombotic
  - Large Vessel Occlusion
  - Transient Ischemic
- Diabetic Emergency
- Hemorrhagic Stroke
  - Subarachnoid
  - Epidural
  - Subdural
- Cardiac event

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines
- bG <60mg/dL:
  Diabetic Emergencies
- Perform Lee County Stroke Assessment/Checklist
  PEARL | *Stroke patients should be transported to the closest Comprehensive Stroke Center or Thrombectomy Capable Stroke Center*

PEARL | *Crystalloid Resuscitation is aimed at maintaining cerebral perfusion*

- Nausea & Vomiting Management Guideline as necessary/indicated
  PEARL | *Antiemetic therapy is aimed at reducing intracranial pressure*

Advanced Procedures

- Drug-assisted airway management

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Ischemic Stroke | FAST VAN			
Includes: Thrombotic/Embolic Stroke, Small/Large Vessel Occlusion Stroke, and Transient Ischemic Stroke			
Step 1 – Perform FAST Exam			
F	• **Face**	Unilateral facial droop or palsy?	☐
A	• **Arms**	Unilateral arm or pronator drift?	☐
S	• **Speech**	Slurred speech, difficulty speaking, inappropriate words, mute?	☐
T	• **Time**	Last known well <24 hours Last known well time:	:
Any FAST boxes checked = Stroke Alert			
Step 2 – Perform VAN Exam			
V	• **Visual**	Disturbance, double vision, or new onset blindness?	☐
A	• **Aphasia**	Expressive, Receptive, or mixed?	☐
N	• **Neglect**	Forced gaze, inability to track, or ignoring one side?	☐
Any VAN boxes checked = VAN Positive Stroke Alert			

Hemorrhagic Stroke		
Includes: Intracerebral, Intracranial, Epidural, Subarachnoid, and Subdural Hemorrhage		
Perform Hemorrhagic History & Exam		
Hemorrhagic	• Worst headache ever? • Severe nausea or vomiting? • Acute hypertension? • Seizure preceding stroke like or focal neurological deficits? • Sudden and unexplained depressed mental status?	☐
Hemorrhagic box checked = Stroke Alert		

Sepsis 2024

Differential Impressions:

- Sepsis – qSOFA
- Septic Shock | Distributive Shock (MAP <65mmHg)
- Pneumosepsis
- Meningeal Sepsis
- Gastro-Intestinal Sepsis
- Septicemia
- Urosepsis
- Skin/Wound Sepsis

Clinical Management Options:

EMT

- Theory and Operational Guidelines
- General Guidelines
- Complete Sepsis Assessment/Checklist

PEARL | *Sepsis Checklist (qSOFA + etCO2) Positive = Sepsis Alert*

MEDIC

- **CPAP 5 – 15cm/H20 PEEP or CPAP with PS (max PS 5)**
- **Crystalloid Resuscitation 20mL/kg IV, IO over 60 minutes**
  Pediatric: 20mL/kg IV, IO over 60 minutes

PEARL | *Crystalloid is paramount for survival; do not withhold in normotensive patients*
PEARL | *Pressor agent second-line therapy for hypotension/shock*
PEARL | *Initiate only after 2L crystalloid infused*

Advanced Procedures

- Drug-assisted airway management

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated
  Pediatric: Epinephrine 0.1 – 0.5mcg/kg/min IV, IO Infusion

Sepsis 3.1 | *qSOFA + etCO2*			
Infection	• Suspected • Known	Fever, UTI/ URI symptoms, etc Taking antibiotics, visible, etc	☐
Sepsis	• Altered Mental Status • Tachypnea • Hypotension	Confused off normal baseline, lethargy, etc RR ≥ 22min SBP < 100mmHg (consider "lower than normal BP")	Any 2 ☐ ☐
Capnography	• Hypocapnea	etCO2 ≤ 29mmHg	☐
		All boxes checked = *Sepsis Alert*	

Overdose & Poisoning

2024

Differential Impressions:

- Opiate Ingestion
- Cholinergic Exposure
- Anticholinergic Ingestion
- Sympathomimetic Ingestion
- Antipsychotic Ingestion/ Extrapyramidal Syndromes
- Poly-Pharmacologic

Clinical Management Options:

EMT

- Theory and Operational Guideline
- General Guidelines
- Contact Poison Control for consultation as necessary/indicated 1-800-222-1222
- Opioid (Narcotic):
  Naloxone 0.4mg IV, IO, IN, IM; repeat PRN; primary goal is to restore spontaneous respiration not mentation
  Pediatric: 0.4mg IV, IO, IN, IM; repeat PRN; primary goal is to restore spontaneous respiration not mentation
  PEARL | *Basic Progressive Airway, Ventilation, & Oxygenation Management is the key to a safe patient encounter*
  PEARL| *Fentanyl and similar substances may require larger doses of Naloxone.*
  PEARL | *Not appropriate with advanced airway placement and in cardiopulmonary arrest*
- **Consider CPAP 5 – 15cm/H20 PEEP of CPAP with Pressure Support**

MEDIC

- Cholinergic:
  Atropine 1 – 2mg IV, IO q 5minutes until airway secretions resolved
  Pediatric ≥12 years: 1mg IV, IO; q 5minutes till resolved
  Pediatric <12 years: 0.05mg/kg IV, IO; q 5minutes till resolved
  PEARL | *For SLUDGEM – No maximum dose*
- Anticholinergic:
  Sodium Bicarbonate 1mEq/kg IV, IO
  PEARL | *For Tricyclic Overdose with heart rate >120bpm & QRS >120ms*
- Sympathomimetic:
  Midazolam 5mg IV, IO or 10mg IM, IN may repeat q 5minutes PRN until heart rate, respiratory rate & blood pressure normalize
  PEARL | *For hyperadrenergic states with heart rate >120bpm*
- Dystonic Reactions/Extrapyramidal Syndrome:
  Diphenhydramine 50mg IV, IO, IM

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Cardiac Guidelines

2024

Tachycardia Management 2024

Differential Impressions:

- Compensatory Tachycardia
- Stable Tachycardia
- Unstable Tachycardia
- Pre-excitation/Reentry
- Sinus Tachycardia
- Supraventricular Tachycardia (AVRT/AVNRT)
- Atrial Flutter/Fibrillation
- Ventricular Tachycardia

Clinical Management Options:

EMT

- Theory and Operational Guidelines
- General Guidelines
- Vagal stimulation

MEDIC

Unstable

Narrow Complex Tachycardia	Wide Complex Tachycardia
Regular **Synchronized Cardioversion** **50 - 120 joules** **Pediatric: Refer to Handtevy** **Irregular** **Synchronized Cardioversion** **120 - 200 joules** **Pediatric: Refer to Handtevy**	**Regular** **Synchronized Cardioversion** **100 joules** **Pediatric: Refer to Handtevy** **Irregular** **Asynchronous Cardioversion** **200 joules** After successful conversion of VT: **Amiodarone 150mg in 100mL over 10 min IV, IO** **Pediatric: 5mg/kg (max of 150mg) in 100mL over 20-60 min IV, IO**

Stable

Narrow Complex Tachycardia	Wide Complex Tachycardia
SVT **Adenosine 12mg Rapid IVP for** **Pediatric: 0.1 – 0.2 mg/kg** **Atrial fibrillation/flutter, or refractory SVT** **Diltiazem 0.25 mg/kg (max of 20mg) over 2 min IV, IO**	**Monomorphic VT** **Amiodarone 150mg in 100mL over 10 min IV, IO** **Torsades de Pointes** **Magnesium Sulfate 2GM in 100mL IV, IO over 10 min for**

- **Calcium 1GM IV, IO** for suspected hyperkalemia

Medical Control Actions/Orders/Requests:

- As needed

Bradycardia Management 2024

Differential Impressions:

- Acute Coronary Syndrome
- Vasovagal Episode
- Hypoxia
- Hypothermia
- Toxicity
- Sinus Bradycardia
- Junctional Rhythm
- Atrioventricular Block
- Idioventricular Rhythm

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines
- Prioritize oxygenation and ventilation
    - For Neonates and Infants: HR< 100 BPM – continue to oxygenate and ventilate while considering atropine for increased vagal tone
    - For Neonates, Infants, and Pediatrics: HR < 60 BPM with signs of hypoperfusion – move to medical cardiac arrest guideline

PEARL | *Pediatrics are defined as someone who is under 13 or has no signs of puberty*

Symptomatic:

- **Atropine 1mg IV/IO (repeat every 3-5 min to Max of 3mg)**
  Pediatric: 0.02 mg/kg (min dose 0.1 mg) for increased vagal tone.

PEARL| *Do not repeat Atropine if initial dose is ineffective*

PEARL| Consider moving to pacing if vascular access cannot be obtained or is delayed

PEARL| *For high degree av blocks, consider moving directly to pacing or epinephrine*

If atropine is ineffective:

- **Transcutaneous Pacing**
    - Consider Procedural Sedation
    - A/P Placement with Rate set to 80 bpm, titrate milliamps to full capture

or

- **Epinephrine 2 – 10 mcg/min IV/IO**
- **Calcium 1GM IV, IO** for suspected hyperkalemia, beta blocker, or calcium channel blocker toxicity.

Medical Control Actions/Orders/Requests:

- As needed

Chest Pain, Acute Coronary Syndrome, STEMI 2024

Differential Impressions:

- Chest Pain – Cardiac Pathology
- STEMI (ST Elevation Myocardial Infarction)
- Acute Coronary Syndrome (ACS)
- Unstable Angina Pectoris
- NSTEMI (Non-ST Elevation Myocardial Infarction)

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines
- **Aspirin 324mg PO (chewable)**
- **Nitroglycerin 0.4mg SL;** may repeat q 5minutes x 3 sprays if symptoms persist without evidence of hypoperfusion

MEDIC

- Continuous Nitrate Therapy

Option 1	OR	Option 2
Tridil Infusion 10 – 50 mcg/min IV, IO titrate by 10mcg q5 minutes PRN		**Nitroglycerin ointment 1inch transdermal anterior chest wall**

- Serial 12 Lead ECGs
- Pain | Anxiety Management Guideline as necessary/indicated
  PEARL | Fentanyl is preferred analgesic for chest pain.
- Nausea & Vomiting Management Guideline as necessary/indicated

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

STEMI		
Monitor Interpretative Statement	• Indicates STEMI; good tracing, stable baseline and free of artifact?	☐
Or		
Paramedic Interpretation	• ECG shows 1mm of ST segment elevation in 2 or more contiguous leads? • QRS width < 120ms (0.12s) or RBBB with ST segment elevation? • ECG good tracing, stable baseline and free of artifact?	☐
		Any boxes checked = *STEMI Alert*

Congestive Heart Failure & Pulmonary Edema

2024

Differential Impressions:

- Congestive Heart Failure
- Pulmonary Edema
- Right Heart Failure
- Left Heart Failure
- Non-Cardiac Pulmonary Edema (e.g., Drowning)

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines
- **CPAP 5 – 15cm/H20 PEEP or CPAP with Pressure Support**
- **Nitroglycerin 1.2mg (x3 0.4mg) SL;** may repeat q 5 minutes PRN for as long as symptoms persist without evidence of hypoperfusion

- Continuous Nitrate Therapy

Option 1	OR	Option 2	OR	Option 3
Tridil Infusion 10 – 100mcg/min IV, IO; titrate to desired effect in increments of 10mcg/min q 5 minutes		**Nitroglycerin 1.2mg (x3 0.4mg) SL;** may repeat q 5 minutes PRN		**Nitropaste 1 inch TD (transdermal; chest wall)**

- Serial 12 Lead ECGs
- Vasopressor agent

Option 1	OR	Option 2
Norepinephrine • **0.1 – 0.5 mcg/kg/min IV, IO**		**Epinephrine** • **0.1 – 0.5 mcg/kg/min IV, IO**

Advanced Procedures

- Drug-assisted airway management

Medical Control Actions/Orders/Requests:

- Consult as needed/indicated

Resuscitation

2024

Medical Cardiac Arrest 2024

Differential Impressions:

- Primary Cardiac Arrest
- Primary Respiratory Arrest
- Maternal Cardiac Arrest
- Pseudo PEA

Clinical Management Options:

EMT

MEDIC

- Theory and Operational Guidelines
- General Guidelines
- Pit Crew Resuscitation Guideline
- Mechanical CPR, ITD, and Elegard device when available (Neuroprotective CPR)
  Maternal: Perform Left Lateral Uterine Displacement (LUD)
  Neonates, Infants, and Pediatrics: Perform chest compressions if HR < 60 with signs of hypoperfusion

---

- **Epinephrine 0.5-1mg IV, IO** every 3 -5 min (Max dose 3mg)
  Pediatric: 0.01 mg/kg IV, IO (Max dose 3mg)
- **Advanced airway management** as needed.
- Identify & treat reversible causes (PEA rhythms) and consider pseudo PEA
- Shockable arrests
  PEARL | *Shockable arrests benefit from defibrillation and anti-dysrhythmic before administration of epinephrine*
  - **Defibrillation (Adults & Pediatrics: Handtevy for energy setting)**
    - **Shock – Anterior/Posterior placement**
      - **(Adult Only) After 3rd shock and subsequent shocks - Dual Sequential Defibrillation (DSD) for patients in refractory v-fib (less than 1 second apart)**

  PEARL | *Refractory v-fib is defined as a patient that has been defibrillated at least three times and been administered the first dose of anti-dysrhythmic and continues to be in v-fib*
- Administer anti-dysrhythmic medication:

Option 1	OR	Option 2	OR	Option 3
Amiodarone IV, IO • **1st dose: 300 mg** • **2nd dose: 150mg** **Pediatric: 5mg/kg (up to 3 doses)**		**Lidocaine IV, IO** • **1st dose: 1.5mg/kg** • **2nd dose: 0.5 mg/kg** **Pediatric: 1mg/kg**		**Magnesium Sulfate IV, IO 2GM for torsades or refractory VT**

  PEARL| *Lidocaine preferred when arrest is toxicology related*
  PEARL| *Blind administration of sodium bicarb or calcium is not recommended*
  PEARL| *Naloxone not indicated for cardiac arrest*
- Post resuscitation efforts (as indicated)
- Termination of resuscitation (as indicated)
  PEARL | *If POCUS is available, scan all PEA rhythms to determine if the rhythm is pseudo-PEA vs PEA*
- **Calcium 1GM IV, IO** for suspected hyperkalemia

Medical Control Actions/Orders/Requests:

- As needed

Traumatic Cardiac Arrest 2024

Differential Impressions:

- Traumatic Cardiac Arrest
- Pending Traumatic Cardiac Arrest

Clinical Management Options:

EMT / MEDIC

PEARL | *Critically ill or injured patients shall receive initial stabilization and resuscitative measures prior to movement*

- Theory and Operational Guidelines
- General Guidelines
- CPR
- Hemorrhage Control:
  Direct pressure, pressure dressing, tourniquet, wound packing
  Pediatric: Direct pressure, pressure dressing, tourniquet, wound packing
- Prevent hypothermia for all trauma
- Pelvic Splinting for all blunt force trauma arrests
  Pediatric: Pelvic Splinting for all blunt force trauma arrests (as sizing allows)

PEARL| *Traumatic Cardiac Arrests should be taken to a trauma center if transport time is within 20 minutes*

- **Epinephrine 0.5 - 1mg IV, IO (max of 3mg)** every 3 -5 min
  Pediatric: 0.01 mg/kg IV, IO (Max dose 3mg)
- **Advanced airway management** as needed.
- Identify & treat reversible causes (PEA rhythms)
  - **Tranexamic Acid 2GM IV, IO** for moderate/massive hemorrhage
    Pediatric: 15mg/kg IV, IO for moderate/massive hemorrhage
  - Pleural Needle Decompression for all blunt force trauma arrests
    Pediatric: Pleural Needle Decompression
  - Pericardiocentesis (as indicated)
- Medical cardiac arrest guideline if shockable arrest presents
- Post resuscitation efforts (as indicated)
- Termination of resuscitation (as indicated)
- Perform chest ultrasound to assess for cardiac activity and for other causes of arrest that may be reversible

Advanced Procedures

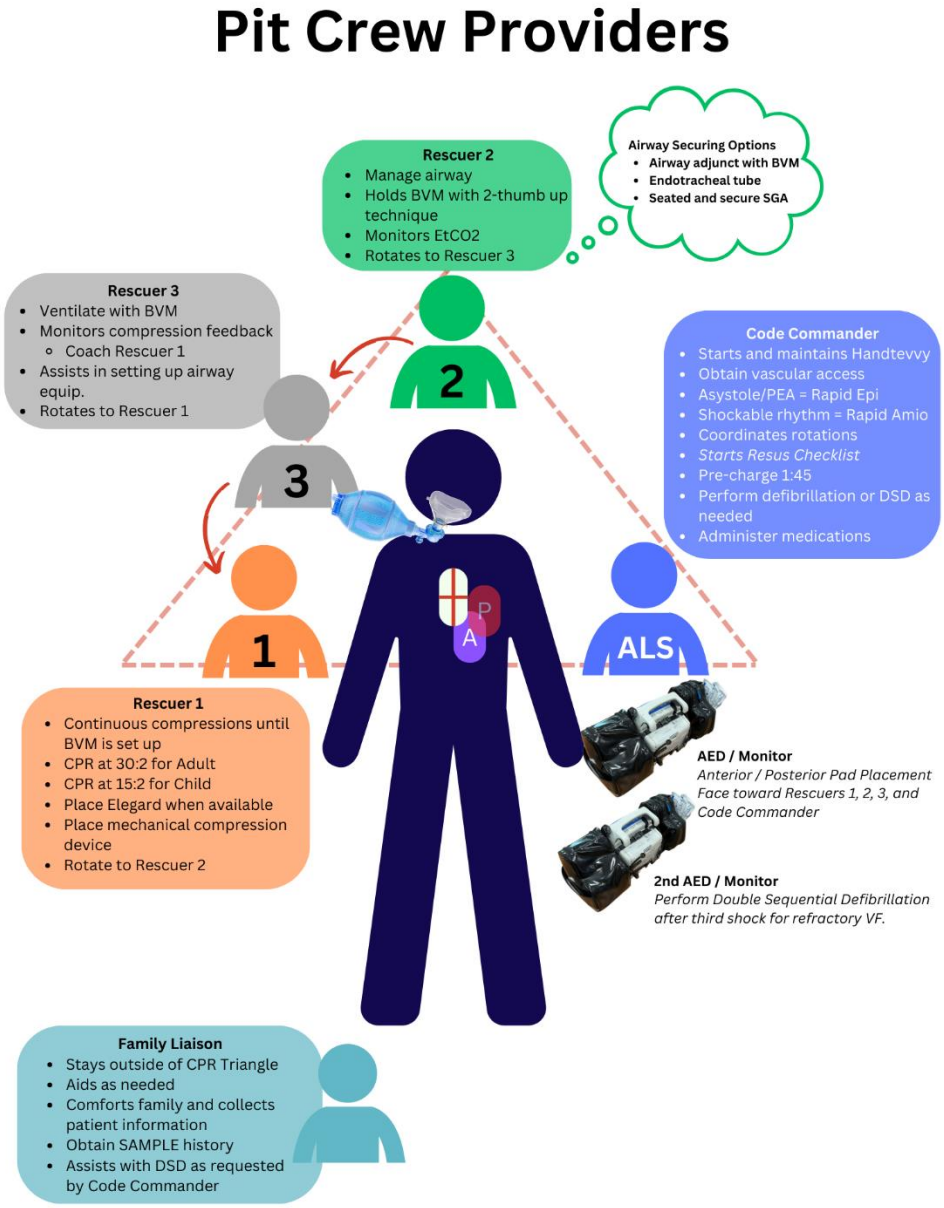
- **Whole blood administration (preferred over crystalloid)**
- **Finger thoracotomy** for all blunt force trauma arrests
- **Calcium 1GM IV, IO** for moderate/massive blood loss

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Clinical Management Options:

EMT | MEDIC



Pseudo PEA

2024

Differentials:

- Hypoperfusion
- True PEA
- Pseudo PEA

Clinical Management Options:

EMT

MEDIC

- Theory and Operational Guideline
- Continue CPR until a definitive palpable pulse is present

PEARL | *Pseudo PEA is a state in which there is an organized rhythm on the monitor without palpable central or peripheral pulses AND the patient has at least two of the following:*

- *Persistent EtCO2 greater than 30 mmHg*
- *Persistent pulse oximetry waveform consistent with pulse rate on the monitor*
- *Coordinated, organized cardiac wall movement confirmed by POCUS*
- *Femoral or carotid pulsation confirmed by POCUS*

PEARL | *If at any point during the pseudo-PEA resuscitation where the patient deteriorates then resume standard resuscitation measures*

PEARL | *Providers should hold standard cardiac arrest epinephrine (0.1mg/mL) and prioritize addressing the profound shock state*

- **Crystalloid Resuscitation 20mL/kg IV,IO** as necessary/indicated
- Pressor therapy

Option 1		Option 2		Option 3
Norepinephrine • **0.1 – 0.5 mcg/kg/min IV, IO**	**OR**	**Epinephrine** (use if HR <50) • **0.1 - 0.5 mcg/kg/min IV, IO**	**OR**	**Push dose Epinephrine** (0.01mg/mL) **0.5 – 2 mL aliquots titrated to effect**

PEARL | *Push dose epinephrine may be administered while infusion is prepared*

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Post-Arrest

2024

Differential Impressions:

- Status post-cardiac arrest
- Cardiogenic Shock
- Hypovolemic Shock
- Distributive Shock
- Obstructive Shock

Clinical Management Options:

EMT

MEDIC

- Theory and Operational Guidelines
- General Guidelines
- Maintain and continuously monitor adequacy airway, ventilation and oxygenation
- Transport Medical Post-Arrest to PCI Center
- Transport Trauma Post-Arrest to Trauma Center

- Transition to mechanical ventilation
- Bradycardia guideline as needed (be prepared to initiate CPR)
- Maintain temp less than 101°F

Prior to transport (medical post-arrests):

- Patent and ventilated airway
- 12-lead ECG obtained and transmitted to receiving facility
- MAP > 65 mmHg
- HR > 50 bpm
- Manage secondary injuries or medical issues during transport
- Prepare pressor agent

PEARL | *Push dose epinephrine should be utilized on patients that are rapidly deteriorating*

Advanced Procedures

- Drug-assisted airway management

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Trauma Guidelines

2024

Spinal Motion Restriction

2024

Goal(s):

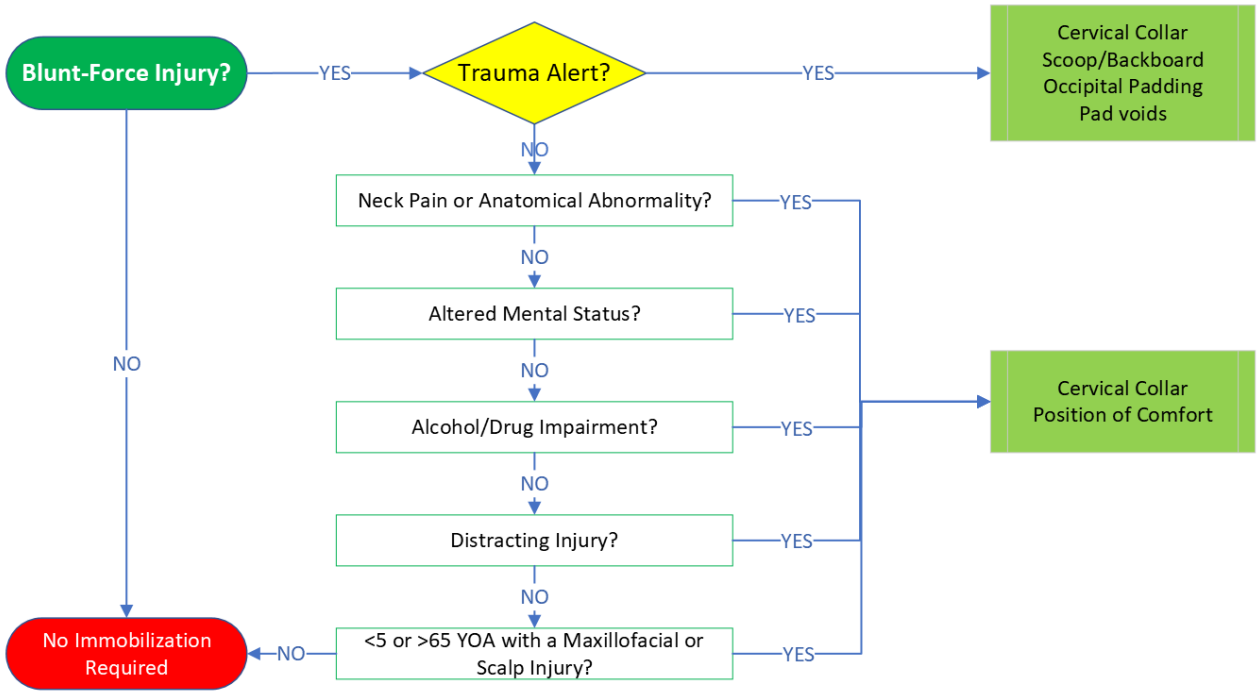
- To provide evidence-based and reasoned logic core principles for spinal motion restriction in patients that have sustained injury/trauma
- Rigid Spine Devices are extrication/transfer tools – not a therapeutic intervention

PEARL | *Precautionary spinal immobilization offers no patient value; may result in iatrogenic injury*

PEARL | *Full body vacuum splints are preferred to scoop stretchers; scoop stretchers are preferential to long spine boards*

PEARL | *Penetrating Trauma Alerts do not benefit from or require a rigid spine device*

General Actions:



Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Traumatic Injury 2024

Differential Impressions:

- Falls
- Motor Vehicle Crash
- Pedestrian
- Gunshot wound
- Battery
- Crush Injury
- Other Impact Injury
- Stab Wound or Impalement

Clinical Management Options:

EMT / MEDIC

PEARL | *Critically ill or injured patients shall receive initial stabilization and resuscitative measures prior to movement*

- Theory and Operational Guidelines
- General Guidelines

Trauma Care for Adults & Pediatrics

- Spinal Motion Restriction Guideline
- Hemorrhage Control:
  Direct pressure, pressure dressing, tourniquet, wound packing
- Thermal preservation for all trauma alerts:
  Hibler's Method preserves body heat and mitigates Lethal Triad
- Pelvic Splinting as necessary/indicated
- Extremity Splinting as necessary/indicated
- Perform Trauma Triage Criteria & Methodology Assessment

MEDIC

- **Tranexamic Acid 2GM in 100mL IV, IO of slow IV push** for moderate/massive hemorrhage
  Pediatric: 15mg/kg mixed in 100mL IV, IO for moderate/massive hemorrhage
- Pleural Needle Decompression as necessary/indicated
  PEARL | *If available, confirm presence of pneumothorax via POCUS prior to decompression*
  PEARL | *Perfusion target: permissive hypotension to a return of peripheral pulses present*
- Pain & Anxiety Management Guideline as necessary/indicated

Advanced Procedures

- **Whole blood administration**
- Drug-assisted airway management

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated
- Sodium bicarbonate for Crush Syndrome

Isolated Spinal Cord Injury

2024

Differential Impressions:

- Isolated Spinal Cord Injury
- Neurogenic Shock
- Spinal Shock
- Keraunoparalysis

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines

Trauma care for adults & Pediatrics

- Spinal Motion Restriction Guideline
- Thermal preservation for all patients: Hibler's Method preserves body heat and mitigates Lethal Triad
- Perform Trauma Triage Criteria & Methodology Assessment

PEARL | *Pressor agents are first-line therapy for hypotension secondary to Distributive Shock target MAP 70mmHg*

PEARL | *Crystalloids are second-line therapy for hypotension secondary to Distributive Shock*

- **Atropine 1mg IV, IO**; repeat x1
  Pediatric: Atropine 0.02mg/kg IV, IO; repeat x1 (minimum dose 0.1mg/maximum dose 0.5mg)

PEARL | *Third-line therapy for hemodynamically significant bradycardia*

- Pain & Anxiety Management Guideline as necessary/indicated
- Nausea & Vomiting Management Guideline as necessary/indicated

PEARL | *Antiemetic therapy is aimed at reducing airway compromise from vomiting*

- Seizure Guideline as necessary/indicated

Advanced Procedures

- Drug assisted airway management

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated
  Pediatric: Vasopressor agent

Isolated Closed Head & Traumatic Brain Injury 2024

Differential Impressions:

- Isolated Closed Head Injury
- Traumatic Brain Injury
- Subdural Hematoma
- Epidural Hematoma
- Intracranial Hemorrhage

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines

Trauma care for adults & pediatrics

- Spinal Motion Restriction Guideline
- Hemorrhage Control:
  Direct Pressure, Pressure Dressing
- Thermal preservation for all trauma alerts:
  Cold blood does not clot – Hibler's Method preserves body heat and reduces Lethal Triad
- Perform Trauma Triage Criteria & Methodology Assessment

PEARL | *Crystalloids are for first-line therapy for hypoperfusion to reduce secondary brain insult*

- Vasopressor agent

Primary option		Option 2
Norepinephrine • **0.1 – 0.5 mcg/kg/min IV, IO**	**OR**	**Epinephrine** • **0.1 – 0.5 mcg/kg/min IV, IO**

PEARL | *Second-line therapy for hypoperfusion (SBP< 90mmHg or MAP < 65) to reduce secondary brain insult (providers should titrate medication to avoid SBP>160mmHg)*

- Pain & Anxiety Management Guideline as necessary/indicated
- Procedural Sedation Management Guideline as necessary/indicated
- Nausea & Vomiting Management Guideline as necessary/indicated
- Seizure Guideline as necessary/indicated

Advanced Procedures

- Drug assisted airway management

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated
- **Pediatric: Epinephrine 0.1 – 1mcg/kg/min IV, IO infusion**

Burn, Electrocution, & Smoke Inhalation 2024

Differential Impressions:

- Burns (Thermal, Chemical, Electrical, Radiation)
- Electrocution (AC, DC)
- Smoke Inhalation
- Toxic Fume Inhalation

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines
- Thermal preservation for all critical burns

PEARL | *Burns – Prevent hypothermia*

- Burn Care (2° and 3° burns)
  Less than 15% BSA – Stop the burning process, moist dressing to patients comfort
  Greater than 15% BSA – Stop the burning process, moist or dry dressing to patients comfort but not to create hypothermia
  Remove jewelry and constricting items

PEARL | *Critical Burns: All burns greater than 25% BSA; 3° burns greater than 10% BSA; 2° and 3° burns to the face, eyes, hands, feet, or genitalia; inhalation burns; burns with extremes of age or co-morbidities; electrical burns.*

- Perform Trauma Triage Criteria & Methodology Assessment

- Pain & Anxiety Management Guideline as necessary/indicated
- Smoke Inhalation:
  Reactive Airway Disease Guideline
- Smoke Inhalation, Carbon Monoxide or Cyanide Toxicity (for patients subject to enclosed fire injuries/illnesses, cardiac arrest secondary to fire, refractory hypotension or AMS)
  Cyanokit 5gm (1 Kit) IV, IO over 15minutes
  Pediatric: Cyanokit 70mg/kg IV,IO over 15minutes

Advanced Procedures

- Drug-assisted airway management
- Escharotomy of chest or proximal extremities

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Isolated Eye Injury

2024

Differential Impressions:

- Foreign Body/Substance (not embedded)
- Foreign Body (impaled object)
- Corneal Abrasion
- Lacerated Globe
- Global Rupture
- Protruding Eye
- Orbital Fracture
- Retinal Artery Occlusion

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines
- Foreign Body/Substance (not embedded) & Corneal Abrasion:
  Irrigation 2L or 20 minutes
  PEARL| *Eye irrigation should be a priority in patients with direct eye exposure from chemicals.*
- Foreign Body (impaled object), Globe Injury and/or Protruding Eye:
  i. Shield or cup dress affected eye
  ii. Consider loose cover to unaffected eye to reduce eye movement
  iii. Protect loss of fluids: apply saline moistened dressing as necessary
  iv. Consider C-Collar to reduce head movement
  v. Elevate stretcher head
- Orbital Fracture
  i. Shield or cup dress affected eye
  ii. Consider loose cover to unaffected eye to reduce eye movement
  iii. Consider C-Collar to reduce head movement
  iv. Elevate stretcher head

- Pain & Anxiety Management Guideline as necessary/indicated
- Nausea & Vomiting Management Guideline as necessary/indicated
  PEARL | *Antiemetic therapy is aimed at reducing intraocular pressure*

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Adult Trauma Triage Criteria & Methodology

The EMT or paramedic shall assess the condition of those injured persons with anatomical and physiological characteristics of a person sixteen (16) years of age or older for the presence of at least one of the following four (4) criteria to determine whether to transport as a trauma alert. These four criteria are to be applied in the order listed, and once any one criterion is met that identifies the patient as a trauma alert; no further assessment is required to determine the transport destination.

Criteria:

- ☐ **1.** Meets color-coded triage system (see below)
- ☐ **2.** GCS ≤ 12 (Patient must be evaluated via GCS if not identified as a trauma alert after application of criterion 1.)
- ☐ **3.** Meets local criteria (specify): _____
- ☐ **4.** Patient does not meet any of the trauma criteria listed above but, in the judgment of the EMT or paramedic, should be transported as a trauma alert (document)_____

_____

COMPONENT		
AIRWAY	RESPIRATORY RATE OF 30 or GREATER ☐ B	ACTIVE AIRWAY ASSISTANCE[1] ☐ R
CIRCULATION	SUSTAINED HR OF 120 BEATS PER MINUTE or GREATER ☐ B	LACK OF RADIAL PULSE WITH SUSTAINED HEART RATE (>120) or BP <90 mmHg ☐ R
BEST MOTOR RESPONSE	BMR =5 ☐ B	BMR = 4 or LESS or PRESENCE OF PARALYSIS, or SUSPICION OF SPINAL CORD INJURY or LOSS OF SENSATION ☐ R
CUTANEOUS	SOFT TISSUE LOSS[2] or GSW TO THE EXTREMETIES ☐ B	2ND OR 3RD ^{O} BURNS TO 15% or MORE TBSA or AMPUTATION PROXIMAL TO THE WRIST or ANKLE or ANY PENETRATING INJURY TO HEAD, NECK, or TORSO[3] ☐ R
LONGBONE FRACTURE[4]	SINGLE FX SITE DUE TO MVA or FALL 10 ' or MORE ☐ B	FRACTURE OF TWO or MORE LONGBONES ☐ R
AGE	55 YEARS or OLDER ☐ B	
MECHANISM OF INJURY	EJECTION FROM VEHICLE[5] or DEFORMED STEERING WHEEL[6] ☐ B	

R = any **one (1)** - transport as a trauma alert

B = any **two (2)** - transport as a trauma alert

1. Airway assistance beyond administration of oxygen.
2. Major degloving injuries, or major flap avulsion (>5 in.)
3. Excluding superficial wounds in which the depth of the wound can be determined.
4. Longbone (Including humerus, (radius, ulna), femur, (tibia or fibula).
5. Excluding motorcycle, moped, all terrain vehicle, bicycle, or open body of a pickup truck.
6. Only applies to driver of vehicle.

Pediatric Trauma Scorecard Methodology

The EMT or Paramedic shall assess the condition of those injured individuals with anatomical and physical characteristics of a person fifteen (15) years of age or younger for the presence of one or more of the following three (3) criteria to determine the transport destination per 64E-2.001, Florida Administrative Code, (F.A.C.):

☐ **1)** Pediatric Trauma Triage Checklist: The individual is assessed based on each of the six (6) physiologic components listed below (left column). The single, most appropriate criterion for each components is selected (along the row to the right). Refer to the color-coding of each criteria and legend below to determine the transport destination:

COMPONENT			
SIZE	> 20 Kg (44+ lbs.) ☐ G	>11-20 Kg (24-44 lbs.) ☐ G	WEIGHT ≤ 11 Kg or LENGTH ≤ 33 INCHES ON A PEDIATRIC LENGTH AND WEIGHT EMERGENCY TAPE ☐ B
AIRWAY	NORMAL ☐ G	SUPPLEMENTED O_2 ☐ G	ASSISTED OR INTUBATED (1) ☐ R
CONSCIOUSNESS	AWAKE ☐ G	AMNESIA OR LOSS OF CONSCIOUSNESS ☐ B	ALTERED MENTAL STATUS (2) OR COMA or PRESENCE OF PARALYSIS OR SUSPICION OF SPINAL CORD INJURY or LOSS OF SENSATION ☐ R
CIRCULATION	GOOD PERIPHERAL PULSES; SBP > 90 mmHg ☐ G	CAROTID OR FEMORAL PULSES PALPABLE, BUT THE RADIAL OR PEDAL PULSE NOT PALPABLE or SBP < 90-mmHg ☐ B	FAINT OR NON-PALPABLE CAROTID OR FEMORAL PULSE or SBP < 50 mmHg ☐ R
FRACTURE	NONE SEEN OR SUSPECTED ☐ G	SINGLE CLOSED LONG BONE (3) FRACTURE (4) ☐ B	OPEN LONG BONE (3) FRACTURE (5) OR MULTIPLE FRACTURE SITES OR MULTIPLE DISLOCATIONS (5) ☐ R
CUTANEOUS	NO VISIBLE INJURY ☐ G	CONTUSION OR ABRASION ☐ G	MAJOR SOFT TISSUE DISRUPTION (6) OR MAJOR FLAP AVULSION OR 2^0 OR 3^0 BURNS TO ≥10% TBSA OR AMPUTATION (7) or ANY PENETRATING INJURY TO HEAD, NECK, OR TORSO (8) ☐ R

R = RED, any **one (1)**-transport as a trauma alert B = BLUE, any **two (2)** - transport as a trauma alert G = GREEN, follow local protocols

☐ **2)** Meets local criteria (specify): all pediatric trauma alert patients will be transported to the closest facility if air support is not available.

☐ **3)** Patient does not meet any of the trauma criteria listed above, but the EMT or Paramedic can call a "Trauma Alert" if, in his or her judgment, the trauma patient's condition warrants such action. Must be documented on run report pursuant to 64E-2.013, (F.A.C.)

1. Airway assistance includes manual jaw thrust, continuous suctioning, or use of other adjuncts to assist ventilatory efforts.
2. Altered mental states include drowsiness, lethargy, inability to follow commands, unresponsiveness to voice, totally unresponsive.
3. Long bones include the humerus, (radius, ulna), femur, (tibia or fibula).
4. Long bone fractures do not include isolated wrist or ankle fractures.
5. Long bone fractures do not include isolated wrist or ankle fractures or dislocations.
6. Includes major degloving injury.
7. Amputation proximal to wrist or ankle.
8. Excluding superficial wounds where the depth of the wound can be determined.

Environmental Guidelines

2024

Bites & Envenomation

2024

Differential Impressions:

- Human bite
- Animal bite
- Snake bite/envenomation
- Spider bite/envenomation
- Ant, Bee, Wasp bite/envenomation
- Jellyfish sting
- Stingray/Catfish sting

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines
- Human & Animal:
  Irrigate and dress wounds as necessary/indicated
  PEARL | *Human Bites are highly infectious are highly infections at 24-48 hours. Strong encouragement for transportation to the hospital*
- Snake & Spider: Make early contact with Venom 1 (412-849-8022)
  Immobilize extremity in elevated position
  PEARL | *No ice, tourniquets, cutting or suctioning of site*
  PEARL | *Do not attempt to catch, kill or bring snake*
- Ant, Bee, Sawfly, Wasp:
  Remove/scrape off stingers/venom sacs with a blunt-edge object (e.g., credit card or tongue depressor)
- Jellyfish:
  Remove from skin with tweezers (preferred) or sea water, rinse with vinegar (if available) and immerse in hot, non-scalding water
- Stingray/Catfish:
  Do not remove barb – immerse in hot, non-scalding water
- Allergic Reaction & Anaphylaxis Guideline as necessary/indicated

MEDIC

- Pain & Anxiety Management Guideline as necessary/indicated
- Nausea & Vomiting Management Guideline as necessary/indicated

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Drowning/Submersion

2024

Differential Impressions:

- Drowning
- Submersion

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines
- **CPAP 5 – 15cm/H20 PEEP or CPAP with Pressure Support**
- Exposure Emergencies | Hypo & Hyperthermia Guideline as necessary/indicated
- Reactive Airway Disease Guideline as necessary/indicated

PEARL | *Resuscitate cold water drowning until warm – transport*

Advanced Procedures

- Drug assisted airway management

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Pediatric: Epinephrine 0.1 – 1mcg/kg/min IV, IO Infusion

Pre-Eclampsia & Eclampsia

2024

Differential Impressions:

- Pre-Eclampsia
- Eclampsia
- Post-Partum Eclampsia
- 3rd Trimester Hypertension
- 3rd Trimester Proteinuria
- 3rd Trimester Headache
- 3rd Trimester Edema
- 3rd Trimester Visual Changes
- 3rd Trimester Seizure Activity

Clinical Management Options:

EMT

- Theory and Operational Guidelines
- General Guidelines
- Place in left lateral recumbent position

MEDIC

- Pre-eclampsia:
  Magnesium Sulfate 4gm in 100mL D5W IV Infusion over 20 minutes

PEARL | *Give magnesium sulfate if pregnant >20 weeks gestation or 6wks postpartum and have SBP > 140 or DBP > 90 AND any of the following symptoms – headache, vision change, AMS, pulmonary edema, and hyperreflexia with clonus.*

PEARL | *Do not treat pre-eclampsia if symptoms can be attributed to alternate diagnosis*

- Eclampsia:

Primary option		If no IV access		If Mag is ineffective
Magnesium Sulfate 4gm in 100mL D5W IV Infusion Run wide open until seizure stops then infuse over 10-20 minutes	**OR**	**Magnesium Sulfate 4gm IM (2gm in each gluteus)**	**OR**	**Midazolam 5mg IV/IO Midazolam 10mg IM/IN**

PEARL | *Magnesium Sulfate is first-line therapy for* eclamptic tonic-clonic seizure activity

PEARL | *Midazolam is second-line therapy for eclamptic tonic-clonic seizure activity when Magnesium Sulfate is otherwise unavailable or ineffective*

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Childbirth 2024

Differential Impressions:

- Normal Spontaneous Vaginal Delivery
- Complicated Spontaneous Vaginal Delivery
- Stillborn Delivery
- Newborn Distress Delivery

Clinical Management Options:

EMT / MEDIC

- Theory and Operational Guidelines
- General Guidelines
- Vaginal Bleeding Guideline as necessary/indicated
- Normal Delivery Procedure
  - Place the mother on a firm surface and elevate hips
  - Inspect the vaginal area for impending delivery (crowning), or any signs of abnormal presentation – prolapsed amniotic sac, limb presentation, cord presentation, or breech presentation

    PEARL | *Signs of imminent delivery include: membrane rupture or bloody show, contractions, urge to move bowels and/or urge to push*
  - Apply gentle palm pressure to the infant's head to prevent explosive delivery and tearing of perineum
  - If amnion is still intact as head delivers, instruct mother to stop pushing and gently tear open membrane
  - Suction mouth, then nose (if needed)
  - Keep newborn warm and dry
  - Stimulate the newborn as necessary/indicated
  - After cord stops pulsating, clamp the cord 6 and 9 inches away from baby and cut between the clamps
  - Document the time of delivery and perform APGAR score at 1 and 5 minutes

- Complicated Delivery Procedures

  Nuchal Cord:
  - As delivery occurs, attempt to slip the umbilical cord over the newborn's head
  - If umbilical cord is too tight to maneuver, immediately clamp and cut
  - Continue with delivery

  Prolapsed Cord:
  - Do not delay transport

    PEARL | *Primary objective: maintain a pulsatile umbilical cord*
  - Place the mother in knee-to-chest position
  - Instruct the mother to pant and not push with each contraction
  - Apply upward manual pressure through the vagina lifting the presenting newborn anatomy away from and off the umbilical cord
  - With the umbilical cord now pulsating, maintain that position and transport

  Limb Presentation:
  - Do not delay transport
  - Place the mother head down with pelvis elevated position
  - Instruct the mother to pant and not push with each contraction

- Maintain that position, do not pull on the exposed limb and transport

Breech Presentation:

- Do not delay transport
- Place the mother head down with pelvis elevated position
- Instruct the mother to pant and not push with each contraction
- Deliver the anterior shoulder in a gentle, controlled fashion, then deliver the posterior shoulder and the remainder of the newborn
- As the newborn's head passes the pubis, apply gentle upward pressure until the mouth appears over the perineum and immediately suction the mouth, then nose
- If the head does not deliver, form a "V" with the index and middle finger on either side of the infant's nose.
- Push the vaginal wall from the face, maintain that position and transport

Postpartum Hemorrhage:

- Massage the uterus/fundus from pubis toward umbilicus
- Vaginal bleeding guideline as necessary/indicated

- Complicated Delivery Procedures

  Meconium Aspiration Syndrome:

  - If the baby is not vigorous (depressed respiratory effort, poor muscle tone, and/or heart rate <100/min): Direct laryngoscopy, intubate, and suction the ETT for no longer than 5 seconds. If no meconium is retrieved, do not repeat intubation and suction. If meconium is retrieved and no bradycardia is present, reintubate and suction. If heart rate is <100/min, administer positive pressure ventilation and consider suctioning again later.
  - If the baby is vigorous (normal respiratory effort, normal muscle tone, and heart rate >100/ min): Do not electively intubate. Gently clear secretions/meconium from mouth and nose with a bulb syringe.
- Nausea & Vomiting Management Guideline as necessary/indicated

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated

Vaginal Bleeding 2024

Differential Impressions:

- Abrutio placenta
- Ectopic pregnancy rupture
- Placenta previa
- Inevitable abortion
- Spontaneous abortion
- Therapeutic abortion
- Threatened abortion
- Endometrosis
- Memorrhagia
- Postpartum hemorrhage
- Sexual battery/Vaginal trauma
- Uterine rupture

Clinical Management Options:

EMT

- Theory and Operational Guidelines
- General Guidelines
- If pregnant and if delivery is not imminent, transport in left lateral recumbent position
- If postpartum, massage the uterus/fundus and encourage newborn breast feeding
  PEARL | *Do not pack vagina to arrest bleeding*

MEDIC

- **Tranexamic Acid 2GM in 100mL IV, IO** for moderate/massive hemorrhage
  PEARL | *Perfusion target: permissive hypotension; peripheral pulses present – restrict crystalloid*

Advanced Procedures

- **Whole blood administration**

Medical Control Actions/Orders/Requests:

- Consult as necessary/indicated
- **Epinephrine 0.1 – 0.5mcg/kg/min IV, IO Infusion** as necessary/indicated

PHARMACOLOGY REFERENCE

Definitions

- **Class**: The family of drugs that this medication belongs to
- **Action**: What this medication does.
- **Indications:** Reason to give the medication.
- **Contraindications:** Reason that the medication CAN NOT be given.
- **Precautions/Notes:** Things to consider when administering this medication.
- **Side effects**: Things that this medication might do in addition to its desired effect.

Medication Safety

All medication administrations should be performed (when possible) with a partner. Providers shall perform a medication administration check and partner cross check ensuring that the following six rights of medication administration are confirmed:

1. Right patient
2. Right drug
3. Right dose
4. Right route
5. Right time
6. Right documentation

Weight Based Medication Dosing

Most medications (unless specified differently) in this reference should be dosed (when applicable) based on ideal body weight. Ideal body weight categories can be found in the Handtevy reference where pediatrics is categorized by age and adults are categorized as small adult, large adult.

Pregnancy Class

Category	Risk to Fetus
A	No demonstrated risk. Safe to use.
B	Minimal demonstrated risk. Generally safe to use.
C	Demonstrated risk. Should only be given if benefit to mother outweighs the risk to the fetus
D	Demonstrated risk. Should only be given in life-threatening situations.
X	Demonstrated risk. Contraindicated in pregnancy.

Pediatric Dosing

In general, pediatric dosing should never exceed the adult dose unless specified.

ADENOSINE

ADENOCARD

Class: Antidysrhythmic

Action: Slows conduction through the AV node; can interrupt reentrant AV nodal pathways.

Indications:

- Conversion of re-entry supraventricular tachycardia (SVT)
- Reentry SVT due to Wolff-Parkinson-White syndrome
- Monomorphic wide-complex tachycardia

Contraindications

- None in emergent settings

Precautions

- Pregnancy safety: Category C

Notes

- Not effective in converting atrial fibrillation/flutter or ventricular tachycardia
- Arrhythmias are common during the cardioversion
- Short half-life limits adverse effects in most patients
- Bronchoconstrictive lung disease (asthma, COPD), providers should listen to lung sounds after administration.
- Adenosine should not be used for patients who are hemodynamically unstable

Side effects:

- Headache, dizziness, dyspnea, bronchospasm, dysrhythmias, palpitations, hypotension, chest pain, facial flushing, cardiac arrest, nausea, metallic taste, pain in head or neck, paresthesia, diaphoresis

Dosage

- **Adult**
  - **12 mg** as a rapid IV bolus, may repeat once
- **Pediatric**
  - **0.1-0.2 mg/kg (max of 12mg)**

Route: IV, IO; must be administered rapidly, followed by a flush.

ALBUTEROL

PROVENTIL/VENTOLIN

Class: Sympathomimetic, Bronchodilator

Action: Selective beta-2 (β2) agonist that stimulates adrenergic receptors of the sympathetic nervous system. This results in smooth muscle relaxation and bronchodilation.

Indications:

- Bronchospasm

Contraindications

- None in emergent settings

Precautions

- Pregnancy safety: Category C
- Symptomatic tachycardia

Notes

- Causes tachycardia so it may precipitate angina and dysrhythmias

Side effects:

- Headache, fatigue, light-headedness, irritability, restlessness, aggressive behavior, pulmonary edema, hoarseness, increased sputum, chest pain, palpitations, dry mouth, and tremors.

Dosage

- **Adult & Pediatrics**
  - **2.5 mg (0.5 ml)** in 2.5 ml normal saline over 10-15 minutes

Route: Nebulized

AMIODARONE

CORDARONE/PACERONE

Class: Antidysrhythmic (Class III)

Action: Blocks Sodium, Potassium, and Calcium channels. Prolongs the action potential and repolarization. Decreases AV conduction and sinoatrial node function. Decreases peripheral vascular resistance (α and β blockade).

Indications:

- Stable monomorphic ventricular tachycardia
- Stable polymorphic ventricular tachycardia with normal QT interval
- Cardiac Arrest with ventricular fibrillation or ventricular tachycardia
- Atrial tachyarrhythmias (narrow rhythms) refractory to other treatments

Contraindications

- QTC > 500ms

Precautions

- Heart failure
- Torsades de Pointes

Notes

Side effects:

- Dizziness, fatigue, malaise, tremor, ataxia, lack of coordination, ARDS, pulmonary edema, cough, progressive dyspnea, heart failure, bradycardia, hypotension, prolongation of QT interval, nausea, vomiting, Stevens-Johnson syndrome.

Dosage

- **Adult**
  - **Cardiac arrest - pulseless VF/VT**: **300 mg IV**, second dose: **150 mg IV**

For all other indications:

  - **150 mg** in 100ml of D5W over 10 min.
- **Pediatric**
  - **Cardiac arrest - pulseless VF/VT 5mg/kg IV/IO bolus. Max dose is adult dose**

For all other indications:

  - **5mg/kg IV/IO over 30 minutes. Max dose is adult dose**

Route: IV, IO

ASPIRIN

Class: Platelet inhibitor and anti-inflammatory

Action: Inhibits platelet aggregation.

Indications:

- New chest pain or cardiovascular equivalent suggestive of acute coronary syndrome

Contraindications

- Known anaphylaxis
- Active, uncontrolled bleeding

Precautions

- GI bleeding

Notes

- Administer a full dose of aspirin to patients who have taken a morning dose of 81mg.
- Aspirin administration should be prioritized in patients with acute coronary syndrome symptoms.

Side effects:

- Heartburn, nausea, vomiting, wheezing

Dosage

- **Adult**
  - **324 mg** PO

Route: Oral

ATROPINE SULFATE

Class: Parasympatholytic (anticholinergic)

Action: Blocks acetylcholine receptors. Increases heart rate. Decreases gastrointestinal secretions.

Indications:

- Hemodynamically significant bradycardia
- Organophosphate poisoning

Contraindications

- None when used emergently

Precautions

- Tachycardia
- Hypertension

Notes

- Dose of 3 mg should not be exceeded unless organophosphate poisoning due to this being a temporary solution. Another more permanent solution for bradycardia needs to be identified if multiple repeat doses needed.
- If administered too slowly, reflex bradycardia may occur

Side effects:

- Palpitations, tachycardia, headache, dizziness, anxiety, dry mouth, pupillary dilation, blurred vision, urinary retention (especially older men)

Dosage

- **Adult**
  - **Bradycardia: 1 mg** every 3-5 min. (max total dose of 3mg)
  - **Organophosphate poisoning:** Administer **1 mg** boluses until a titrated goal of secretion management is met. There is no max dose.
- **Pediatric**
  - **Organophosphate poisoning:**
    - **Pediatric ≥12 years: 1mg IV, IO;** q 5minutes till resolved
    - **Pediatric <12 years: 0.05mg/kg IV, IO;** q 5minutes till resolved

Route: IV, IO must be administered rapidly, followed by a flush.

CALCIUM CHLORIDE

Class: Electrolyte

Action: Increases cardiac contractility (positive inotropic effect). May enhance ventricular automaticity.

Indications:

- Hyperkalemia
- Calcium channel blocker toxicity
- Beta-blocker toxicity

Contraindications

- None when used emergently

Precautions

- Pregnancy safety: Category C
- Ventricular fibrillation (relative)
- Digitalis toxicity

Notes

- Do not use routinely in cardiac arrest, unless the cause of the arrest is a suspected hyperkalemia.
- Triple the potency of calcium gluconate
- Local infiltration results in necrosis

Side effects:

- Arrhythmias (bradycardia/asystole), hypotension

Dosage

- **Adult**
  - **1 g** of 10% solution; may be repeated at 10 min. intervals.
- **Pediatric**
  - **20 mg/kg of 10% solution (Max dose: 1 g) may be repeated at 10 min. intervals**

Route: IV, IO

CYANOKIT

HYDROXYCOBALAMIN

Class: Vitamin

Action: An injectable form of vitamin B12 that binds with cyanide from the tissues creating cyanocobalamin which is the urinated out safely

Indications:

Any potential cyanide toxicity

Contraindications

- None in an emergency setting

Precautions

- None

Notes

- Strongly consider for for victims of combustion in enclosed space with **any** of following
  - Altered mental status (confusion, disoriented, unresponsive, altered responsiveness)
  - Hypotension
  - Low $EtCO_2$
  - Cardiac arrest

Side effects:

- Red coloring of skin or urine, warmth sensation under skin, hypertension, vomiting, diarrhea

Dosage

- **Adult**
  - **5 g over 15 minutes (1 package)**
- **Pediatric**
  - **70 mg/kg over 15 minutes. Max dose is adult dose**

Route: IV, IO

DEXAMETHASONE

Class: Corticosteroids, anti-inflammatory agents

Action: Decreases inflammation by suppressing migration of polymorphonuclear leukocytes (PMNs) and reducing capillary permeability. Upregulates beta receptors to allow albuterol to work better.

Indications:

- Reactive airway disease

Contraindications

- None in emergent setting

Precautions

- Pregnancy safety: Category C

Side effects:

- Nausea, vomiting, dizziness, restlessness

Dosage

- **Adult: 10mg**
- **Pediatric: 0.6 mg/kg (max of 16mg)**

Route: IV, IO, PO

DEXTROSE

D50, D25, D12.5, D10, Oral Glucose

Class: Carbohydrate, antihypoglycemic

Action: Rapidly elevates serum glucose levels. Short-term osmotic diuresis.

Indications:

- Hypoglycemia

Contraindications

- None in emergent setting

Precautions

- Pregnancy safety: Category C

Notes

- Extravasation (infiltration) may cause tissue necrosis with higher concentrations

Side effects:

- Extravasation leads to tissue necrosis, cerebral hemorrhage, cerebral ischemia, pulmonary edema, warmth, pain, burning from IV infusion, hyperglycemia.

Dosage

- **Adult**
  - *D50*: **25 gm** slow IV push – titrated to return of mentation
  - *D10*: **250 mL (25 gm)** titrated to return of mentation
  - *Oral Glucose Gel*: **30 gm PO** – titrated to return of mentation
- **Pediatric**
  - ***> 1 year old*: 0.5 to 1 gm/kg of D25 slow IV**
  - ***< 1 year old*: 200 to 500 mg/kg of D12.5 Slow IV**
  - ***D10:* 5mL/kg titrated to return of mentation**
  - ***Oral Glucose Gel*: 15 gm PO – titrated to return of mentation**

Route: IV, IO, PO (Oral Glucose Gel only)

DIAZEPAM

VALIUM

Class: Tranquilizer (benzodiazepine)

Action: Anticonvulsant, skeletal muscle reactant, and sedative

Indications:

- Major motor seizures
- Status epilepticus

Contraindications

- None

Precautions

- Venous irritation

Notes

- Short duration of effect

Side effects:

- Drowsiness, hypotension, respiratory depression, apnea

Dosage

- **Adult 5mg**
- **Pediatric: 0.2mg/kg IV**

Route: IV, IO, IM

DILTIAZEM

CARDIZEM

Class: Calcium channel blocker, Antidysrhythmic (Class IV)

Action: Inhibits extracellular calcium ion influx across membranes of myocardial cells and vascular smooth muscle cells, resulting in inhibition of cardiac and vascular smooth muscle contraction and thereby dilating main coronary and systemic arteries; no effect on serum calcium concentrations; substantial inhibitory effects on the cardiac conduction system, acting principally at the AV node, with some effects at the SA node.

Indications:

- Stable, narrow complex tachycardia (refractory to adenosine and vagal maneuvers)
- Atrial fibrillation or atrial flutter with rapid ventricular response

Contraindications

- Wide-complex tachycardia (may cause ventricular fibrillation)
- Presence of Wolff-Parkinson-White syndrome

Precautions

- Underlying cause of tachycardia – sepsis, drug use, etc.
- Pregnancy safety: Category C
- Hypotension / cardiogenic shock
- Renal or hepatic dysfunction

Notes

- Dysrhythmias may present during pharmacologic cardioversion

Side effects:

- Dizziness, headache, dyspnea, cough, dysrhythmias, heart failure, peripheral edema, bradycardia, hypotension, AV blocks, syncope, VF/VT, cardiac arrest, chest pain, nausea, and vomiting

Dosage

- **Adult**
  - **0.25 mg/kg** over 2 min. (max of 20 mg)

Route: IV, IO

DIPHENHYDRAMINE

BENADRYL

Class: Antihistamine

Action: Blocks histamine receptors. Has some sedative side effects.

Indications:

- Allergic/anaphylactic reactions
- Extrapyramidal symptoms

Contraindications

- None in emergency setting

Precautions

- Asthma
- Nursing mothers
- Hypotension

Notes

- Diphenhydramine is not the primary treatment for anaphylactic reactions

Side effects:

- Sedation, dries bronchial secretions, blurred vision, headache, palpitations

Dosage

- **Adult**
  - **25-50 mg**
- **Pediatric**
  - **1 mg/kg**

Route: IV, IO, IM

DROPERIDOL

Class: Antipsychotic and Antiemetic

Action: Butyrophenone antipsychotic causes CNS depression; antiemetic effect is from dopamine blocking. Main actions from potent dopamine (2) receptor antagonism.

Indications:

- Hyperactive delirium
- Mild to moderate agitation
- Nausea
- Vomiting
- Gastroparesis abdominal pain / cyclic vomiting

Contraindications

- None

Precautions

- Known long QT interval

Side effects:

- Restlessness, anxiety, dystonic reactions, drowsiness

Dosage

- **Adult:**
  - **Hyperactive delirium 5mg**
  - **Nausea/Vomiting 1.25mg**

Route: IV, IO, IM

EPINEPHRINE

1 mg/mL (1:1000)

Class: Alpha and Beta receptor agonist

Action: Increases heart rate and automaticity. Increases cardiac contractile force. Increases myocardial electrical activity. Increases systemic vascular resistance. Increases blood pressure. Causes bronchodilation.

Indications:

- Anaphylactic reactions
- Bronchial asthma
- COPD exacerbation
- Symptomatic bradycardia
- Sepsis
- Severe reactive airway disease
- Croup

Contraindications

- None

Precautions

- Patients with cardiovascular disease
- Hypertension
- Pregnancy
- Patients with tachyarrhythmia
- Should protect from light

Side effects:

- Palpitations, anxiety, tachycardia, tremulousness, nausea, and vomiting

Dosage

- **Adult**
  - **Anaphylaxis: 0.5 mg IM;** administer in the lateral thigh
  - **Pressor: 0.1 mcg/kg/min – 0.5 mcg/kg/min** IV Infusion
  - **Bradycardia: 2-10 mcg/min** infusion
- **Pediatric**
  - **Anaphylaxis: 0.01 mg/kg max of 0.3mg; administer in the lateral thigh**
  - **Croup: 0.5 mg in 4mL of normal saline AT**

Route: IV, IO, IM, AT

EPINEPHRINE

0.01 mg/mL (1:100,000)

Class: Alpha and Beta receptor agonist

Action: Increases heart rate and automaticity. Increases cardiac contractile force. Increases myocardial electrical activity. Increases systemic vascular resistance. Increases blood pressure. Causes bronchodilation.

Indications:

- Pressor agent

Contraindications

- None

Precautions

- Should be protected from light
- Can be deactivated by alkaline solutions (sodium bicarb)

Side effects:

- Palpitations, anxiety, tremulousness, nausea, and vomiting

Dosage

- **0.5 – 2mL push dose aliquots**
- **Pediatrics 0.1mL/kg up to 10Kg then for every 10 kg add 1mL**

PEARL | *1:100,000 concentration is made by taking 1mL of 0.1mg/mL (1:10,000) and adding it to 9mL of saline.*

Route: IV, IO

EPINEPHRINE

0.1 mg/mL (1:10,000)

Class: Alpha and Beta receptor agonist

Action: Increases heart rate and automaticity. Increases cardiac contractile force. Increases myocardial electrical activity. Increases systemic vascular resistance. Increases blood pressure. Causes bronchodilation.

Indications:

- Cardiac arrest
- Peri-Arrest

Contraindications

- None

Precautions

- Should be protected from light
- Can be deactivated by alkaline solutions (sodium bicarb)

Side effects:

- Palpitations, anxiety, tremulousness, nausea, and vomiting

Dosage

- **Adult**
  - **Cardiac arrest: 0.5 mg - 1 mg** repeat every 3-5 min, max of 3 mg
  - **Peri-Arrest: 0.1 mg IVP**
- **Pediatric**
  - **Cardiac arrest: 0.01 mg/kg every 3-5 min.**

Route: IV, IO

ETOMIDATE

AMIDATE

Class: General anesthetic

Action: Ultrashort-acting, non-barbiturate hypnotic intravenous anesthetic agent

Indications:

- Drug-assisted airway management

Contraindications

- None

Precautions

- Caution in sepsis patients

Side effects:

- None

Dosage

- **Adult**
  - **0.3 mg/kg**

Route: IV, IO

FENTANYL

SUBLIMAZE

Class: Narcotic

Action: Central nervous system depressant. Decreases sensitivity to pain.

Indications:

- Pain management

Contraindications

- None

Precautions

- Respiratory depression
- Hypotension
- Nausea

Notes

- EtCO2 monitoring should be continually performed post administration
- Intubation can be a painful procedure, Fentanyl may be used as a pain management tool post intubation

Side effects:

- Dizziness, altered mental status, bradycardia, rigid chest wall syndrome

Dosage

- **Adult & Pediatric: 1 mcg/kg;** repeat q10 minutes PRN

Route: IV, IO, IN, IM

HYDROMORPHONE

DILAUDID

Class: Narcotic

Action: Central nervous system depressant. Decreases sensitivity to pain.

Indications:

- Pain management

Contraindications

- None

Precautions

- Respiratory depression
- Hypotension
- Nausea

Notes

- EtCO2 monitoring should be continually performed post administration

Side effects:

- Dizziness, altered mental status, bradycardia

Dosage

- **Adult 1mg**
- **Pediatric: 5 mcg/kg**

Route: IV, IO, IM, IN

IPRATROPIUM

ATROVENT

Class: Anticholinergic

Action: Causes bronchodilation. Dries respiratory tract secretions.

Indications:

- Refractory bronchospasm

Contraindications

- None in emergent situation

Precautions

- Should not be used as primary treatment for bronchospasm

Side effects:

- Palpitations, dizziness, anxiety, headache, nervousness

Dosage

- **Adult:**
  - **0.5 mg;** mixed with Albuterol (only a one-time use)

Route: Nebulized

KETAMINE

KETALAR

Class: Sedative/hypnotic analgesic

Action: Causes dissociative state

Indications:

- Pain management
- Sedation
- Hyperactive delirium with agitation

Contraindications

- Children less than 3 months old

Precautions

- Catecholamine depleted states
- Eye impalement

Notes

- Hallucinations may occur
- Ketamine (100mg/mL) IV/IO should be diluted with an equal volume of Normal Saline

Side effects:

- Hallucinations, increased skeletal muscle tone

Dosage

- **Adults & Pediatrics**
  - **Procedural sedation 1 mg/kg;** IV, IO or **2mg/kg IM, IN**
  - **Sub-dissociative pain management/procedural anxiolytic: 0.2 mg/kg;** 10 mg/ml concentration, IV, IO, IN

- **Adults only**
  - **Hyperactive delirium 4 mg/kg;** IM dissociation**;** target large muscle

Route: IV, IM, IO

KETOROLAC

TORADOL

Class: Nonsteroidal anti-inflammatory drugs

Action: Anti-inflammatory and pain reliever. Works by blocking prostaglandins that lead to pain, fever, and inflammation pain management

Indications

- Pain management

Contraindications

- Active peptic ulcer disease
- Recent gastrointestinal bleeding
- Known kidney failure or dysfunction
- Suspected kidney failure

Precautions

- None

Notes

- Highly effective for use in mild to moderate pain related to kidney stones and muscle skeletal pain

Side effects:

- Nausea, vomiting, dizziness, bleeding

Dosage

- **Adults: 15mg**
- **Pediatrics: 0.5mg/kg (max 15mg)**

Route: IV, IM, IO

LEVALBUTEROL

Xopenex

Class: Sympathomimetic, Beta agonist, Short-acting bronchodilator

Action: Levalbuterol A is a beta$_2$-adrenergic agonist indicated for the treatment or prevention of bronchospasm in patients 4 years of age and older with reversible obstructive airway disease.

Indications:

- Bronchospasm

Contraindications

- None in emergent settings

Precautions

- Pregnancy safety: Category C
- Symptomatic tachycardia
- Paradoxical bronchospasm
- Hypokalemia

Notes

- Causes tachycardia so it may precipitate angina and dysrhythmias

Side effects:

- Headache, fatigue, light-headedness, irritability, restlessness, aggressive behavior, pulmonary edema, hoarseness, increased sputum, chest pain, palpitations, dry mouth, and tremors.

Dosage

- **Adult**
  - **0.63mg** in 3 mL normal saline nebulized
- **Pediatrics**
  - **0.31 – 0.63mg** in 3 mL normal saline nebulized

Route: Nebulized

LEVTIRACETAM

KEPPRA

Class: anticonvulsants

Action: The mechanism of action of Keppra is not known, but it is thought to bind to a protein called synaptic vesicle protein 2A (SV2A).SV2A regulates the release of hormones and signaling molecules in the brain, notably gamma-aminobutyric acid (GABA). GABA reduces the excitability of nerve cells, or the signals sent by nerve cells during normal signaling. Binding to SV2A is thought to make it more active, increasing the amount of GABA that is secreted, which reduces or "tunes down" nerve signaling and reduces seizure activity.

Indications:

- Seizures
- Status epilepticus

Contraindications

- None in emergent situation

Precautions

- Pregnancy Safety: Category C

Side effects:

- Ectopy

Dosage

- **Adult: 40mg/kg infusion** max of 1gm
- **Pediatric: 40mg/kg infusion** max of 1gm

Route: IV, IO

LIDOCAINE HYDROCHLORIDE

XYLOCAINE

Class: anesthetic, antidysrhythmic

Action: *Local anesthetic*: Inhibits transport of ions across the neuronal membrane, blocking conduction of normal nerve impulses. *Antidysrhythmic*: Lidocaine is specifically indicated in the acute management of ventricular arrhythmias.

Indications:

- Local anesthetic post IO placement
- Ventricular Arrhythmia

Contraindications

- None in emergent situation

Precautions

- Pregnancy Safety: Category B

Notes

- Monitor for central nervous system toxicity
- Preferred antidysrhythmic if toxin caused dysrhythmia

Side effects:

- Ectopy

Dosage

- **Adult:**
  - **IO site pain**
    - **40 mg IO over 2 minutes;** flush with saline after sitting in IO space for 60 seconds
  - **Antidysrhythmic**
    - **1st dose 1.5mg/kg**
    - **2nd dose 0.5 mg/kg**
- **Pediatric:**
  - **IO site pain**
    - **0.5 mg/kg (40 mg max) IO over 2 minutes; flush with saline after sitting in IO space for 60 seconds**
  - **Antidysrhythmic**
    - **1mg/kg**

Route: IV, IO

LORAZEPAM

ATIVAN

Class: Benzodiazepine

Action: Anticonvulsant, sedative

Indications:

- Motor seizures
- Status epilepticus

Contraindications

- None in emergent situation

Precautions

Notes

- Dilute with normal saline prior to intravenous administration
- Respiratory depression common

Side effects:

- Drowsiness, hypotension, amnesia, respiratory depression, apnea

Dosage

- **Adult: 2mg**
- **Pediatric: 0.1mg/kg (max of 2mg per dose)**

Route: IV, IO, IM

MAGNESIUM SULFATE

Class: Electrolyte, anti-inflammatory

Action: Reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction. Induces uterine relaxation. Can cause bronchodilation after beta-agonists and anticholinergics have been administered. Is a smooth muscle relaxer.

Indications:

- Eclampsia
- Torsades de Pointes
- Hypomagnesemia
- Severe bronchospasm refractory to other treatments (specifically in asthma)

Contraindications

- Hypotension/hypoperfused
- Heart block

Precautions

- Pregnancy safety: category D
- Caution in patients receiving digitalis
- Use with caution in patients with renal failure

Side effects:

- Drowsiness, CNS depression, respiratory depression, respiratory tract paralysis, abnormal ECG, AV block, hypotension, vasodilation, hyporeflexia

Dosage

- **Adult**
  - **Eclampsia**: 4 g IV/IO in 100 mL of D5W wide open until seizure stops.
    - Alternative dose/route: 2g IM in each gluteus maximus
  - **Torsades de Pointes:** 2 g IV/IO in 100 mL of D5W over 10 min
  - **Bronchospasm**: 2 g IV/IO in 100 mL of D5W over 10 min
  - **Cardiac Arrest**: 2 g IV/IO push
- **Pediatric**
  - **Torsades de Pointes: 50 mg/kg IV/IO in 100 mL of D5W over 10 min.**
  - **Bronchospasm: 50 mg/kg IV/IO in 100 mL of D5W over 10 min.**
  - **Cardiac Arrest: 50 mg/kg IV/IO push**

Route: IV, IO, IM

METHYLPREDNISOLONE

SOLU-MEDROL

Class: Steroid

Action: Anti-inflammatory. Suppresses immune response. Upregulates beta receptors.

Indications:

- Severe anaphylaxis
- Asthma / COPD

Contraindications

- None in the emergency setting

Precautions

Notes

- Must be reconstituted
- Onset of action may be 2-6 hours

Side effects:

- Hyperglycemia
- Sleep disturbances

Dosage

- **Adult**
  - **125 mg**
- **Pediatric**
  - **2 mg/kg**

Route: IV, IM, IO

MIDAZOLAM

VERSED

Class: Benzodiazepine

Action: Hypnotic/sedative

Indications:

- Severe motor seizures
- Need for dissociation
- Acute severe anxiety

Contraindications

- None in emergent situation

Precautions

Notes

- Emergency resuscitative equipment must be available
- Dilute with normal saline prior to intravenous administration
- Respiratory depression common
- Can have an augmented effect when administered with opioids

Side effects:

- Drowsiness, hypotension, amnesia, respiratory depression, apnea

Dosage

- **Adult**
  - **Seizures & dissociation:**
    - **10 mg IN, IM**
    - **5 mg IV, IO**
  - **Anxiety: 2 mg IV, IO, IM, IN**

- **Pediatric**
  - **Seizure & dissociation: 0.2 mg/kg (max adult dose) IV, IO, IM, IN**

Route: IV, IO, IM, IN

MORPHINE

Class: Narcotic

Action: Central nervous system depressant. Causes peripheral vasodilation. Decreases sensitivity to pain.

Indications:

- Pain management

Contraindications

- None in emergent situation

Precautions

- Respiratory depression
- Hypotension
- Nausea

Side effects:

- Dizziness, altered level of consciousness

Dosage

- **Adult: 0.2 mg/kg**
- **Pediatric: 0.1 mg/kg**

Route: IV, IO, IM, IN

NALOXONE

NARCAN

Class: Narcotic antagonist, antidote

Action: Competitive inhibition at narcotic receptor sites. Reverses respiratory depression secondary to opiate/opioid drug use. Inhibits the effect of opiate/opioid medications.

Indications:

- Narcotic overdoses

Contraindications

- Cardiac arrest

Precautions

- Pregnancy safety: Category C

Notes

- Not intended to return patient to baseline mental state.
- Assist ventilations prior to administration to avoid sympathetic stimulation
- May cause withdrawal effects in patients with narcotic dependence
- Short acting: half-life of Naloxone is often shorter than the narcotic.
- Not beneficial in cardiac arrest

Side effects:

- Restlessness, seizures, dyspnea, pulmonary edema, tachycardia, hypertension, dysrhythmias, cardiac arrest, nausea, vomiting, withdrawal symptoms in narcotic addicts, diaphoresis.

Dosage

- **Adult & Pediatric**
  - **0.4 mg titrated to return of spontaneous respiration may repeat as needed**

Route: IV, IO, IM, IN

NITROGLYCERIN

NITROGLYCERIN SPRAY, TRIDIL

Class: Antianginal

Action: Smooth muscle relaxant. Reduces cardiac work. Dilates coronary arteries. Dilates systemic arteries.

Indications:

- Acute coronary syndrome
- Congestive heart failure

Contraindications

- Erectile dysfunction medications taken in last 72 hours
- Hypotension / hypoperfusion

Precautions

- Constantly monitor blood pressure
- Right ventricular infarct
- Syncope

Side effects:

- Headache, dizziness, hypotension

Dosage

- **Adult**
  - Sublingual or PO
    - **0.4mg every 3-5 min**
    - **CHF – 1.2 mg every 5min as long as good perfusion**
  - Transdermal
    - **1 inch of paste on the anterior chest wall**
  - IV Infusion
    - **10mcg/min titrate to effect**

Route: IV, PO, Sublingual, Transdermal

NOREPINEPHRINE

LEVOPHED

Class: Sympathomimetic, vasopressor

Action: Potent alpha-agonist resulting in intense peripheral vasoconstriction. Positive chronotropic

Indications:

- Cardiogenic shock
- Septic shock
- Hypotension/hypoperfusion

Contraindications

- None

Precautions

- Pregnancy safety: C
- Hemorrhagic shock

Side effects:

- Headache, anxiety, dizziness, restlessness, dyspnea, bradycardia, hypertension, dysrhythmias, chest pain, peripheral cyanosis, cardiac arrest, nausea, vomiting, urinary retention, renal failure, decreased blood flow to GI tract, kidneys, skeletal muscle, and skin, tissue necrosis from extravasation

Dosage

- **Adult: 0.1 – 1 mcg/kg/min**

Route: IV, IO

ONDANSETRON HYDOCHLORIDE

ZOFRAN

Class: Serotonin receptor antagonist, antiemetic

Action: Blocks the serotonin receptors. Serotonin is a natural substance that causes nausea and vomiting.

Indications:

- Nausea, vomiting

Contraindications

- None in emergent situations

Precautions

- Pregnancy safety: Category B

Notes

- Constantly monitor blood pressure
- Use with caution during pregnancy or while breastfeeding
- Use with caution in patients on serotonin reuptake inhibitors

Side effects:

- Headache, malaise, wheezing, bronchospasm, atrial fibrillation, abnormal ECG, prolonged QT interval, ST segment depression, 2nd degree AV block, constipation, diarrhea, hives, skin rash.

Dosage

- **Adult**
  - **4 mg**
- **Pediatric**
  - **0.1 mg/kg (maximum dose is 4 mg)**

Route: IV, IO, IM, PO

PROMETHAZINE

PHENERGAN

Class: Phenothiazine, antiemetic, antihistamine

Action: H-1 receptor antagonist; blocks action of histamine; possesses sedative, anti-motion, antiemetic, and anticholinergic activity; potentiates the effects of narcotics to induce analgesia

Indications:

- Nausea
- Vomiting

Contraindications

- None in emergent situations

Precautions

- Pregnancy safety: Category C
- Use caution in patients with asthma, peptic ulcer, or bone marrow suppression.
- Extravasation (infiltration) can cause tissue damage

Side effects:

- Headache, dizziness, drowsiness, confusion, restlessness, wheezing, chest tightness, thickening of bronchial secretions, palpitations, bradycardia, reflex tachycardia, QT prolongation, postural hypotension, diarrhea, nausea, vomiting

Dosage

- **Adult: 25mg**

Route: IV

ROCURONIUM

ROCURONIUM BROMIDE

Class: Nondepolarizing neuromuscular blocker

Action: Antagonizes acetylcholine at the motor end plate producing skeletal muscle paralysis.

Indications:

- Drug assisted airway intubation

Contraindications

- None in an emergency setting

Precautions

- Pregnancy safety: Category B
- Airway obstruction (partial/full)

Side effects:

- Bronchospasm, respiratory depression, apnea, dysrhythmias, nausea, vomiting

Dosage

- **100mg**

Route: IV, IO

SODIUM BICARBONATE

Class: Systemic hydrogen ion buffer, alkalizing agent

Action: Buffers metabolic acidosis and lactic acid buildup in the body caused by anaerobic metabolism secondary to severe hypoxia by reacting with hydrogen ions to form water and carbon dioxide.

Indications:

- Tricyclic antidepressant, Aspirin, and Phenobarbital overdose
- Hyperkalemia
- Crush injuries

Contraindications

- None in emergent situations

Precautions

- Pregnancy safety: Category C
- Electrolyte imbalance due to severe vomiting or diarrhea

Notes

- Repeat as needed with TCA overdoses until QRS complex narrows
- Must be used in conjunction with CPR during cardiac arrest
- Avoid contact with other medications (may deactivate)
- Heart failure and renal disease

Side effects:

- Hypernatremia, alkalosis, tissue sloughing, cellulitis, necrosis at injection site, seizures, fluid retention, hypokalemia, electrolyte imbalance, tetany, sodium retention, peripheral edema.

Dosage

- **Adult & Pediatric**
  - **1 mEq/kg slow IV/IO**

Route: IV, IO

SUCCINYLCHOLINE

Class: Depolarizing neuromuscular blocker

Action: Succinylcholine chloride is a short-acting depolarizing neuromuscular blockade producing skeletal muscle paralysis

Indications:

- Drug assisted airway intubation

Contraindications

- None in an emergency setting

Precautions

- Major burns
- Major trauma
- History of malignant hyperthermia (self or family)

Side effects:

- Hyperkalemia, malignant hyperthermia

Dosage

- **150mg**

Route: IV, IO

TRANEXAMIC ACID

TXA

Class: Anti-fibrinolytic

Action: Competitively inhibits multiple plasminogen binding sites, decreasing plasmin formation and fibrinolysis

Indications:

- Significant blood loss or hypotension, tachycardia, and time of injury < 3 hours

Contraindications

- None in emergent situations

Precautions

- Must be administered within 3 hours of injury
- Hypotension has been observed with rapid IV administration.
- Pregnancy class C

Notes

Side effects:

- Hypernatremia, alkalosis, tissue sloughing, cellulitis, necrosis at injection site, seizures, fluid retention, hypokalemia, electrolyte imbalance, tetany, sodium retention, peripheral edema.

Dosage

- **Adult marked blood loss**
  - 2 gm TXA mixed in 100 ml of crystalloid fluid or very slow IV push
  - Upper respiratory tract bleeding: 1 gm soaked on gauze placed topically, atomized, or nebulized
- **Pediatric marked blood loss**
  - **15 mg/kg TXA mixed in 100 ml of crystalloid fluid or very slow IV push**

Route: IV, IO, Nebulized, Oral, IN

PROCEDURE

BLS or ALS

Indications:

- When should the procedure be performed

Contraindications

- When the procedure shall not be performed

Precautions

- Side effects
- Points of caution

Equipment Needed

-

Procedure

1. **Stepwise approach to successfully complete the procedure**

12-Lead Electrocardiography

ALS procedure

Indications:

- Chest Pain/Discomfort
- Epigastric Pain
- Syncope/Dizziness
- Unexplained Diaphoresis
- Dyspnea
- Weakness
- Dysrhythmia
- Atraumatic thoracic pain

Contraindications

- None

Precautions

- None

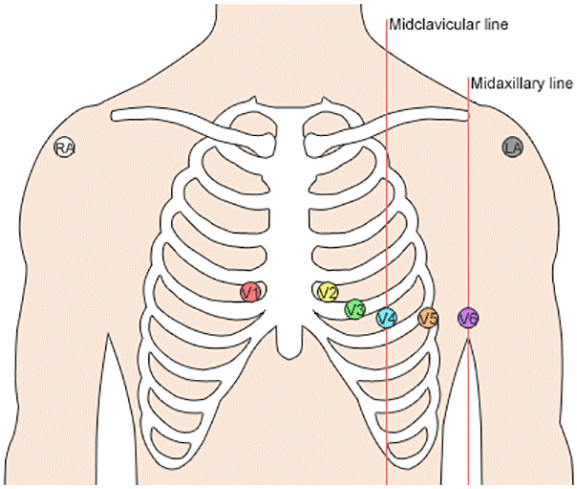
Equipment Needed

- **Monitor/ defibrillator**
- **Electrodes**
- **Razor**

Procedure

1. **Place patient in Semi-Fowler's position**
2. **Shave excess hair and dry skin**
3. **Remove shirt/clothing covering the chest while protecting modesty**
4. **Place limb lead electrodes on deltoids and thighs**
5. **Place precordial lead electrodes**
6. **Assure that wires are not over the arms to reduce artifact**
7. **Enter patient age and gender then obtain tracing**

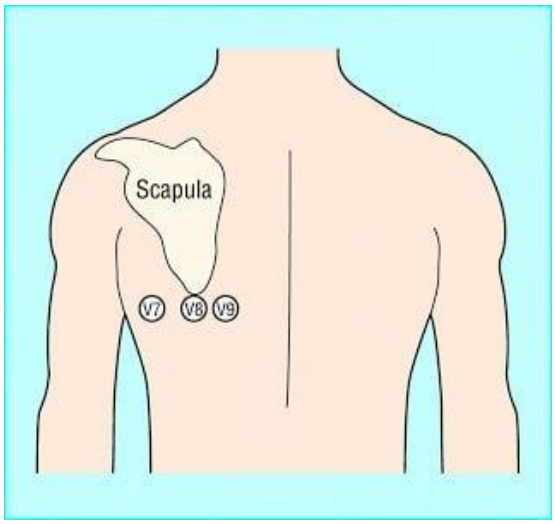
Standard Placement



V1: 4th interspace right parasternal border
V2: 4th interspace left parasternal border
V3: Diagonally between V2 and V4
V4: 5th interspace at Lt. mid-clavicular line
V5: Lt. anterior-axillary line, same plane as V-4
V6: Lt. mid-axillary line, same plane as V-4

V3 & V4 may be mirrored to Right chest for a "right-sided 12-lead"

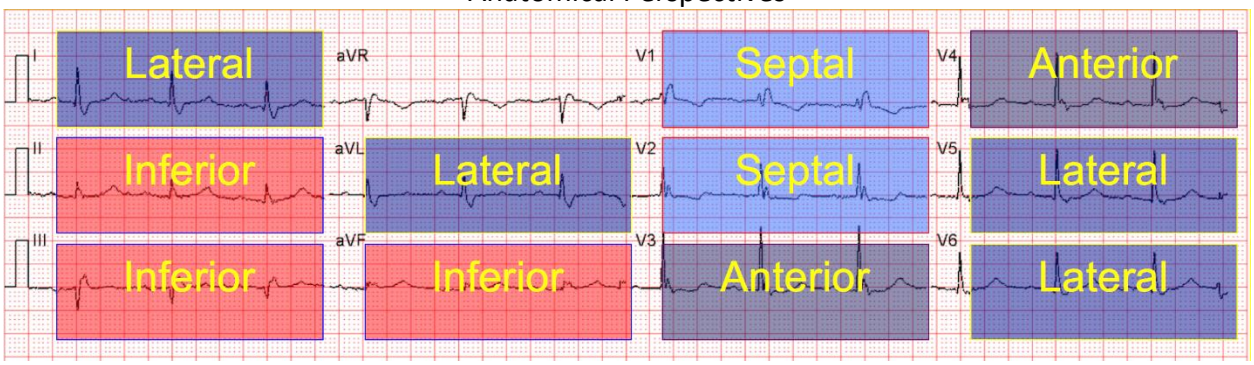
Posterior Placement



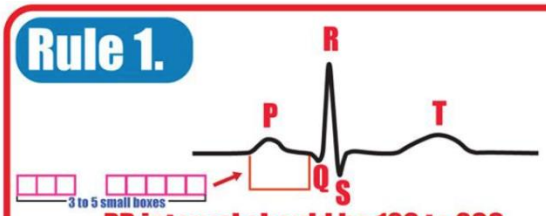
Electrodes wrap around to back at same level of standard V6 placement:

V7: Move V4 to posterior axillary line
V8: Move V5 to mid-scapular line
V9: Move V6 to Left paraspinal border

Anatomical Perspectives

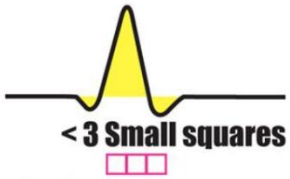


Rule 1.



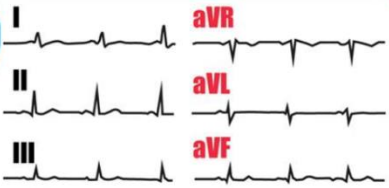
PR interval should be 120 to 200 milliseconds or 3 to 5 little squares.

Rule 2.



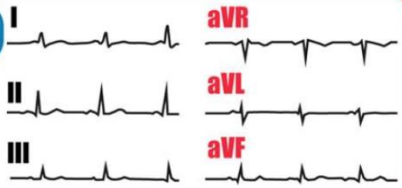
The width of the QRS complex should not exceed 110 ms, less than 3 little squares.

Rule 3.



The QRS complex should be dominantly upright in leads I and II.

Rule 4.

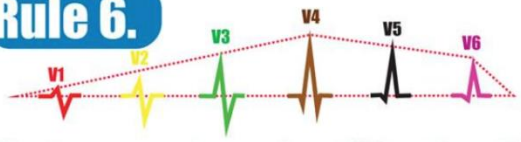


QRS and T waves tend to have the same direction in the limb leads.

Rule 5.

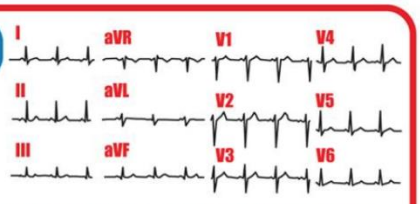
All waves are negative in lead aVR

Rule 6.



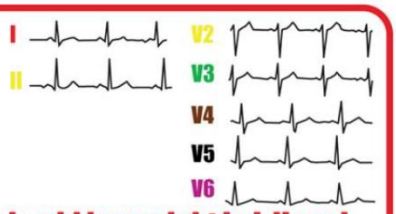
The R wave must grow from V1 to at least V4
The S wave must grow from V1 to at least V3 and disappear in V6

Rule 7.



The ST segment should start isoelectric except in V1 and V2 where it may be elevated.

Rule 8.

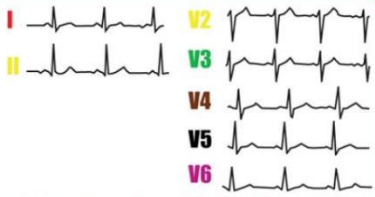


The P waves should be upright in I, II, and V2 to V6

Rule 9.

There should be no Q wave or only a small q less then 0.04 seconds in width in I, II, V2 to V6.

Rule 10.



The T wave must be upright in I, II, V2 to V6

Cardiac Monitoring

ALS procedure

Indications:

- ALS Patients

Contraindications

- None

Precautions

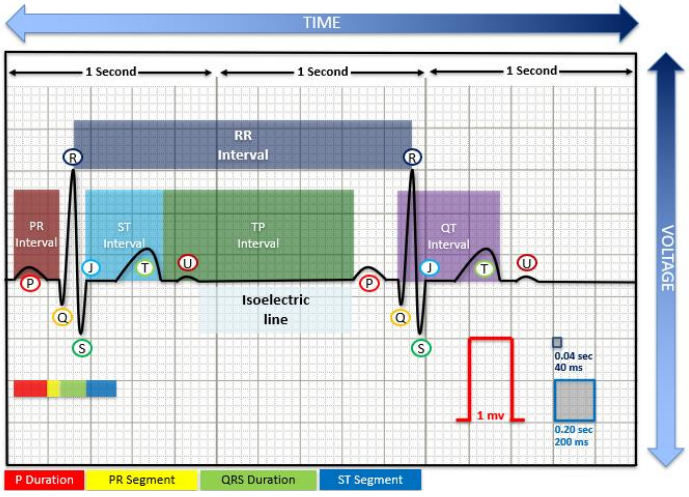
- None

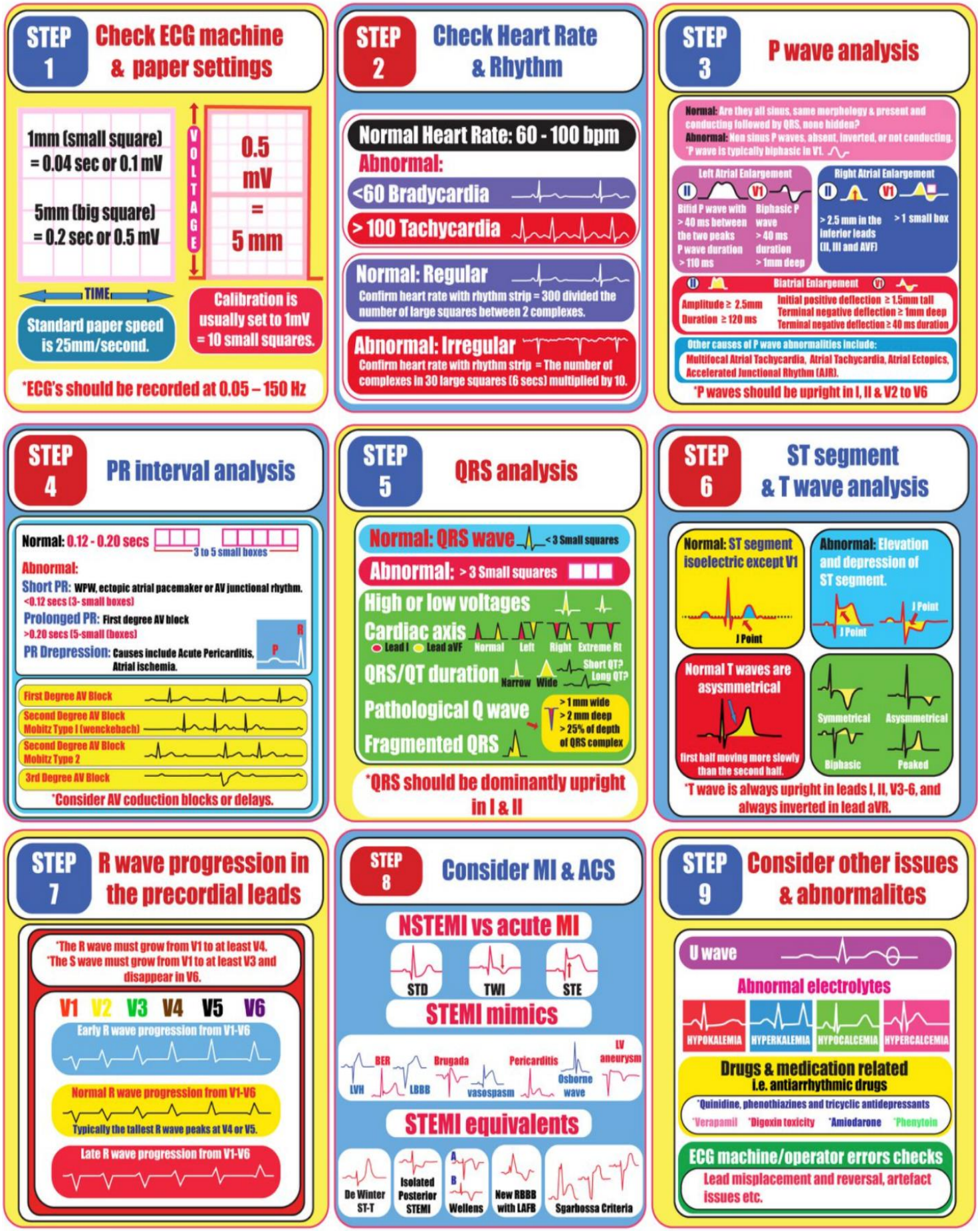
Equipment Needed

- **Monitor/ defibrillator**
- **Electrodes**
- **Razor**

Procedure

1. **Analyze the rate (six-second or triplicate method)**
2. **Analyze the rhythm (regular, irregular, pattern)**
3. **Analyze the P-waves (present, regular, upright, or inverted)**
4. **Analyze the P-R interval (normal duration 120 - 200 ms)**
5. **Analyze the ORS complex (normal duration 40 - 120 ms)**




STEP 1
Check ECG machine & paper settings
1mm (small square) = 0.04 sec or 0.1 mV
5mm (big square) = 0.2 sec or 0.5 mV
VOLTAGE
0.5 mV = 5 mm
TIME
Standard paper speed is 25mm/second.
Calibration is usually set to 1mV = 10 small squares.
*ECG's should be recorded at 0.05 – 150 Hz
STEP 2
Check Heart Rate & Rhythm
Normal Heart Rate: 60 - 100 bpm
Abnormal:
<60 Bradycardia
>100 Tachycardia
Normal: Regular
Confirm heart rate with rhythm strip = 300 divided the number of large squares between 2 complexes.
Abnormal: Irregular
Confirm heart rate with rhythm strip = The number of complexes in 30 large squares (6 secs) multiplied by 10.
STEP 3
P wave analysis
Normal: Are they all sinus, same morphology & present and conducting followed by QRS, none hidden?
Abnormal: Non sinus P waves, absent, inverted, or not conducting.
*P wave is typically biphasic in V1.
Left Atrial Enlargement
Bifid P wave with > 40 ms between the two peaks
P wave duration > 110 ms
Biphasic P wave > 40 ms duration > 1mm deep
Right Atrial Enlargement
> 2.5 mm in the inferior leads (II, III and AVF)
> 1 small box
Biatrial Enlargement
Amplitude ≥ 2.5mm
Duration ≥ 120 ms
Initial positive deflection ≥ 1.5mm tall
Terminal negative deflection ≥ 1mm deep
Terminal negative deflection ≥ 40 ms duration
Other causes of P wave abnormalities include:
Multifocal Atrial Tachycardia, Atrial Tachycardia, Atrial Ectopics, Accelerated Junctional Rhythm (AJR).
*P waves should be upright in I, II & V2 to V6
STEP 4
PR interval analysis
Normal: 0.12 - 0.20 secs
3 to 5 small boxes
Abnormal:
Short PR: WPW, ectopic atrial pacemaker or AV junctional rhythm.
<0.12 secs (3- small boxes)
Prolonged PR: First degree AV block
>0.20 secs (5-small boxes)
PR Drepression: Causes include Acute Pericarditis, Atrial ischemia.
First Degree AV Block
Second Degree AV Block Mobitz Type I (wenckebach)
Second Degree AV Block Mobitz Type 2
3rd Degree AV Block
*Consider AV coduction blocks or delays.
STEP 5
QRS analysis
Normal: QRS wave
< 3 Small squares
Abnormal: > 3 Small squares
High or low voltages
Cardiac axis
Lead I
Lead aVF
Normal
Left
Right
Extreme Rt
QRS/QT duration
Narrow
Wide
Short QT?
Long QT?
Pathological Q wave
> 1 mm wide
> 2 mm deep
> 25% of depth of QRS complex
Fragmented QRS
*QRS should be dominantly upright in I & II
STEP 6
ST segment & T wave analysis
Normal: ST segment isoelectric except V1
J Point
Abnormal: Elevation and depression of ST segment.
J Point
J Point
Normal T waves are asysmmetrical
first half moving more slowly than the second half.
Symmetrical
Asysmmetrical
Biphasic
Peaked
*T wave is always upright in leads I, II, V3-6, and always inverted in lead aVR.
STEP 7
R wave progression in the precordial leads
*The R wave must grow from V1 to at least V4.
*The S wave must grow from V1 to at least V3 and disappear in V6.
V1 V2 V3 V4 V5 V6
Early R wave progression from V1-V6
Normal R wave progression from V1-V6
Typically the tallest R wave peaks at V4 or V5.
Late R wave progression from V1-V6
STEP 8
Consider MI & ACS
NSTEMI vs acute MI
STD
TWI
STE
STEMI mimics
LVH
BER
LBBB
Brugada
vasospasm
Pericarditis
Osborne wave
LV aneurysm
STEMI equivalents
De Winter ST-T
Isolated Posterior STEMI
A
B
Wellens
New RBBB with LAFB
Sgarbossa Criteria
STEP 9
Consider other issues & abnormalites
U wave
Abnormal electrolytes
HYPOKALEMIA
HYPERKALEMIA
HYPOCALCEMIA
HYPERCALCEMIA
Drugs & medication related
i.e. antiarrhythmic drugs
*Quinidine, phenothiazines and tricyclic antidepressants
*Verapamil
*Digoxin toxicity
*Amiodarone
*Phenytoin
ECG machine/operator errors checks
Lead misplacement and reversal, artefact issues etc.

CPAP: Z-Vent

ALS procedure

Indications:

- Dyspnea
- Pulmonary Edema
- Cardiogenic Pulmonary Edema
- Hypoxia
- Acute Respiratory Distress Syndrome
- Bronchospasm

Contraindications

- Altered Mental Status
- Hypotension
- Upper airway obstruction
- Respiratory Failure
- Pneumothorax
- Vomiting

Equipment Needed

- **Z-Vent**
- **CPAP Circuit**
- **CPAP Mask**
- **Oxygen Cylinder**
- **Cardiac Monitor**
- **Capnography**

Procedure

1. **Position patient in sitting or high Fowler's**
2. **Continuously monitor BP, ECG, EtCO2, and SpO2**
3. **Connect Appropriate CPAP Circuit**
4. **Turn on Z-Vent**
5. **Select *Mask CPAP* on device menu**
6. **Perform Circuit Check**
7. **Witness *Patient Disconnect* & *High Pressure* Alarms**
8. **Set PEEP to 5 cmH2O**
9. **Set PS to 5 cmH2O**
10. **Complete the Confirmation Checklist**
11. **Apply mask with circuit attached to patient**
12. **Reassess the patient**
13. **Confirm Tidal Volume (Vt) and Minute Volume (Vmin)**

Cricothyrotomy (Needle)

ALS procedure

Indications:

- Unable to oxygenate or ventilate
- Recommended technique for pediatric patient

Contraindications

- Capable of providing less invasive means of ventilation and oxygenation.
- Inability to identify anatomical landmarks
- Tracheal Dissection

Precautions

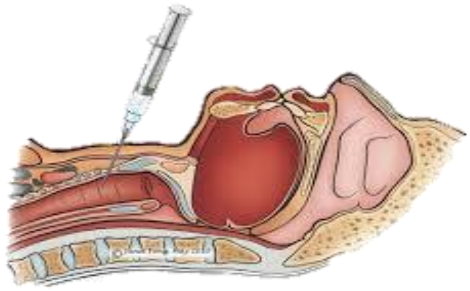
- Anatomical abnormalities

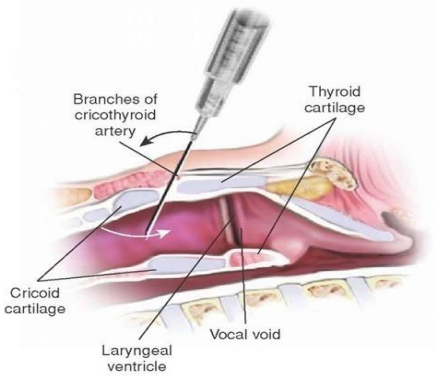
Equipment Needed

- **Antiseptic**
- **14 gauge catheter (ARS)**
- **3 mL syringe**
- **3 mm ET tube adapter**
- **BVM/Ventilator**
- **Suction with catheter**
- **Bulky dressing**
- **Capnography**

Procedure

1. **Position patient Supine with head and neck midline in the neutral position**
2. **Locate the Cricothyroid Membrane**
3. **Connect 14 ga needle/catheter to the 3 mL syringe**
4. **Insert needle/catheter toward the midline, caudally, and posteriorly at 45-degree angel**
5. **Aspirate air to confirm tracheal placement**
6. **Advance the catheter and remove the needle after placement is confirmed**
7. **Connect the 3 mm adapter and attach BVM**
8. **Ventilate with capnography attached**





Cricothyrotomy: Quicktrach

ALS procedure

Indications:

- Unable to oxygenate or ventilate

Contraindications

- Capable of providing less invasive means of ventilation and oxygenation.
- Inability to identify anatomical landmarks
- Tracheal Dissection

Precautions

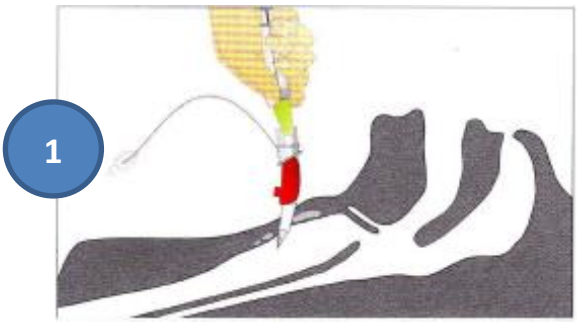
- Anatomical abnormalities

Equipment Needed

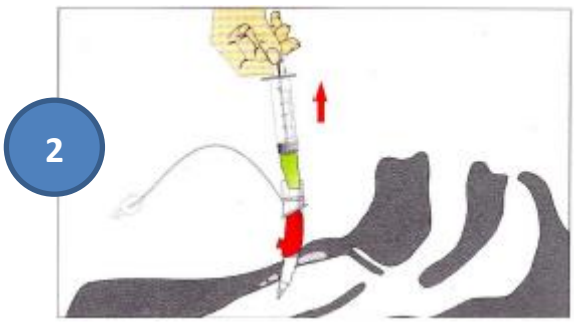
- **Antiseptic**
- **Quicktrach/Quicktrach II device**
- **10 mL syringe**
- **BVM/Ventilator**
- **Suction with catheter**
- **Capnography**

Procedure

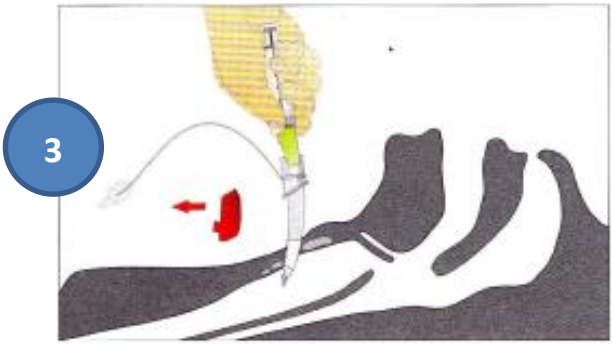
1. **Hyperextend the head.**
2. **Evacuate the cuff completely.**
3. **Locate the cricothyroid membrane.**
4. **Puncture cricothyroid membrane.**
5. **Because of the sharp tip and conical shape of the needle, an incision is not necessary.**
6. **The opening of the trachea is obtained by dilating the skin.**
7. **insert the Quicktrach further towards the trachea up to the stopper.**
8. **Aspirate air with the syringe to determine the position of the cannula.**
9. **Remove the stopper from the plastic cannula.**
10. **Push the plastic cannula forward with the thumb until the safety clip audibly clicks.**
11. **Further insert the Quicktrach until the flange rests on the neck.**
12. **The metal needle can now be removed.**
13. **inflate the cuff with the prepared syringe (10mL).**
14. **Secure the plastic cannula with the foam necktape.**
15. **Ventilate the patient.**



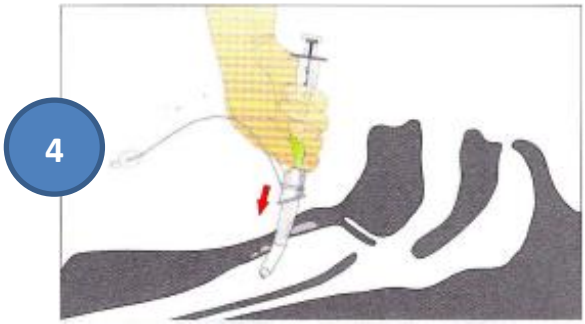
Hyperextend the head. Evacuate the cuff completely. Locate the cricothyroid membrane by palpation of the depression between the thyroid and cricoid cartilage and puncture. Because of the sharp tip and conical shape of the needle, an incision is not necessary. The opening of the trachea is obtained by dilating the skin which reduces the risk of bleeding. Insert the Quicktrach further towards the trachea up to the stopper. The stopper prevents the needle from being inserted too deep and therefore avoids perforation of the posterior tracheal wall.



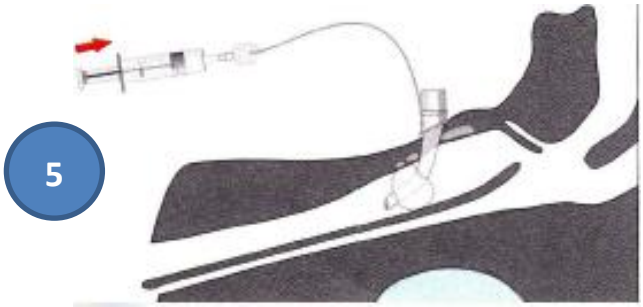
Aspirate air with the syringe to determine the position of the cannula. If this is possible, the needle is in the trachea.



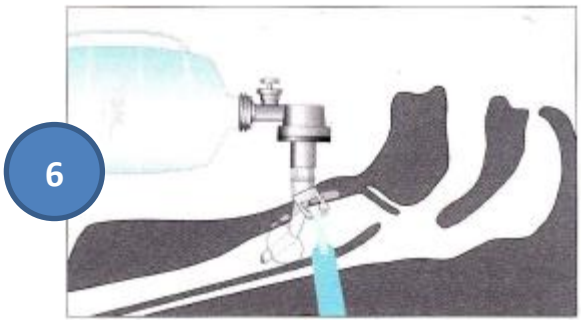
Remove the stopper from the plastic cannula.



Push the plastic cannula forward with the thumb until the safety clip audibly clicks into position. This indicates that the tip of the metal needle is covered by the plastic cannula to prevent trauma· Further insert the Quicktrach until the flange rests on the neck. The metal needle can now be removed.



Inflate the cuff with the prepared syringe (10ml).



Secure the plastic cannula with the foam neck tape. Ventilate the patient via the 15mm standard connector.

Cricothyrotomy (Surgical)

ALS procedure

Indications:

- Unable to oxygenate or ventilate

Contraindications

- Capable of providing less invasive means of ventilation and oxygenation.
- Inability to identify anatomical landmarks
- Tracheal Dissection
- Pediatric patients under 10 y/o

Precautions

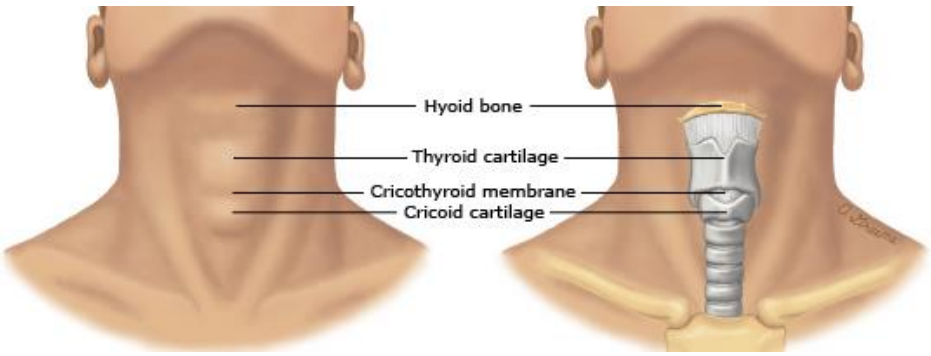
- Anatomical abnormalities

Equipment Needed

- **Antiseptic**
- **Scalpel**
- **10 mL syringe**
- **Forceps/Introducer**
- **5.5 Endotracheal Tube**
- **Bougie**
- **BVM/Ventilator**
- **Suction with catheter**
- **Bulky dressing**
- **Capnography**

Procedure

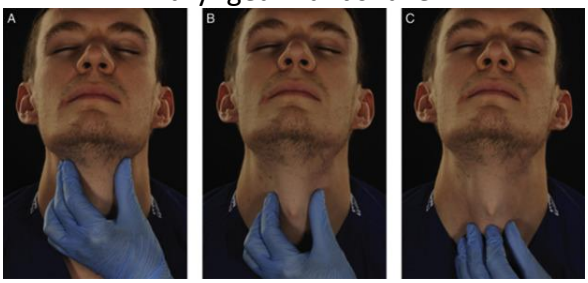
1. **Position patient Supine with head and neck midline in the neutral position**
2. **Locate the Cricothyroid Membrane using "Laryngeal Handshake"**
3. **Make a 3 cm vertical incision in the skin with the scalpel**
4. **Puncture the exposed membrane horizontally with the scalpel**
5. **Insert handle of scalpel/forceps/finger to dilate the opening**
6. **Introduce the bougie through the stoma until the cuff is in the trachea**
7. **Introduce the ET tube over the bougie until the cuff is in the trachea**
8. **Inflate the cuff, remove the bougie and secure the tube**
9. **Ventilate with capnography attached**



Surgical Cricothyrotomy Job Aid

STEP 1

"Laryngeal Handshake"



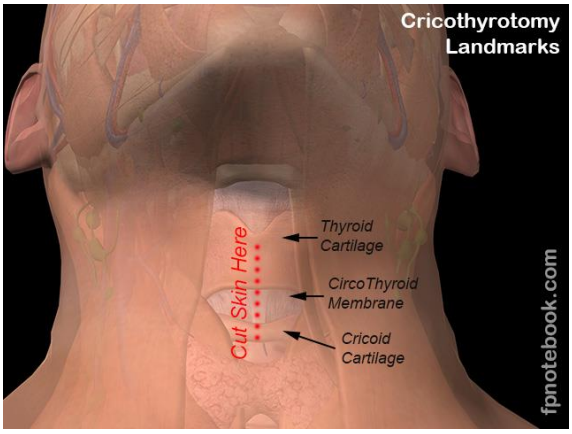
(A) The index finger and thumb grasp the top of the larynx (the greater cornu of the hyoid bone) and roll it from side to side. The bony and cartilaginous cage of the larynx is a cone, which connects to the trachea. **(B)** The fingers and thumb slide down over the thyroid laminae. **(C)** Middle finger and thumb rest on the cricoid cartilage, with the index finger palpating the cricothyroid membrane.

STEP 2

Prep the site with aseptic technique.

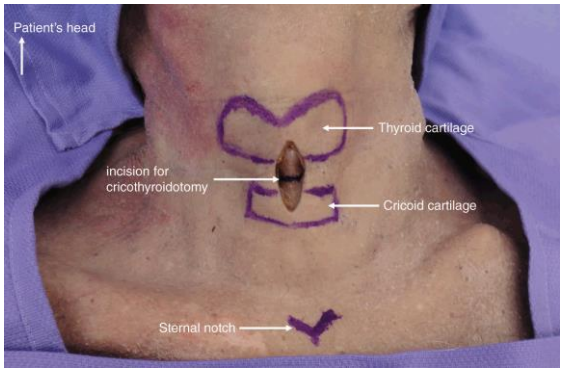
Step 3

Make vertical incision.



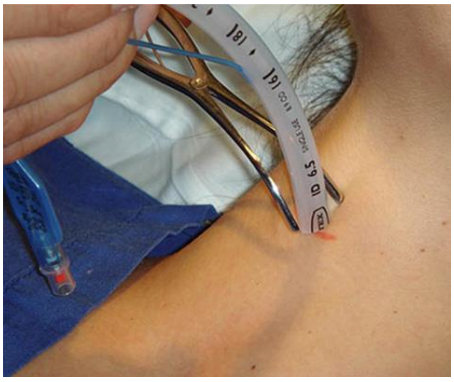
Step 4

Make horizontal puncture through cricothyroid membrane.



Step 5

Dilate the opening & insert tube.



Double Sequential Defibrillation (DSD)

ALS procedure

Indications:

- Refractory Ventricular Fibrillation

Contraindications

- None

Precautions

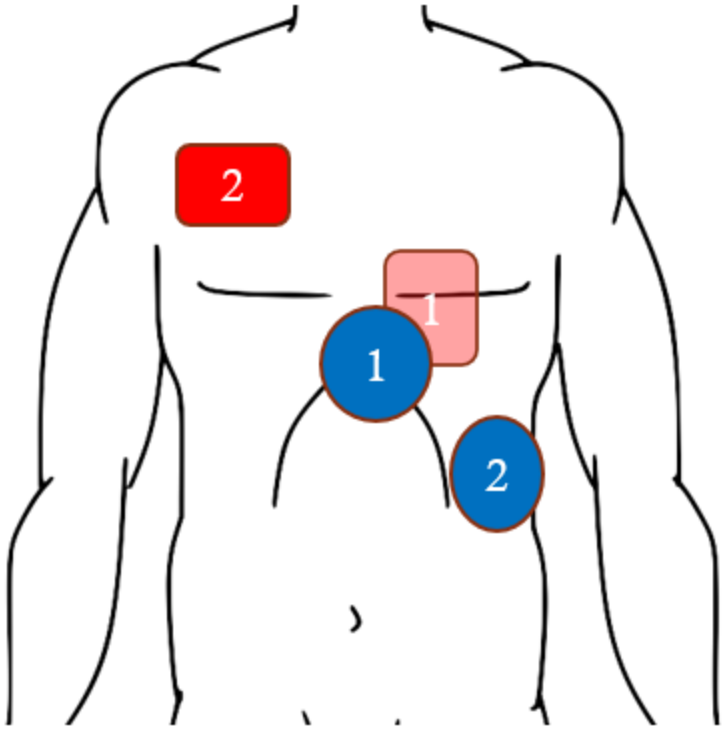
- Make sure patient is dry

Equipment Needed

- **Monitor/ defibrillator**
- **Second monitor / defibrillator**
- **Defibrillator pads**
- **Razor**

Procedure

1. **Apply pads for both monitors**
    a. **Monitor 1: Anterior / Posterior placement**
    b. **Monitor 2: Anterior / Lateral (traditional) placement**
2. **One paramedic performs the following**
    a. **Charge monitors**
    b. **Verbalize "CLEAR"**
    c. **Press the "SHOCK" button on monitor 1**
    d. **Press the "SHOCK" button on monitor 2**
3. **Reassess patient**


2
1
1
2

Manual Defibrillation

ALS procedure

Indications:

- Ventricular Fibrillation
- Pulseless Ventricular Tachycardia

Contraindications

- None

Precautions

- Make sure patient is dry

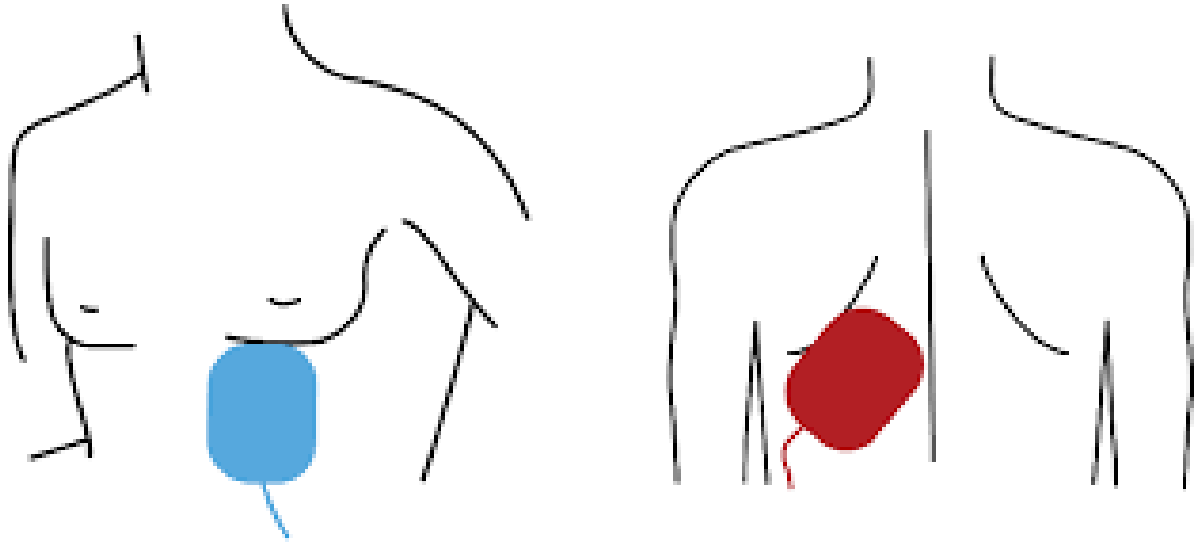
Equipment Needed

- **Monitor/ defibrillator**
- **Defibrillator pads**
- **Razor**

Procedure

1. **Apply pads**
    a. **Shock 1: Anterior / Posterior placement**
    b. **Shock 2: Anterior / Lateral placement**
2. **One paramedic performs the following**
    a. **Charge monitor to manufacture recommended settings**
    b. **Confirms shockable rhythm**
    c. **Verbalize "CLEAR"**
    d. **Press the "SHOCK" button**
3. **Continue CPR**

Anterior/Posterior Pad Placement



Anterior / Lateral Placement

Endotracheal Intubation: Direct Laryngoscopy

ALS procedure

Indications:

- Patient unable to maintain airway
- Prolonged artificial ventilation
- High risk of aspiration

Contraindications

- None when indicated

Precautions

- Severe trauma
- Cervical spinal injury
- Assess for difficult airway

Equipment Needed

- **Proper size endotracheal tube**
- **Laryngoscope and properly sized blade**
- **10 mL syringe**
- **Proper size stylet for ET tube**
- **Bougie if available**
- **Waveform capnography**
- **ET tube securing device**
- **Suction available**
- **Magill Forceps within reach**
- **Rescue airway (BIAD) prepared**
- **Nasal Cannula**
- **BVM or mechanical ventilator**
- **Stethoscope**
- **Lubricant**

Procedure

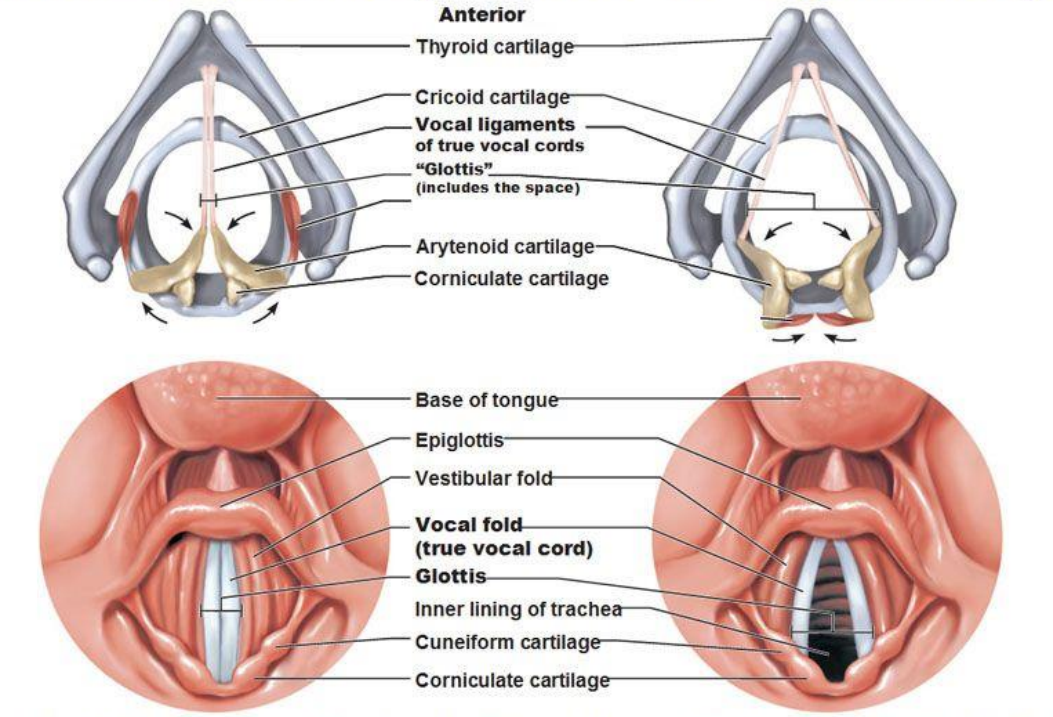
Prepare:

1. **Don gloves and eye protection**
2. **Monitor EtCO2, ECG, SpO2, and BP**
3. **Position patient with Airway Axis Alignment**
4. **Place patient on high flow Nasal Cannula**
5. **Pre-Oxygenate and Pre-Ventilate**
6. **Suction within reach**
7. **Assign Team Roles**
8. **Rescue airway prepared**
9. **"Failed Airway Plan" verbalized to team**
10. **Test ET Tube cuff & leave syringe attached**
11. **Place tube holder in position**
12. **Perform LEMON Exam**

Perform:

1. **Remove OPA if present**
2. **Grip the laryngoscope handle in Left hand**
3. **Use Right hand to open mouth**
4. **Direct blade downward and insert into mouth**
5. **Progress blade slowly to view glottic opening**
   a. Do not make contact with teeth
6. **Suction as needed**
7. **Utilize bougie if available**
8. **Introduce ET tube and pass through vocal cords**
9. **Assure the cuff is about ½ " past the glottis**
10. **Remove stylet (or bougie)**
11. **Inflate cuff with 1 mL of air per 1 mm tube size**
12. **Ventilate patient while auscultating**
13. **Confirm placement with capnography**
14. **Secure the ET tube with appropriate device**

True Vocal Cords (= “Folds” or “Ligaments”)



(a) Vocal folds in closed position; closed glottis (b) Vocal folds in open position; open glottis

Endotracheal Intubation: Video Laryngoscopy

ALS procedure

Indications:

- Patient unable to maintain airway
- High risk of aspiration

Contraindications

- None when indicated

Precautions

- Assess for difficult airway

Equipment Needed

- **Proper size endotracheal tube**
- **Video laryngoscope**
- **10 mL syringe**
- **Proper stylet for VL device**
- **Bougie**
- **Waveform capnography**
- **ET tube securing device**
- **Suction available**
- **Magill Forceps within reach**
- **Rescue airway (BIAD) prepared**
- **Nasal Cannula**
- **BVM or mechanical ventilator**
- **Stethoscope**
- **Lubricant**

Procedure

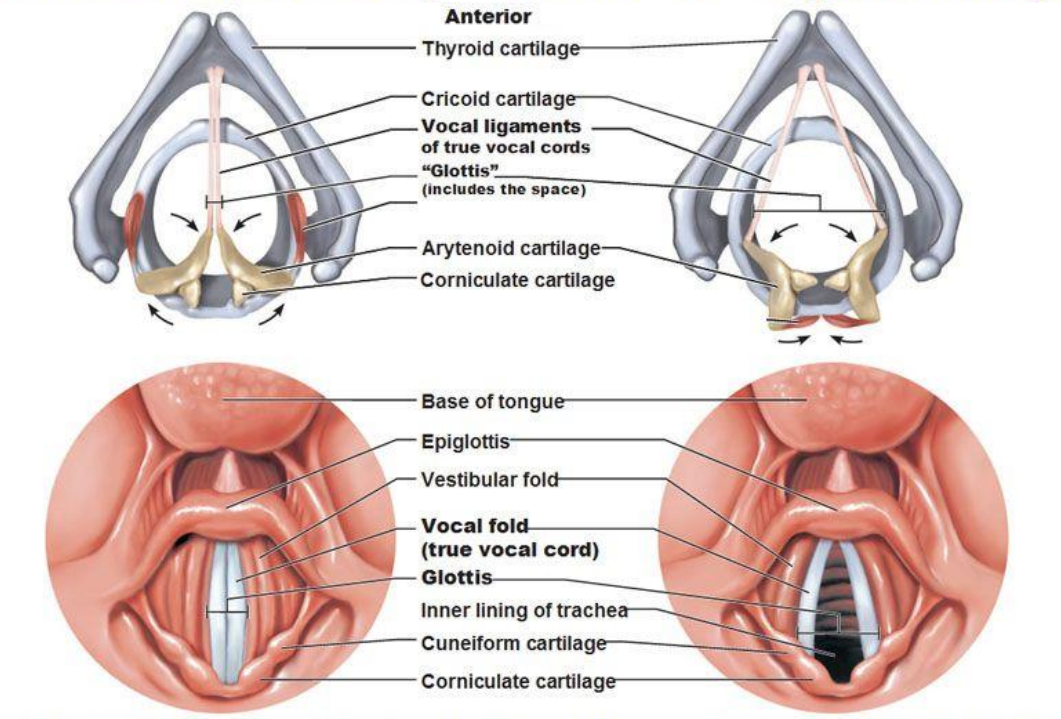
Prepare:

1. **Don gloves and eye protection**
2. **Monitor EtCO2, ECG, SpO2, and BP**
3. **Position patient with Airway Axis Alignment**
4. **Place patient on high flow Nasal Cannula**
5. **Pre-Oxygenate and Pre-Ventilate**
6. **Suction within reach**
7. **Assign Team Roles**
8. **Rescue airway prepared**
9. **"Failed Airway Plan" verbalized to team**
10. **Test ET Tube cuff & leave syringe attached**
11. **Place tube holder in position**
12. **Perform LEMON Exam**

Perform:

1. **Airway Axis Alignment**
2. **Hold device in left hand and introduce blade into oropharynx**
3. **Watch the screen while gliding down the surface of the tongue**
4. **Manipulate device to visualize the palate, uvula, then epiglottis**
5. **Advance tip of blade into vallecula and gently lift the tip to expose glottis**
6. **Optimize view**
7. **Insert the pre-curved stylet loaded with an ET tube on the Right side of mouth**
8. **Visualize the tube on the screen**
9. **Angle and rotate tube until tip is aligned with glottis**
10. **Advance the ET tube and withdraw the stylet**
11. **Confirm placement**
12. **Withdraw VL device**
13. **Inflate cuff of ET to appropriate pressure**
14. **Turn off VL device**

True Vocal Cords (= “Folds” or “Ligaments”)



(a) Vocal folds in closed position; closed glottis (b) Vocal folds in open position; open glottis

Escharotomy

ALS procedure

Indications:

Eschar compressing or potentially compressing tissue in, or surrounding burn area Compressed tissue is identified by any of the following:

- Absent distal arterial flow as determined by pulses, skin color, and capillary refill.
- An SpO2 < 95% in the distal end of the extremity as shown by pulse oximetry in the absence of systemic hypoxia.
- Impending or established respiratory compromise due to circumferential torso or neck burns.

Contraindications

- None

Precautions

Complications from the procedure include:

- Bleeding
- Infection
- Damage to neurovascular structures
- Inadvertent fasciotomy

Equipment Needed

- Cleansing solution, such as povidone-iodine or chlorhexidine
- Sterile gauze
- Scalpel

Procedure

Relevant Anatomy

- Eschars occur in full-thickness burns or, less commonly, deep partial-thickness burns through at least the dermis.
- A properly executed escharotomy releases the eschar to the depth of subcutaneous fat only. This release results in minimal bleeding, which can be controlled with local pressure or electrocautery.
- Major neurovascular structures to avoid when incising at the following sites include:
  - Elbow: Ulnar nerve
  - Wrist: Radial nerve
  - Fibular head: Superficial peroneal nerve
  - Ankle: Posterior tibial artery
  - Neck: Jugular veins

General

- Cleanse the site with povidone-iodine or chlorhexidine solution.
- If burns are particularly painful, utilize pain management guideline.
- Unsedated patients may benefit from procedural sedation.

Limbs

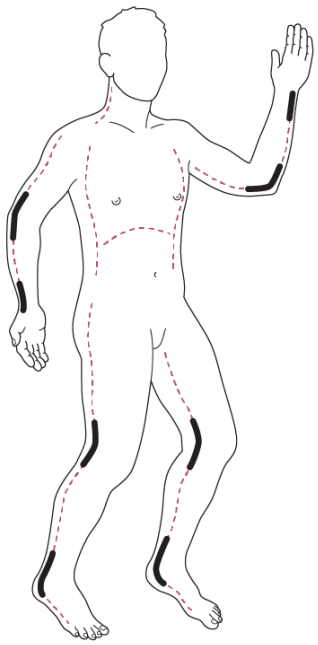
1. Using sterile technique, incise the lateral and medial aspects of the involved extremity with a scalpel from 1 cm proximal to the burned area to 1 cm distal to the involved area of constricting burn.
2. Avoid vital structures such as major arteries and nerves (eg, ulnar nerve at the elbow, the radial nerve at the wrist, the superficial peroneal nerve near the fibular head, the posterior tibial artery at the ankle).
3. Carry the incision only through the full thickness of skin. Incisions should cross joints. This incision should result in immediate separation of the constricting eschar to expose subcutaneous fat.
4. In circumferential burns of the hands, extend the incisions to the thenar and hypothenar aspects of the hand.
5. In circumferential burns of the feet, extend the incision to the great toe medially and the little toe laterally.
6. Reassess perfusion: A properly done escharotomy results in near-immediate softening of the tissue, improved distal tissue perfusion, sensation, Doppler flow signal strength, and oximetry values. If perfusion fails to improve after the procedure, reassess the escharotomy depth and location and reincise any insufficiently deep incisions.

Chest

1. Using sterile technique, incise the chest wall from the clavicle to the costal margin in the anterior axillary line bilaterally; avoid breast tissue in females (see figure Escharotomy incision sites). Consider joining this by transverse incisions to result in a chevron-shaped subcostal incision.
2. Assess response: Increased airway pressure or an inability to ventilate is evidence of the need to reincise the eschar.

Escharotomy incision sites

The dashed lines are the preferred escharotomy incision sites. The bold lines are areas where vascular structures and nerves may be damaged by escharotomy incisions.



Intramuscular Injection

ALS procedure

Indications:

- The administration of intramuscular medication

Contraindications

- Medications that aren't approved for the IM route

Precautions

- Accidental intravenous administration
- IM injections may be painful

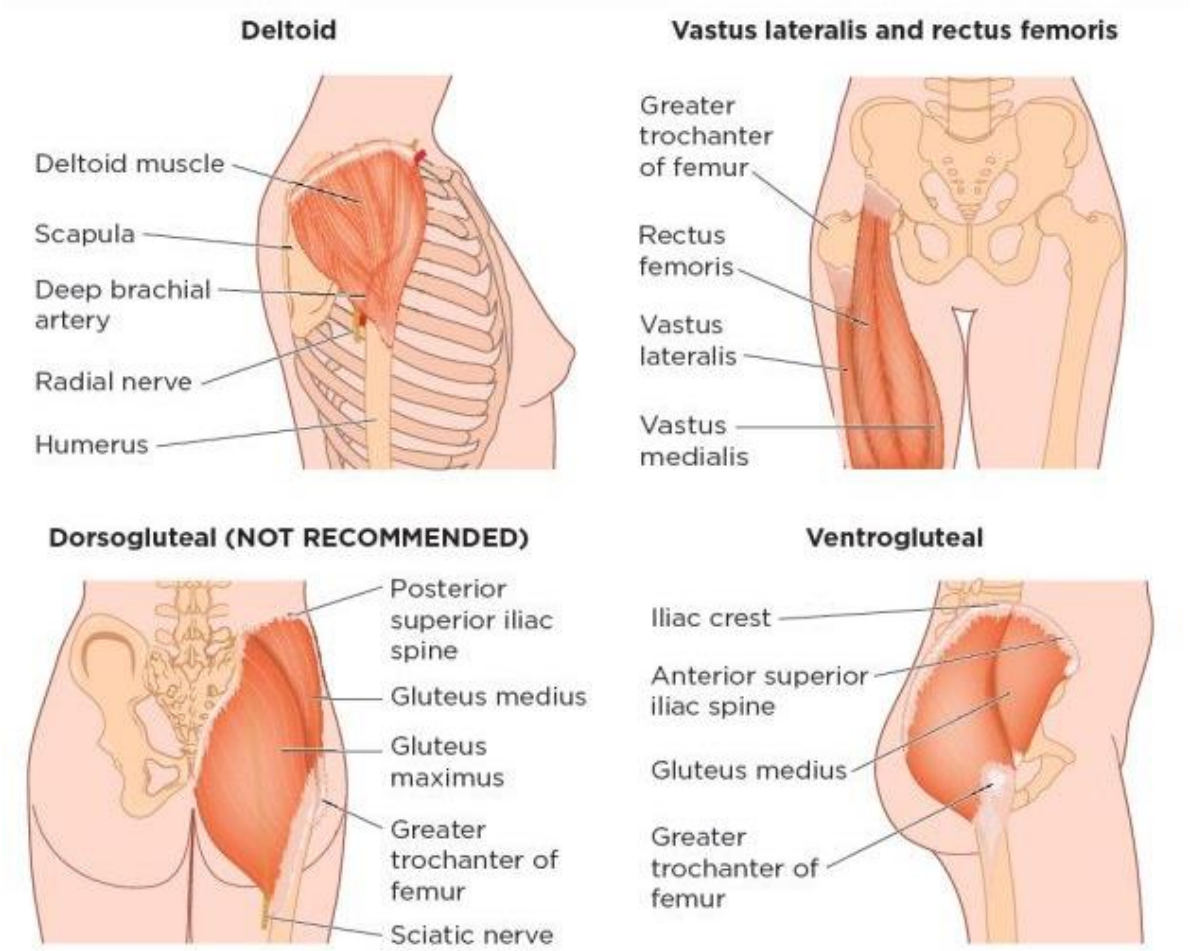
Equipment Needed

- **Appropriate syringe**
- **18 g 1.5" – 22g 1-1.5" Needle**
- **Alcohol prep**
- **Bandage**

Procedure

1. **Prepare equipment, medication to be given**
2. **Perform 6 Rights and partner cross-check**
3. **Explain procedure to patient**
4. **Select proper injection site**
    a. **(deltoid / ventrogluteal / vastus lateralis)**
5. **Clean site with alcohol swap, starting with small circles and working into larger ones**
6. **Hold skin taut**
7. **Puncture the skin and enter the muscle at a 90 degree angle**
8. **Inject medication**
9. **Cover with bandage**
10. **Dispose of needle/ syringe in sharps container**
11. **Reassess the patient**
12. **Document drug given, time given, route, effects and person administering drug**

IM Injection Sites



Meconium Aspiration

ALS procedure

Indications:

- Newborn with meconium staining

Contraindications

- None

Precautions

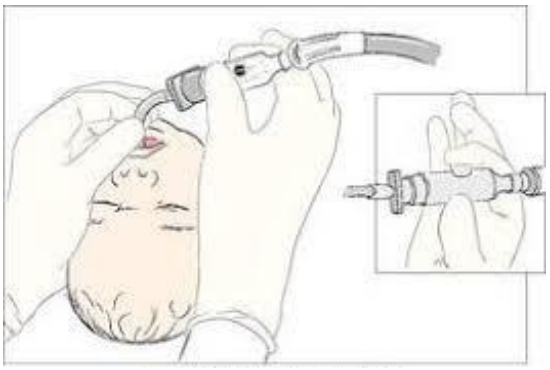
- May cause bradycardia

Equipment Needed

- **Meconium Aspirator**
- **Suction device**
- **Suction tubing**
- **Appropriate ET Tube (likely a 2.5)**

Procedure

1. **Connect barbed end of meconium aspirator to suction line**
2. **Set the suction pressure at 80 mmhg or less**
3. **Intubate patient**
4. **Connect the ET tube to the other end of meconium aspirator**
5. **Block thumb port with thumb to begin suctioning**
6. **Suction for 2 seconds or less at a time until meconium is fully removed**
7. **Continue to suction while ET tube is withdrawn**
8. **Discard after use**



Pericardiocentesis

ALS procedure

Indications:

- Cardiac Tamponade
- Beck's Triad: Muffled heart sounds, JVD, & Hypotension
- Electrical Alternans
- Traumatic Cardiac Arrest
- Ultrasound Confirmation of Tamponade

Contraindications

- Unable to identify landmarks

Precautions

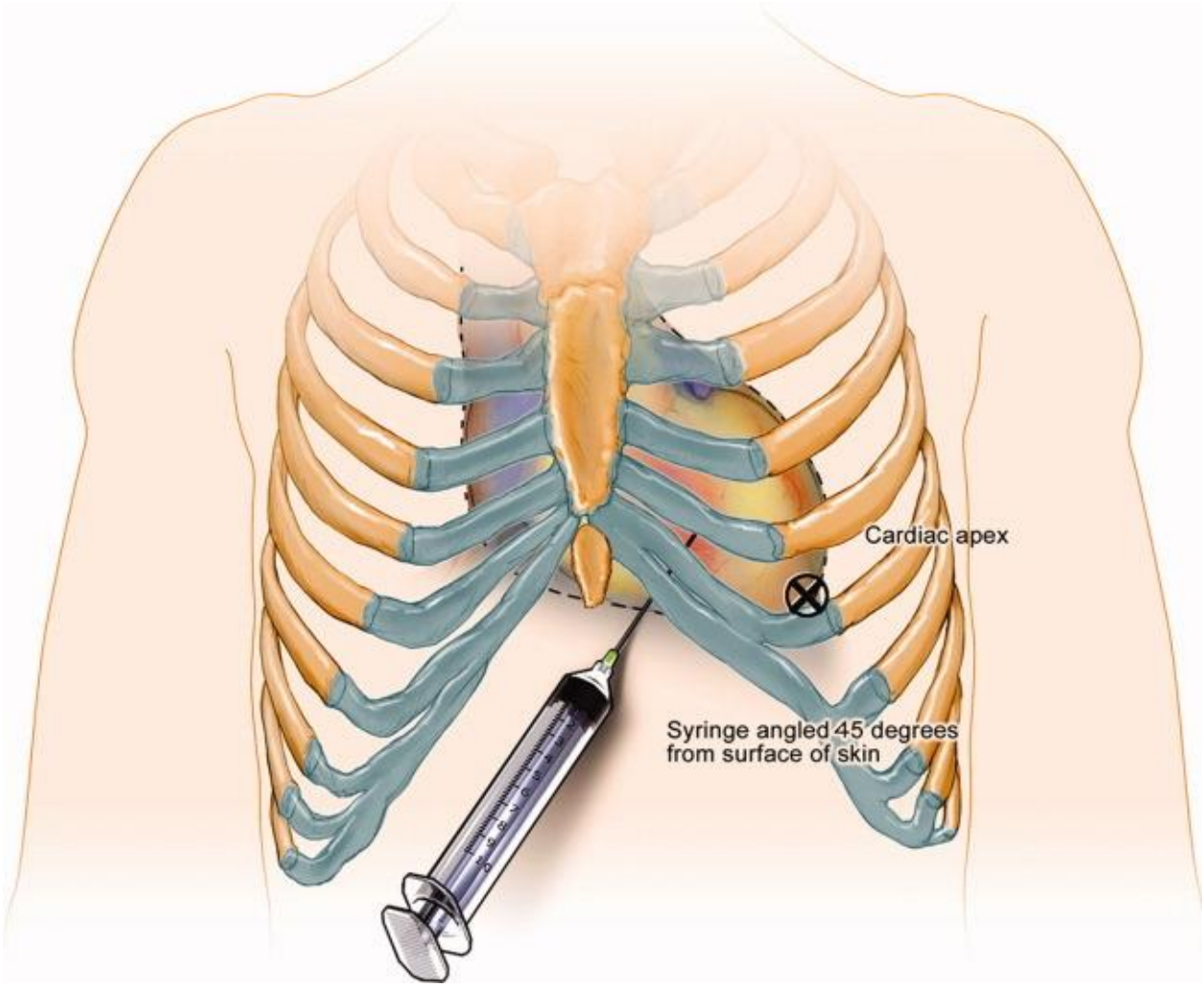
- May not have classic presentation
- May require a repeat aspiration

Equipment Needed

- **Alcohol or Betadine swab**
- **60 mL syringe**
- **18 gauge x 3 ½' spinal needle**

Procedure

1. **Attach the syringe and needle**
2. **Locate the xiphoid process**
3. **Insert the needle just to the left of the patient's xiphoid and inferior to the left rib**
4. **At a 45° angle to the patient, advance the syringe and needle slowly, aiming toward the patient's left mid-clavicle**
5. **While advancing slowly, apply negative pressure to the syringe**
6. **Once fluid is encountered, stop advancing the needle and continue aspirating**
7. **Aspirate up to 60cc, then remove needle and syringe**
8. **Reassess for improvement**
9. **Repeat process as necessary**


Cardiac apex
Syringe angled 45 degrees
from surface of skin

Push Dose Pressor (Epinephrine)

ALS procedure

Indications:

- Hypoperfusion – as a bridge to vasopressor infusion
- Post-arrest hypotension

Contraindications

- None

Precautions

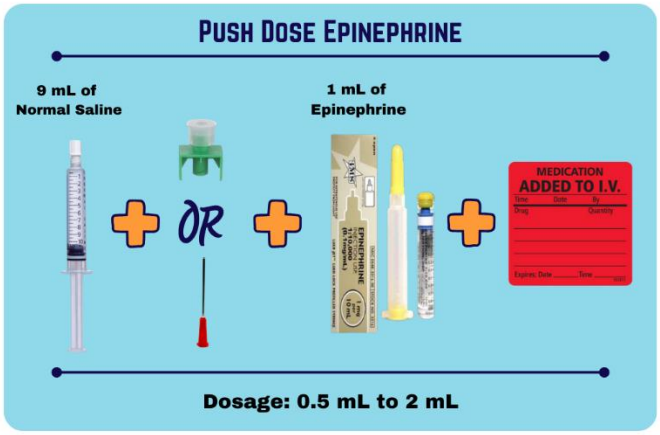
- Cross-check the correct concentration.

Equipment Needed

- **1mg in 10mL Epinephrine (1:10,000)**
- **Medication Transfer Device (or needle)**
- **10 mL Saline Flush**
- **Medication label**

Procedure

1. **Open saline flush and eject 1 mL, leaving 9 mL in the syringe.**
2. **Attach medication transfer device (or appropriate needle)**
3. **Open epinephrine vial and aspirate 1 mL into the saline syringe**
    a. **Concentration is now 0.1mg of epinephrine in 10mL.**
4. **Perform safety cross-check.**
5. **Fill out medication label and attach to syringe.**
6. **Complete the 6 Patient Rights prior to administration.**
7. **Dosage: 0.5 to 2 mL (repeat as needed until infusion is in place)**



Sapphire IV Pump (Infusion)

ALS procedure

Indications:

- Administration of medication infusion

Contraindications

- None

Precautions

- None

Equipment Needed

- **Medication to be infused**
- **Sapphire administration set**
- **Sapphire IV pump**

Procedure

1. **Power ON**
2. **Ensure correct drug library**
    a. **AP Medic vs. Paramedic**
3. **Select New Infusion**
4. **From Drug Name screen find medication to be infused**
5. **If weight-based medication, insert the appropriate kg of the patient**
6. **Depending on time-based or weight-based infusion, enter the appropriate parameters for the medication to be infused**
7. **Perform cross-check during the 'Confirm' screens**
8. **Press Start; ensure green LED light running light is on**

Suction Assisted Laryngeal Airway Decontamination

ALS procedure

Indications:

- Contaminated Larynx
- Patient unable to maintain physiologic airway

Contraindications

- None

Precautions

- Severe oral trauma
- Suspected cervical injury

Equipment Needed

- **Proper size endotracheal tube w/ stylet**
- **Laryngoscope and properly sized blade**
- **Video-laryngoscope if available**
- **10 mL syringe**
- **Bougie if available**
- **Waveform capnography**
- **ET tube securing device or tape with bite block**
- **Suction available**
- **Ducanto Suction Catheter**
- **BVM or mechanical ventilator**
- **Oxygen supply**
- **Stethoscope**
- **Gloves and eye protection**
- **Lubricant**

Procedure

1. **Position equipment**
2. **Hold laryngoscope handle with blade in Left Hand**
3. **Hold suction catheter in Right Hand with overhand grip**
4. **Visualize oropharynx**
5. **Begin suctioning as tip of laryngoscope blade is entered**
6. **Push and lift suction catheter to move tongue out of way**
7. **Advance laryngoscope blade and position suction catheter**
8. **Remove catheter and place on Left side of laryngoscope**
9. **Perform "SALAD Poke"**
10. **Obtain view of glottic opening**
11. **Perform endotracheal intubation**

Synchronized Cardioversion

ALS procedure

Indications:

- Hemodynamic Instability caused by an organized tachycardia

Contraindications

- None

Precautions

- Usually unnecessary if HR is less than 150 bpm
- Assure patient is dry
- Cardioversion of chronic atrial fibrillation to an organized rhythm may cause an ischemic stroke

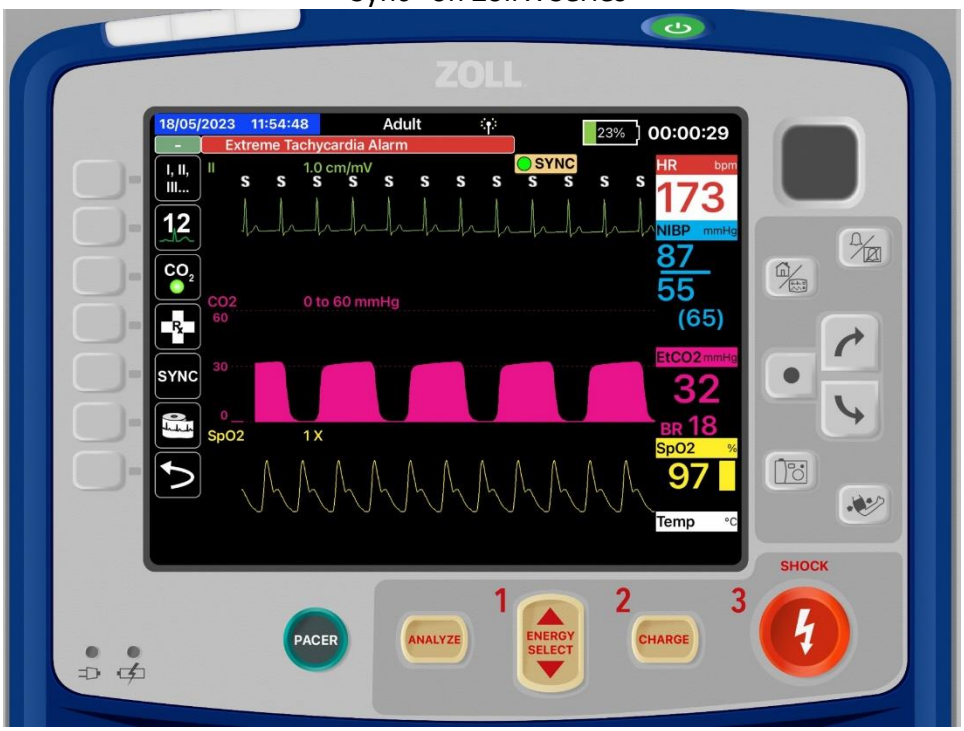
Equipment Needed

- **Monitor/ defibrillator**
- **Defibrillator pads**
- **Razor**

Procedure

1. **Provide sedation if responsive and time permits**
2. **Attach pads with A/P placement**
3. **Select ECG/EKG lead with most prominent QRS complex**
4. **Press "SYNC" button**
5. **Recognize R wave indicators on monitor**
6. **Select appropriate energy:**
    a. *Narrow & Regular: 50 – 100 Joules*
    b. *Narrow & Irregular: 120 – 200 Joules*
    c. *Wide & Regular: 100 Joules*
    d. *Wide & Irregular: Perform defibrillation at 200 Joules*
7. **Charge monitor**
8. **Verbalize "CLEAR"**
9. **Press and hold the "SHOCK" button**
10. **Reassess patient**

“Sync” on Zoll X Series



“Sync” on Lifepak 15

Finger Thoracostomy

ALS procedure

Indications:

- Traumatic Arrest

Contraindications

- Simple pneumothorax

Precautions

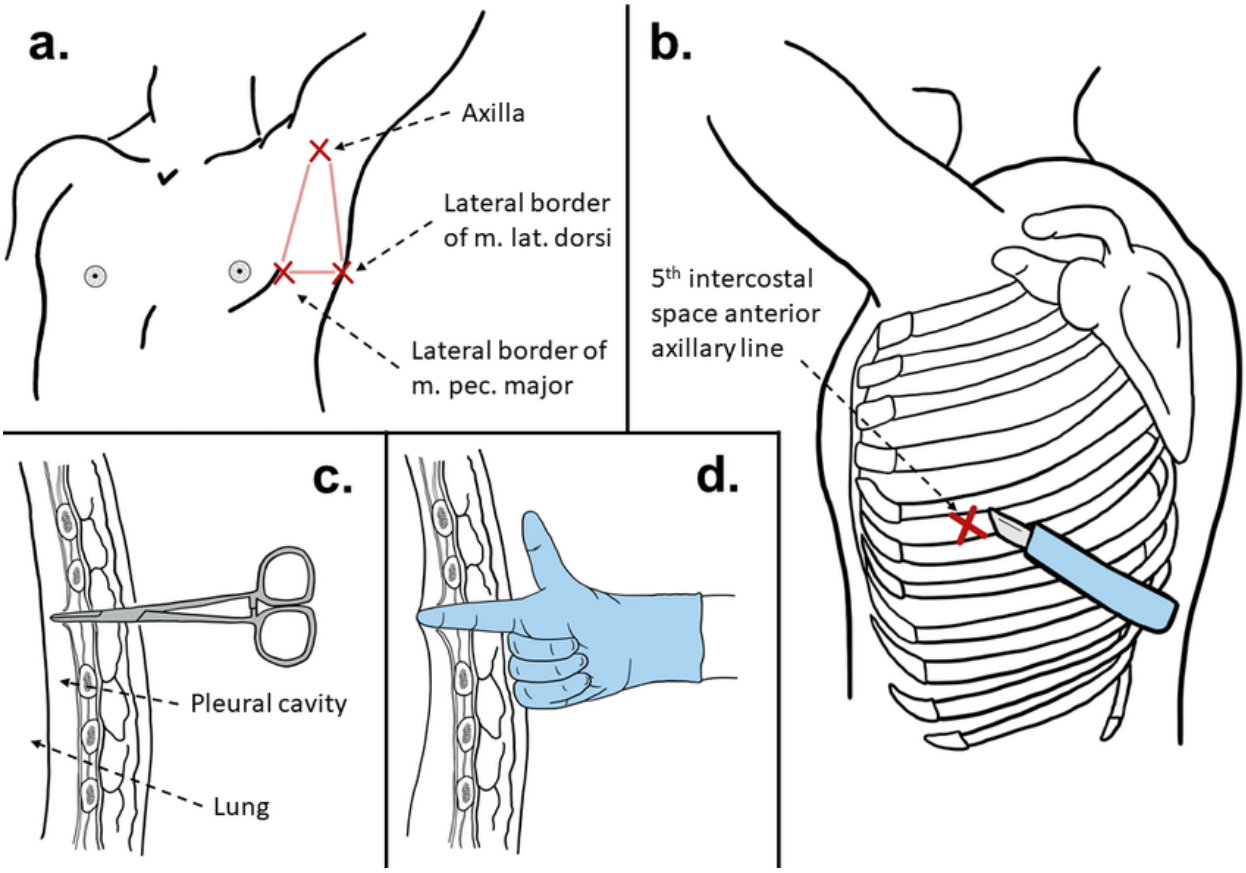
- Enter skin above ribs
- May create a pneumothorax

Equipment Needed

- **Sterile Gloves**
- **Scalpel**
- **Kelly Clamp**
- **Betadine**
- **Lidocaine, Syringe & Needle**

Procedure

1. **Position patient supine or in semi-Fowler's**
2. **Recognize possible tension physiology.**
3. **Continuous monitoring (ECG, SpO2, EtCO2)**
4. **Locate 5th intercostal space at anterior/mid-axillary line.**
5. **Clean with betadine or chlorhexadine.**
6. **Consider lidocaine/local anesthetic**
7. **Don sterile gloves.**
8. **Using a scalpel, make a 4cm cut through skin over and parallel to the superior border of the inferior rib.**
9. **Using Kelly clamps, quickly blunt dissect through subcutaneous tissue and muscle just over the superior border of the inferior rib.**
10. **With closed Kelly clamps, puncture through the parietal pleura.**
    a. **the "give" of the parietal pleura indicates access of the pleural space**
    b. **if hemopneumothorax is present, you may hear air or note swift return of blood**
11. **Remove the Kelly clamps from the tract and insert your full gloved finger into the space. Next, rotate your finger 180 degrees clockwise and counterclockwise feeling inside of the ribs**
    a. **intrapleural palpation confirms access of the pleural space**
    b. **re-expansion of the lung parenchyma may be palpated, especially if patient is receiving positive pressure ventilation (e.g. intubated)**
12. **If lung is already expanded on palpation and there is no forceful air/fluid release, it may be possible to close the thoracic wound with occlusive dressing only.**


a.
Axilla
Lateral border of m. lat. dorsi
Lateral border of m. pec. major
b.
5th intercostal space anterior axillary line
c.
Pleural cavity
Lung
d.

Needle Thoracostomy (Anterior axillary)

ALS procedure

Indications:

- Tension Pneumothorax

Contraindications

- None

Precautions

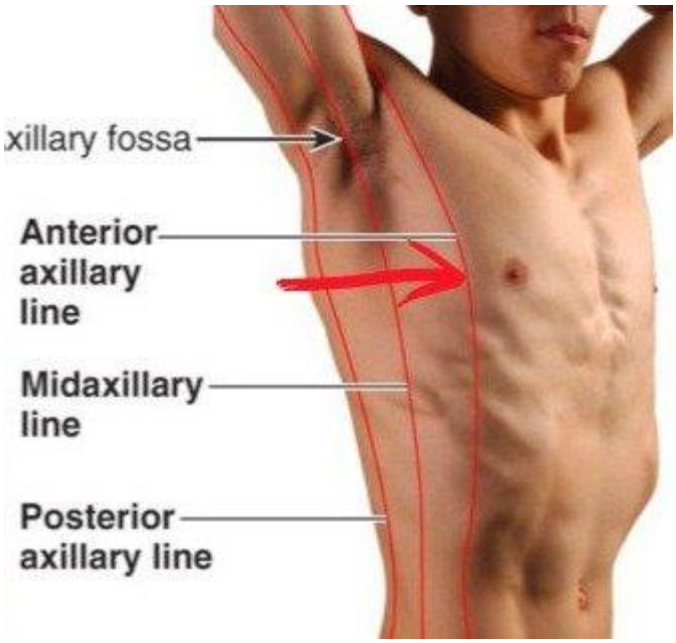
- Hemothorax
- Simple Pneumothorax
- Pediatric Patients

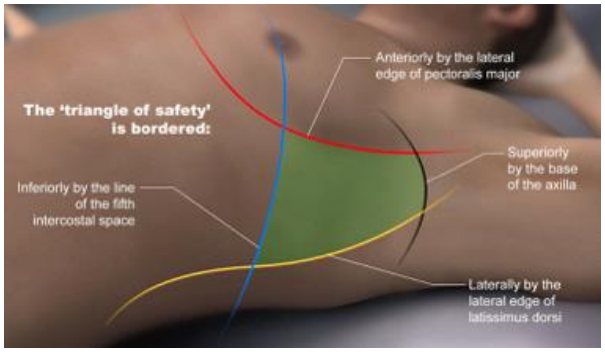
Equipment Needed

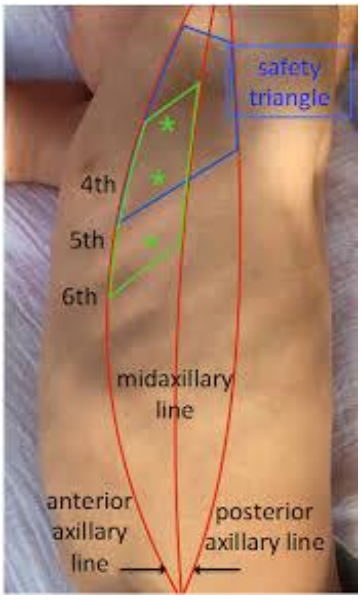
- **Alcohol or Betadine swab**
- **ARS Needle or 14 or 16ga IV catheter/ minimum 2" length for adult patients**
- **10 mL syringe**
- **Children may require needle smaller than 2”**

Procedure

1. **Identify the 4th or 5th intercostal space, anterior-axillary line.**
2. **Cleanse site**
3. **Remove the red cap with a twisting motion**
4. **Attach 10 mL syringe**
5. **Remove the ARS from the case**
6. **Insert the ARS into the skin over the superior border of the fifth or sixth rib, anterior axillary line, and direct it into the intercostal space at a 90-degree angle to the chest wall. Ensure ARS entry into the chest is not medial to the nipple line and not directed toward the heart**
7. **Insert the ARS into the pleural space. Listen for the sudden escape of air as the tension pneumothorax is decompressed**
8. **If frank blood appears, remove needle and discontinue procedure**
9. **Remove the needle portion of the ARS and secure the catheter in place**
10. **Monitor closely for recurrence of respiratory distress**
11. **Reassess patient**


xillary fossa
Anterior axillary line
Midaxillary line
Posterior axillary line


The 'triangle of safety' is bordered:
Anteriorly by the lateral edge of pectoralis major
Superiorly by the base of the axilla
Inferiorly by the line of the fifth intercostal space
Laterally by the lateral edge of latissimus dorsi


safety triangle
4th
5th
6th
midaxillary line
anterior axillary line
posterior axillary line

Needle Thoracostomy (Anterior)

ALS procedure

Indications:

- Tension Pneumothorax

Contraindications

- None

Precautions

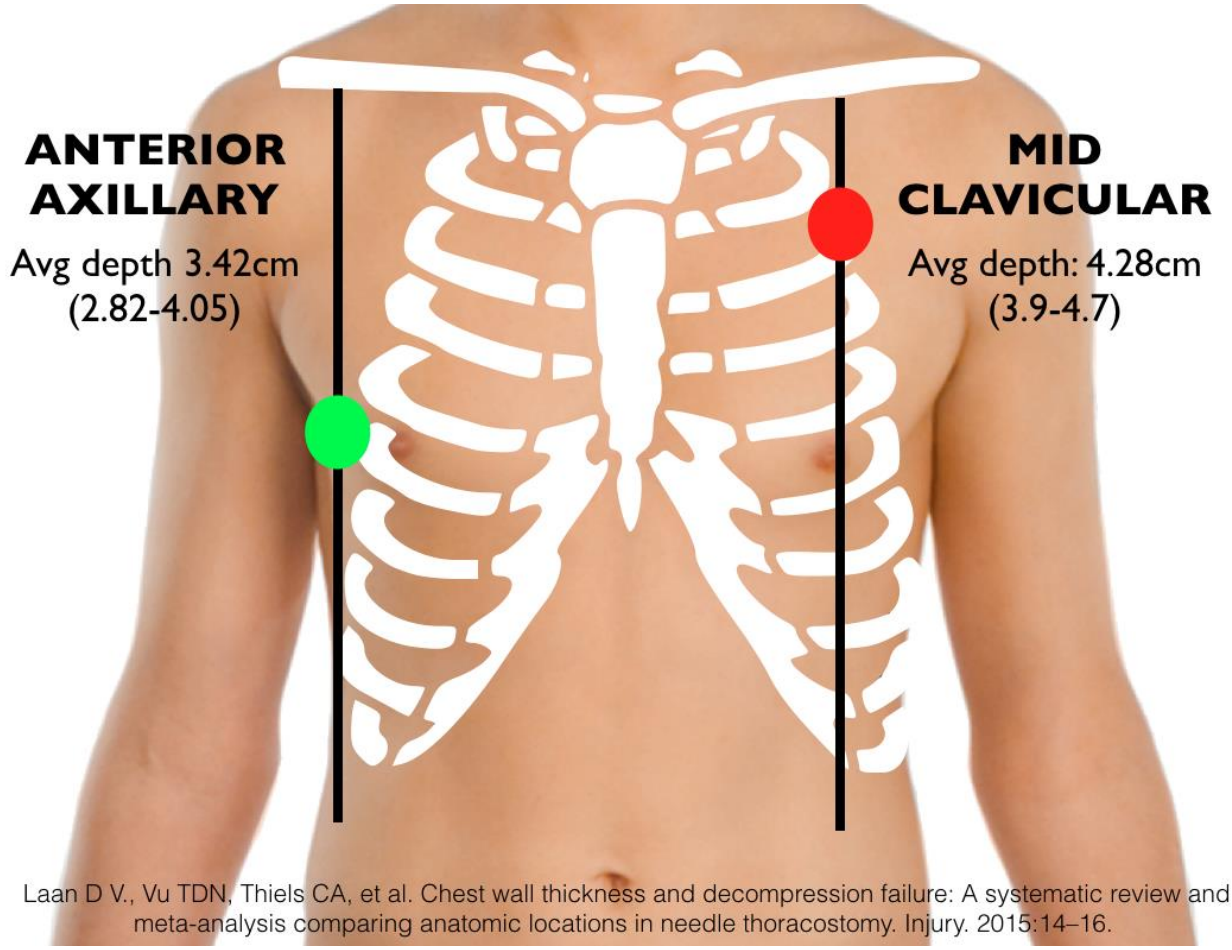
- Hemothorax
- Simple Pneumothorax
- Pediatric Patients

Equipment Needed

- **Alcohol or Betadine swab**
- **ARS Needle or 14 or 16ga IV catheter/ minimum 2" length for adult patients**
- **10 mL syringe**
- **For patients smaller than adult size, use only the length of needle that is necessary to decompress the chest, usually much less than 2”**

Procedure

1. **Identify the 2nd or 3rd intercostal space on the anterior chest at the midclavicular line on the same side as the injury**
2. **Cleanse site**
3. **Remove the red cap with a twisting motion**
4. **Remove the ARS from the case**
5. **Insert the ARS into the skin over the superior border of the third or fourth rib, midclavicular line, and direct it into the intercostal space at a 90-degree angle to the chest wall. Ensure ARS entry into the chest is not medial to the nipple line and not directed toward the heart**
6. **Insert the ARS into the pleural space. Listen for the sudden escape of air as the tension pneumothorax is decompressed**
7. **If frank blood appears, remove needle and discontinue procedure**
8. **Remove the needle portion of the ARS and secure the catheter in place**
9. **Monitor closely for recurrence of respiratory distress**
10. **Reassess patient**



Laan D V., Vu TDN, Thiels CA, et al. Chest wall thickness and decompression failure: A systematic review and meta-analysis comparing anatomic locations in needle thoracostomy. Injury. 2015:14–16.

Transcutaneous Pacing

ALS procedure

Indications:

- Symptomatic Bradycardia

Contraindications

- Cardiac Arrest

Precautions

- Severe Hypothermia

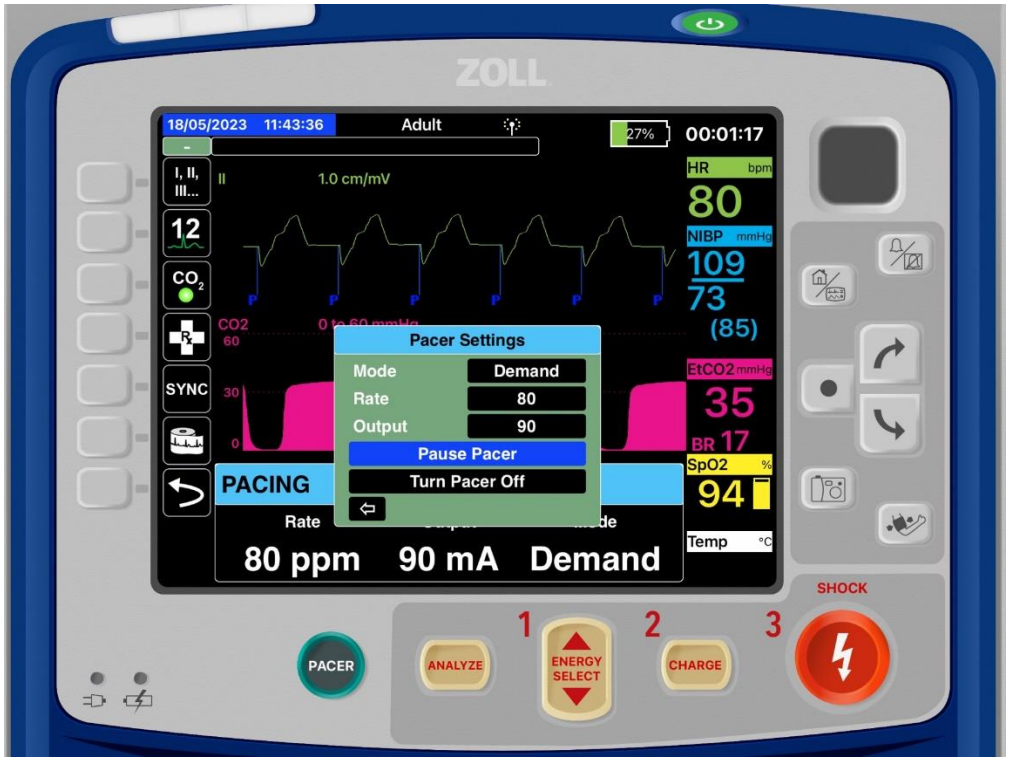
Equipment Needed

- **Monitor/ defibrillator**
- **Defibrillator pads**
- **Razor**

Procedure

1. **Treat patient per Bradycardia guideline**
2. **Identify rhythm on the cardiac monitor**
3. **If patient is conscious and aware of situation during pacing, consider sedation**
4. **Apply pads anterior/posterior as well as 4-lead**
5. **Set the pacemaker to 80 beats per minute (monitor defaulted to 80)**
6. **Set the output setting to 30 (monitor defaulted to 30)**
7. **Turn on the pacer**
8. **Quickly increase output to 60 ma while observing for capture**
9. **Slowly increase the output until electrical capture is detected**
    a. **Electrical capture: Spike, loss of intrinsic rhythm, large QRS, & discordant T-wave**
10. **Palpate for femoral pulse (mechanical capture)**
11. **Reassess the vital signs. BP, SpO2, EtCO2**
12. **Adjust as necessary to maintain perfusion**

Pacing on Zoll X Series



Pacing on Lifepak 15

Ultrasound: Cardiac Exam

ALS procedure

Indications:

- Hemodynamically Unstable Trauma Patient
- Abdominal & Thoracic Trauma
- Previously stable trauma patient with acutely worsening clinical status

Contraindications

- None

Precautions

- Doesn't localize injured organ.
- Views may be limited with subcutaneous emphysema.
- Views may be limited in patients who have a hollow-viscus injury with free air.

Equipment Needed

- **Ultrasound device**
- **Transducer – Phased Array (or cardiac probe)**

Procedure

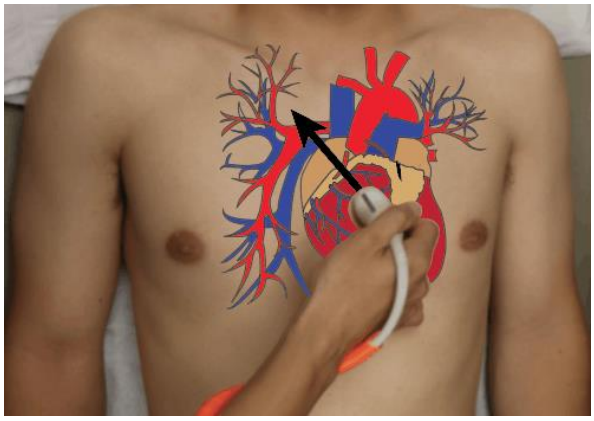
1. **Patient laying supine**
    a. *If you are unable to visualize the heart in the supine position, consider repositioning the patient into the Left lateral decubitus.*
2. **Select Preset: Cardiac**
    a. *Make sure the U/S Image Indicator Marker is on the RIGHT side of the U/S screen.*
3. **Obtain the preferred view:**
    a. **Parasternal Long Axis (PSLA)**
    b. **Parasternal Short Axis (PSSA)**
    c. **Apical View**
    d. **Subxiphoid (Subcostal)**
    e. **Inferior Vena Cava (IVC)**

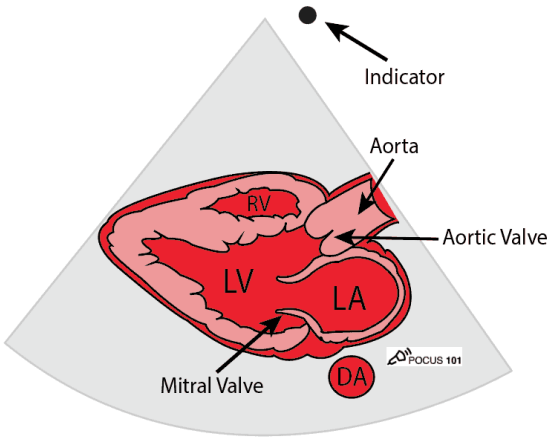
Parasternal Long Axis View

The **Parasternal Long Axis View** is often abbreviated as PSLA or PLAX.

It is usually the first cardiac ultrasound view obtained and will give you an immediate assessment of the general condition of the heart including ejection fraction and overall left and right ventricular sizes.

- Point the probe indicator toward the patient's right shoulder
- Place the probe at the 4th intercostal space which is approximately the nipple line for males or the inframammary fold to the sternum (females).





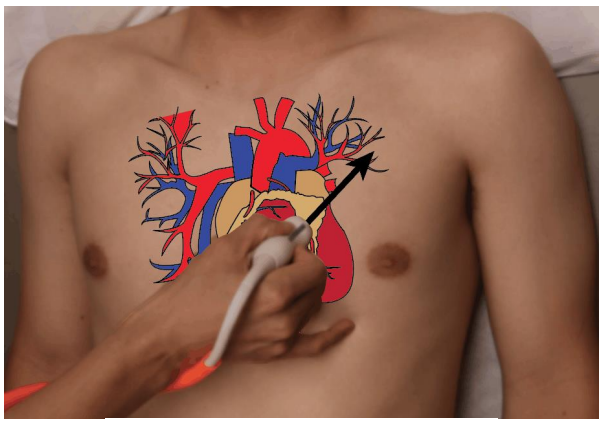
Structures to identify in the Parasternal Long Axis (PSLA) View:

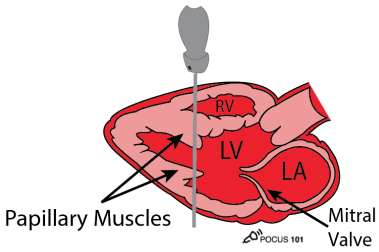
- RV: Right Ventricle
- LV: Left Ventricle
- LA: Left Atrium
- AV: Aortic Valve
- MV: Mitral Valve
- AO: Aorta
- DA: Descending Aorta
- Pericardium

Parasternal Short Axis View

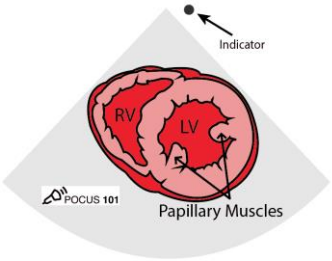
The **Parasternal Short Axis view** is often abbreviated as PSSA or PSAX.

- From the Parasternal Long Axis view, rotate your probe 90 degrees clockwise so that the indicator is now pointing towards the patient's left shoulder.



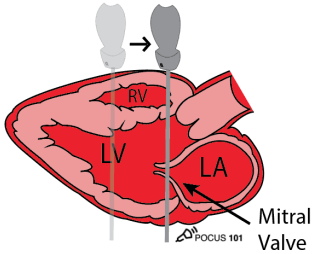


Mid-Papillary Level

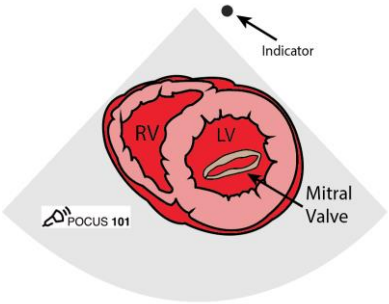


Mid-Papillary Level

Slide the Probe Towards the Mitral Valve

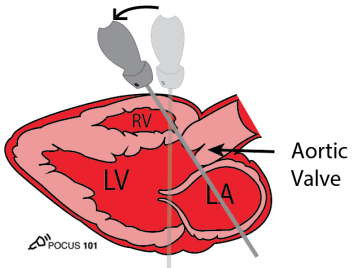


Mitral Valve Level

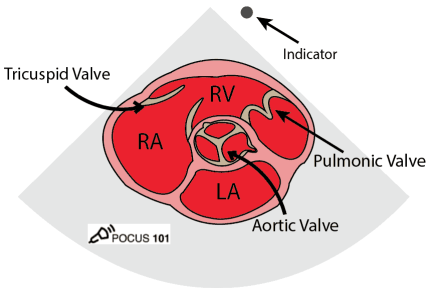


Mitral Valve Level ("Fish Mouth" View)

Tilt the Probe Towards the Base of the Heart



Aortic Valve Level

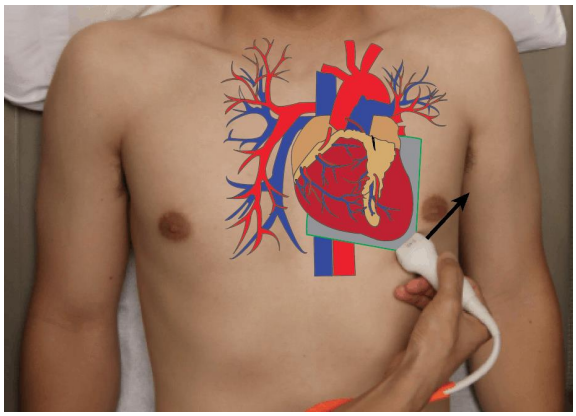


Aortic Valve Level ("Mercedes Benz" View)

Apical View

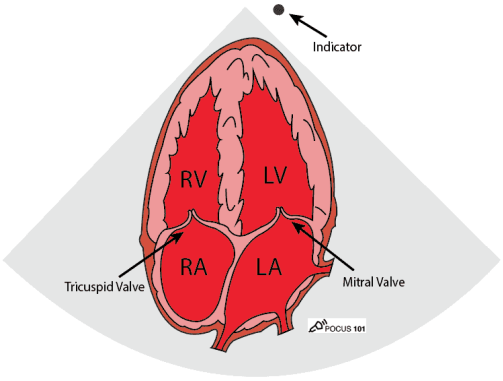
The Apical Views are some of the most important views to be able to obtain when doing hemodynamic assessment of the heart. This includes looking at diastolic dysfunction, valvular regurgitation, cardiac output, etc.

Unfortunately, it can be one of the most challenging views to obtain when first starting out. In this section, we will show you exactly how to get the mail apical views including the apical 4 chamber view, 5 chamber view, and the coronary sinus view.

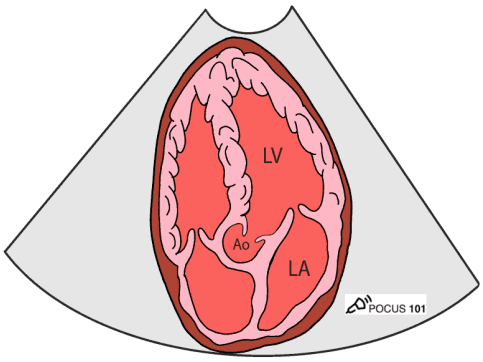


Structures to identify in the **Apical 4 Chamber (A4C)** View:

- LV: Left Ventricle
- RV: Right Ventricle
- LA: Left Atrium
- RA: Right Atrium
- TV: Tricuspid Valve
- MV: Mitral Valve

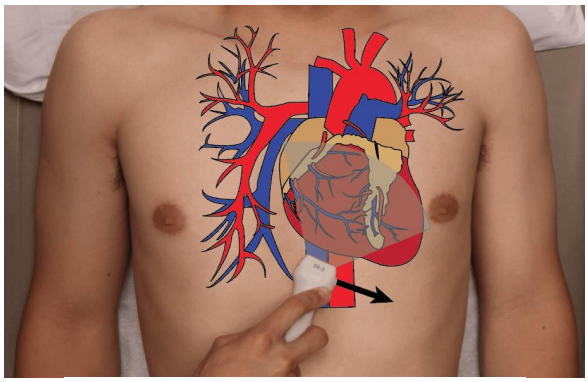


Apical 5 Chamber (A5C) View
Of course, there are not really 5 chambers in the heart but in echocardiography, the "5th chamber" is when you can see the appearance of the aortic valve and the left ventricular outflow tract.
Sometimes you will want to intentionally obtain this view in order to calculate the cardiac output of the left heart.
From the Apical 4 Chamber view, slightly tilt the tail of your probe towards the patient's feet to get the Apical 5 chamber view.



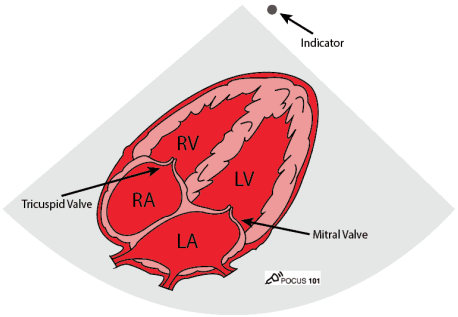
Subxiphoid View

The **Subxiphoid or "Subcostal" view** allows you to see similar structures as the Apical 4 Chamber view but just approached from a different angle. This Subxiphoid view is useful when you are having difficulty getting adequate parasternal views (i.e. COPD patients) or when you are evaluating a trauma patient when doing the eFAST scan.



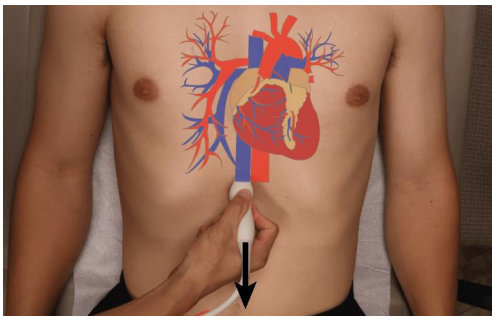
Structures to identify in the Subxiphoid (Subcostal) View:

- RV: Right Ventricle
- LV: Left Ventricle
- TV: Tricuspid Valve
- MV: Mitral Valve
- LA: Left Atrium
- RA: Right Atrium
- Pericardium



Inferior Vena Cava View

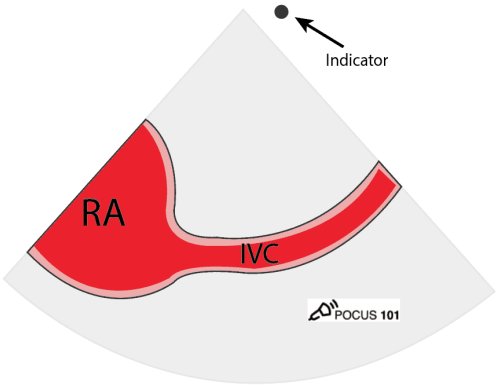
Evaluating the Inferior Vena Cava (IVC) with ultrasound is one of the most used Point of Care Ultrasound (POCUS) applications. It is a great way to estimate central venous pressure (CVP) and fluid tolerance.



- From the Subxiphoid view with the patient still in the supinated position with knees bent, keep the right atrium in view.
- Locate the Inferior Vena Cava within the Liver and center it on the ultrasound screen.
- Once the IVC is centered on the screen, rotate the transducer clockwise (to your right) to bring the indicator down toward the feet (play the instructional video).
- This will give a longitudinal view of the Inferior Vena Cava entering the Right Atrium.

Structures to identify in the Inferior Vena Cava (IVC) View:

- IVC: Inferior Vena Cava
- RA: Right atrium
- HV: Hepatic Vein (sometimes seen)



Ultrasound: eFAST Exam

ALS procedure

Indications:

- Hemodynamically Unstable Trauma Patient
- Abdominal & Thoracic Trauma
- Previously stable trauma patient with acutely worsening clinical status

Contraindications

- None

Precautions

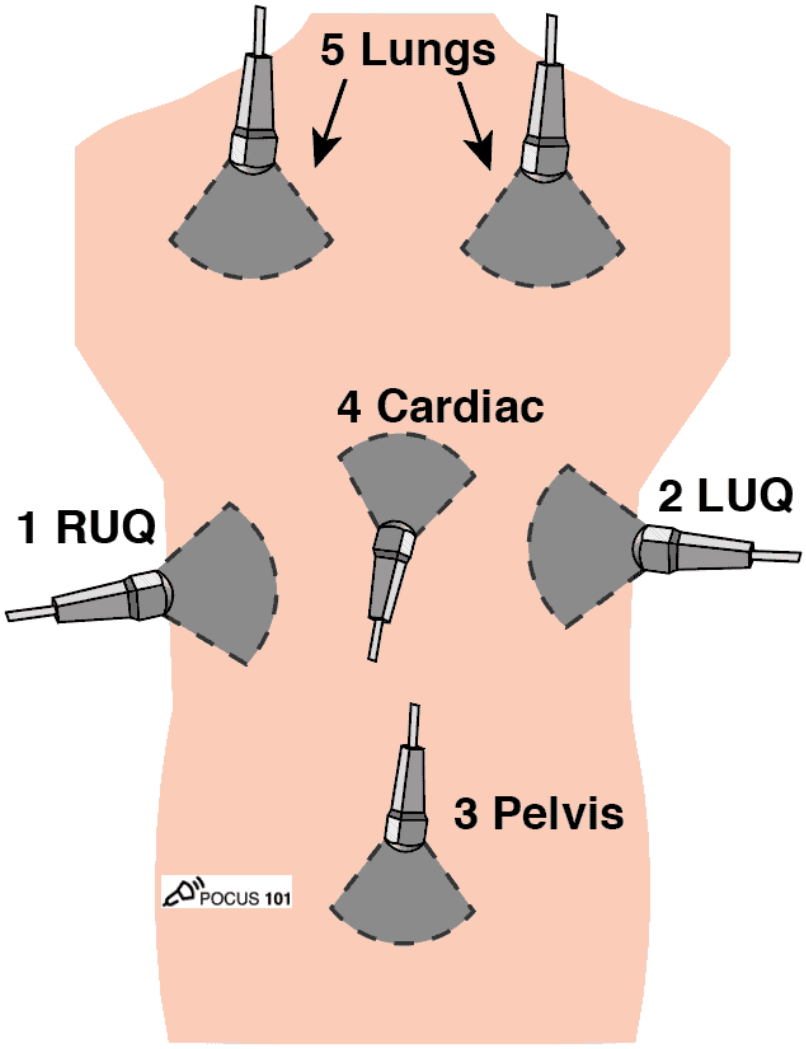
- Doesn't localize injured organ.
- Views may be limited with subcutaneous emphysema.
- Views may be limited in patients who have a hollow-viscus injury with free air.

Equipment Needed

- **Ultrasound device**
- **Transducer – Phased Array (or cardiac probe)**

Procedure

1. **Patient laying supine**
2. **Select Preset: FAST Exam or Abdominal Exam**
3. **Obtain the following views:**
    a. **Right Upper Quadrant (RUQ)**
    b. **Left Upper Quadrant (LUQ)**
    c. **Pelvic**
    d. **Cardiac (Parasternal Long Axis or Subxiphoid)**
    e. **Lungs (Right & Left)**
4. **Assess the following:**
    a. **Is there free fluid in the Abdomen?**
    b. **Is there free fluid in the Thorax?**
    c. **Is there cardiac movement?**
    d. **Is there fluid in the Pericardium?**
    e. **Is there a Pneumothorax?**


5 Lungs
4 Cardiac
1 RUQ
2 LUQ
3 Pelvis
POCUS 101

Intraosseous Access: EZ-IO®

ALS procedure

Indications:

- IO Medication administration
- IV access difficult/impossible

Contraindications

- Fracture of the targeted bone
- Previous, significant orthopedic procedures at insertion site (e.g. prosthetic limb or joint)
- IO in the targeted bone within the past 48 hours

Precautions

- Avoid unrecognized extravasation

Equipment Needed

- **EZ-IO® Power Driver**
- **EZ-IO® Needle Set and EZ-Connect® Extension Set**
- **EZ-Stabilizer® Dressing**
- **Non-sterile gloves**
- **Cleansing agent of choice**
- **Luer-lock syringe with flush (5-10 mL for adults, 2-5 mL for infant/child)**
- **Pressure infusion bag**
- **Lidocaine (2%) for local anesthesia**

Procedure

1. **Use a clean, "no touch" technique, maintaining asepsis**
2. **Prepare supplies**
3. **Prepare the site by using antiseptic of your choice; stabilize the extremity**
4. **Remove the needle set cap**
5. **Follow site-specific instructions for insertion**

INSERTION SITE IDENTIFICATION

Proximal Humerus (Adult/Pediatric)

1. Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated)
2. Place your palm on the patient's shoulder anteriorly; the "ball" under your palm is the general target area
    a. You should be able to feel this ball, even on obese patients, by pushing deeply
3. Place the ulnar aspect of your hand vertically over the axilla and the ulnar aspect of your other hand along the midline of the upper arm laterally
4. Place your thumbs together over the arm; this identifies the vertical line of insertion on the proximal humerus
5. Palpate deeply up the humerus to the surgical neck
    a. This may feel like a golf ball on a tee – the spot where the "ball" meets the "tee" is the surgical neck
    b. The insertion site is 1 to 2 cm above the surgical neck, on the most prominent aspect of the greater tubercle

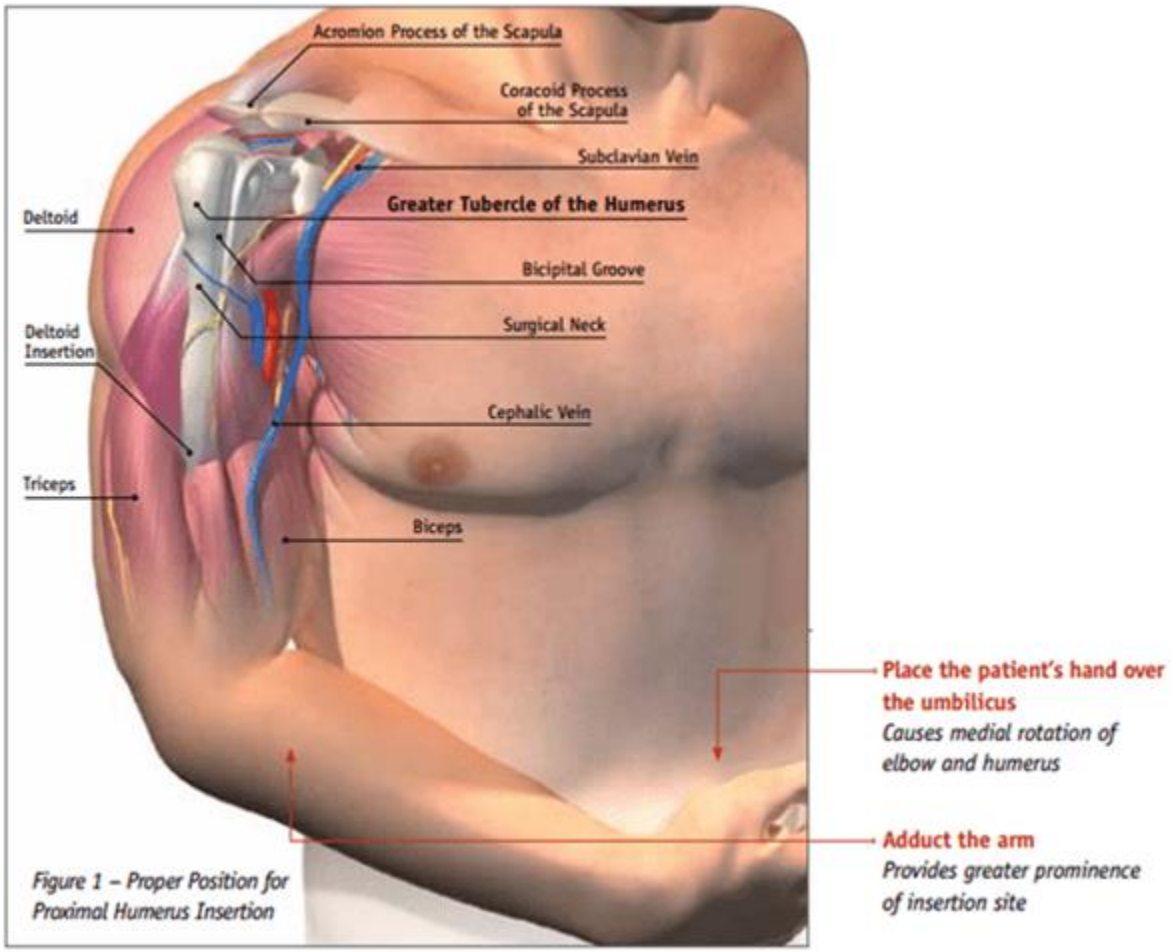


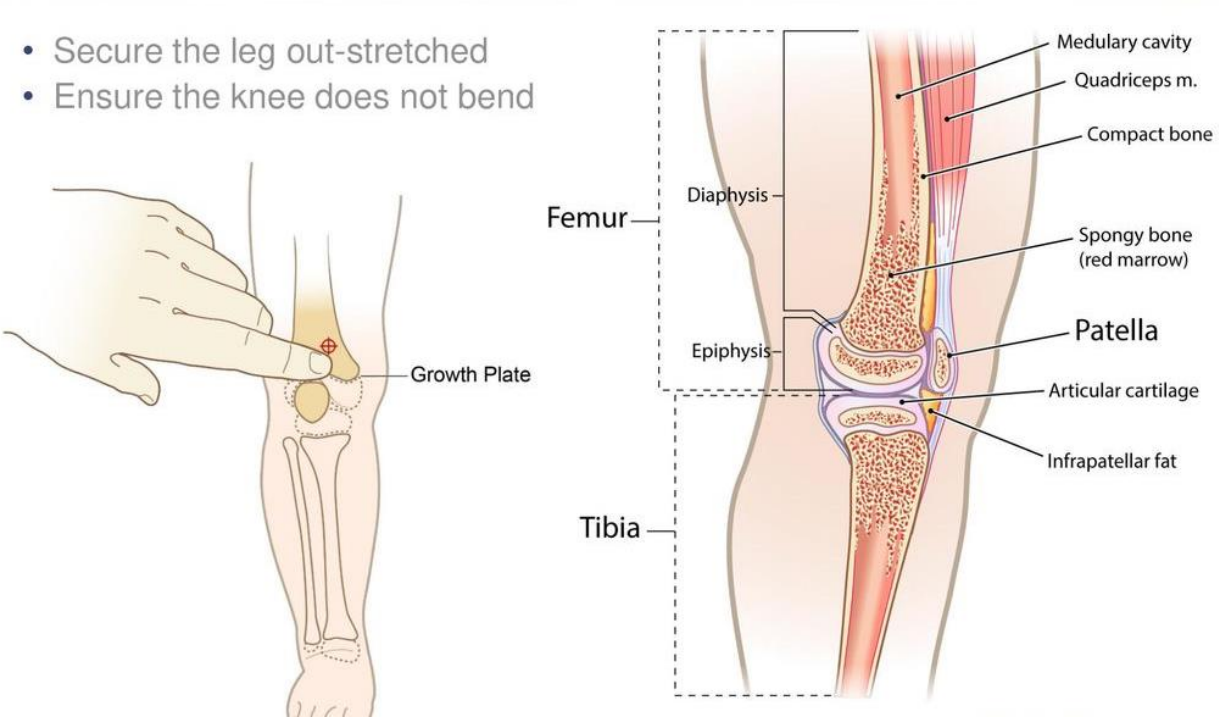
Figure 1 – Proper Position for Proximal Humerus Insertion

Proximal Tibia (Adult)

1. Extend the leg.
2. Insertion site is approximately 2 cm medial to the tibial tuberosity, or approximately 3 cm below the patella and approximately 2 cm medial, along the flat aspect of the tibia.

Distal Femur (Adult/Pediatric)

1. Secure the leg outstretched to ensure the knee does not bend.
2. Identify the patella by palpation. The insertion site is just proximal to the patella (maximum 1 cm) and approximately 1-2 cm medial to midline.



INSERTION TECHNIQUE

Proximal Humerus

1. Aim the needle set at a 45-degree angle to the anterior plane and posteromedial
2. Push the needle set tip through the skin until the tip rests against the bone
    a. The 5 mm mark must be visible above the skin for confirmation of adequate needle set length
3. Gently drill into the humerus approximately 2 cm or until the hub is close to the skin; the hub of the needle set should be perpendicular to the skin

Tibia

1. Aim the needle set at a 90-degree angle to the bone
2. Push the needle set tip through the skin until the tip rests against the bone
    a. The 5 mm mark must be visible above the skin for confirmation of adequate needle set length
3. Gently drill, advancing the needle set approximately 1-2 cm after entry into the medullary space or until the needle set hub is close to the skin

Femur

1. Aim the needle set at a 90-degree angle to the bone
2. Push the needle set tip through the skin until the tip rests against the bone
    a. The 5 mm mark must be visible above the skin for confirmation of adequate needle set length
3. Gently drill, immediately release the trigger when you feel the loss of resistance as the needle set enters the medullary space; avoid recoil – do NOT pull back on the driver when releasing the trigger.

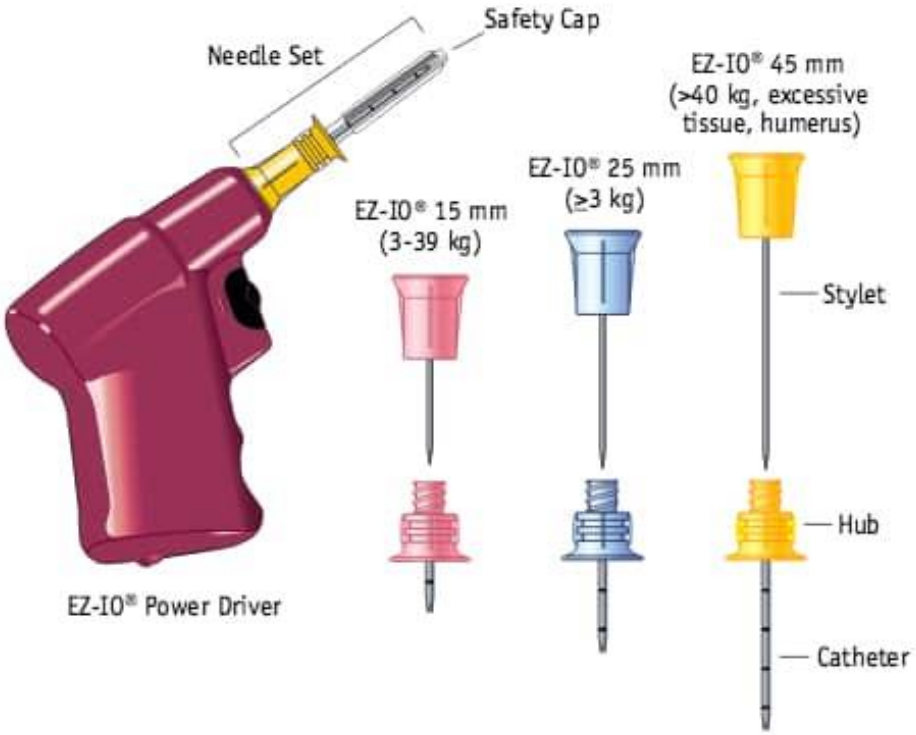
INSERTION COMPLETION

1. Hold the hub in place and pull the driver straight off; continue to hold the hub while twisting the stylet off the hub with counter clockwise rotations; catheter should feel firmly seated in the bone (1st confirmation of placement);
    a. Dispose of all sharps and biohazard materials using standard biohazard practices and disposal containers.
2. If using the NeedleVISE® 1 port sharps block, place on stable surface and use a one-handed technique.
3. Place the EZ-Stabilizer® Dressing over the hub
4. Attach a primed extension set to the catheter hub, firmly secure by twisting clockwise
5. Pull the tabs off the dressing to expose the adhesive, apply to the skin

EZ-IO® NEEDLE SETS: DESCRIPTION

- Comprised of Catheter with Luer-lock connection, Stylet, Safety Cap.
- 15 gauge, 304 stainless steel in 15 mm, 25 mm and 45 mm lengths.
- Sterile, non-pyrogenic, in protective packaging.
- Intended for use with EZ-IO® Power Driver.

EZ-IO® Power Driver and Needle Sets: Description



NEEDLE SET SELECTION

Select EZ-IO® Needle Set based on patient weight, anatomy and clinical judgment. The EZ-IO® Catheter is marked with a black line 5 mm proximal to the hub. Prior to drilling, with the EZ-IO® Needle Set inserted through the soft tissue and the needle tip touching bone, adequate needle length is determined by the ability to see the 5 mm black line above the skin.

- EZ-IO® 45 mm Needle Set (yellow hub) should be considered for proximal humerus insertion in patients 40 kg and greater and patients with excessive tissue over any insertion site
- EZ-IO® 25 mm Needle Set (blue hub) should be considered for patients 3 kg and greater
- EZ-IO® 15 mm Needle Set (pink hub) should be considered for patients approximately 3-39 kg

Intravenous Access: Peripheral IV

ALS procedure

Indications:

- Administration of IV fluids/medications

Contraindications

- None

Precautions

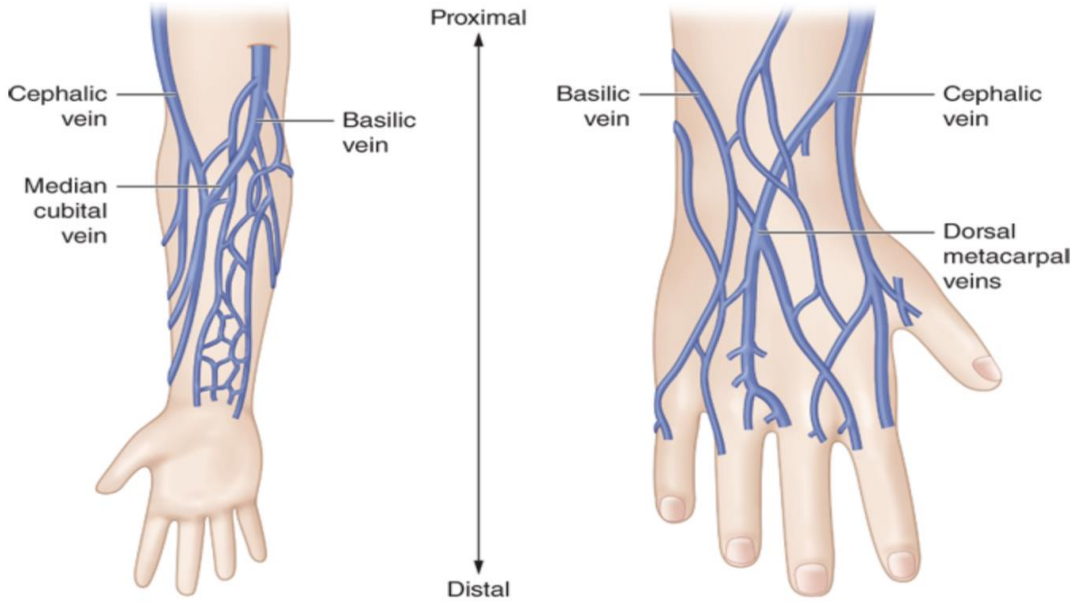
- Avoid unrecognized extravasation
- Proximal fracture

Equipment Needed

- **IV fluid**
- **Appropriately sized IV catheter**
- **Administration set**
- **Saline flush**
- **Alcohol or Iodine prep**
- **Gauze & tape**
- **Veniguard / dry sterile dressing**
- **Venous constricting band**

Procedure

1. **Explain the procedure to the patient**
2. **Apply constricting band proximally**
3. **Locate vein of choice (bouncy, straight, non-rolling)**
4. **Clean site with aseptic technique**
5. **Open IV catheter**
6. **Stabilize vein by holding pressure distally**
7. **Enter with bevel up**
8. **Observe for flash**
9. **Advance catheter**
10. **Remove constricting band**
11. **Apply pressure proximal to IV catheter to prevent bleeding**
12. **Retract needle and place in sharps container**
13. **Attach administration set to catheter**
14. **Release pressure**
15. **Flush, aspirate, flush**
16. **Assess for signs of infiltration/extravasation**
17. **Secure site with Veniguard or dry sterile dressing**


Cephalic vein
Basilic vein
Median cubital vein
Proximal
Distal
Basilic vein
Cephalic vein
Dorsal metacarpal veins

Automated External Defibrillator (AED)

BLS procedure

Indications:

- Cardiac Arrest

Contraindications

- Do not place AED on patients with a pulse

Precautions

- Remove patient from standing water and wipe water from surface of chest
- Do not place a defibrillation paddle or electrode directly over an implanted pacemaker/defibrillator
- Remove transdermal medication patches and wipe area clean
- Utilize pediatric pads when appropriate

Equipment Needed

- **Automated External Defibrillator (AED)**

Procedure

1. **Determine if patient is unresponsive and pulseless**
2. **Perform CPR until defibrillator is available**
3. **Turn on AED**
4. **Position patches on chest at sternum-apex**
5. **Follow voice prompts**
6. **Quickly clear the patient, shock patient if advised by AED and switch compressors**
7. **Perform CPR for 2 minutes**
8. **Continue to follow AED voice prompts**

Bag Valve Mask Ventilation

BLS procedure

Indications:

- Patient requiring positive pressure ventilation
- Patient in respiratory arrest
- Patient in severe respiratory distress

Contraindications

- None

Precautions

- Inflate only to chest rise.
- Ensure proper chest rise if pop off valve activates (peds only)

Equipment Needed

- **Bag-valve-mask with reservoir**
- **Oxygen tubing**
- **Oxygen bottle with regulator and flow meter**
- **Assorted masks.**

Procedure

Procedure should be performed with two providers when available

1. **Open the airway with jaw thrust or head tilt / chin lift**
2. **Insert an airway adjunct (oral or nasal airway)**
3. **Select proper bag: adult, child, infant**
4. **Select appropriate size mask**
5. **Connect reservoir and oxygen tubing**
6. **Create proper mask-to-face seal with the "EC" clamp technique**
7. **Ventilate adult patient once every 5-6 seconds and every 3-5 seconds for children/infants.**
8. **Adjust oxygen liter flow to ensure reservoir bag stays inflated**

CPAP: Flow-Safe

BLS procedure

Indications:

- Dyspnea
- Hypoxia
- Pulmonary Edema
- Cardiogenic Pulmonary Edema
- Acute Respiratory Distress Syndrome
- Bronchospasm

Contraindications

- Altered Mental Status
- Hypotension
- Respiratory Failure
- Pneumothorax
- Vomiting
- Upper airway obstruction

Equipment Needed

- **CPAP Mask and Circuit**
- **Oxygen Cylinder with regulator**
- **Cardiac Monitor**
- **Capnography**

Procedure

1. **Position patient in sitting or high Fowler's**
2. **Continuously monitor BP, ECG, EtCO2, and SpO2**
3. **Connect CPAP Circuit to O2 regulator**
4. **Turn on oxygen to desired output**
5. **Reassure and calm the patient**
6. **Hold the mask to the patient's face and assure seal**
7. **When the patient tolerates the mask, secure the head straps**
8. **Continuously monitor patient and repeat VS every 5 minutes**

CPAP/PEEP (cm H2O)	Flow (LPM)
5.0	8 - 9
7.5	10 - 12
10.0	13 - 14

Epinephrine Auto-Injector

BLS procedure

Indications:

- Anaphylaxis

Contraindications

- None

Precautions

- May result in tachycardia, pallor, diaphoresis, dizziness, chest pain, headache, nausea

Equipment Needed

- **Auto-Injector**

Procedure

1. **Obtain patient's auto-injector**
2. **Verify the six Rights and perform partner cross-check**
3. **Remove the safety cap**
4. **Place at patient's lateral thigh midway between knee and hip**
5. **Push injector firmly against the thigh and hold for 10 seconds**
6. **Reassess the patient**

Glucometer

BLS procedure

Indications:

- To obtain a blood glucose level

Contraindications

- None

Precautions

- Capillary or venous sample

Equipment Needed

- **Glucometer**
- **Test strips**
- **Alcohol prep**
- **Lancet or blood-letting device**
- **2x2 or 4x4**
- **Bandage**

Procedure

1. **Prepare test strip and glucometer**
2. **Cleanse site with alcohol prep**
3. **Pierce desired site with lancet**
4. **Wipe site with clean 2x2 or 4x4**
5. **Compress proximally to puncture site and work blood towards the site**
6. **Hold test strip to collect sample**
7. **Allow sample to be drawn into strip**
8. **Apply bandage**
9. **Dispose of lancet into sharps bin**

I-Gel Laryngeal Airway

BLS procedure

Indications:

- Patient requiring positive pressure ventilation
- Rescue airway for failed ETI attempt

Contraindications

- Intact gag reflex
- FBAO

Precautions

- The presence of emesis/fluids may indicate a need for a more secure airway

Equipment Needed

- **I-Gel**
- **Lubricant**
- **Proprietary strap**
- **Capnography**

Procedure

1. **Confirm the patient is being properly ventilated with high flow oxygen.**
2. **Select appropriate I-Gel.**
3. **Lubricate posterior portion of device and NOT the mask itself**
4. **Place head in neutral position or slightly extended (sniffing)**
5. **Insert device downward along hard palate. Stop when it is felt to "pop" into place or when resistance is felt.**
6. **Attach Capnography and ventilate via BVM/mechanical ventilator**
7. **Confirm placement with chest rise and fall, lung sounds and capnography**
8. **Assess for air leakage. If leakage occurs, reposition or remove the I-Gel if necessary**
9. **Secure tube with strap or tape**

15mm connector
Reliable connection to any standard catheter mount or connection

Proximal end of gastric channel

Color coded hook ring
To secure the i-gel O_2 in position with the airway support strap

Clearly displayed product information
For quick easy reference. Includes confirmation of size and weight guidance

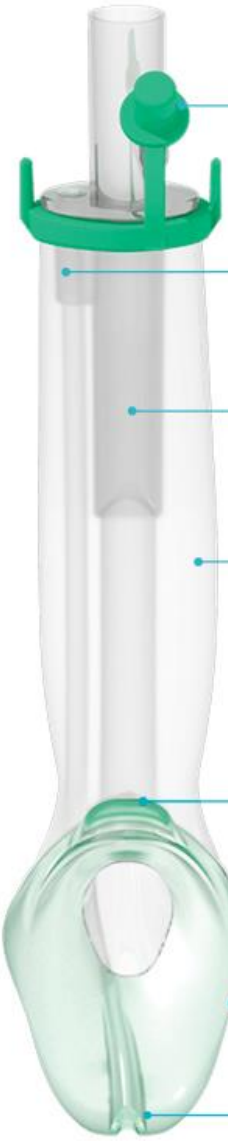
Position guide
(adult sizes only)

Supplementary oxygen port
For the administration of passive oxygenation as a component of cardiocerebral resuscitation (CCR)

Gastric channel
Enhances patient safety by providing a mechanism for the management of regurgitant fluid

Integral bite block
Reduces the possibility of airway channel occlusion

Buccal cavity stabilizer
Aids insertion and eliminates the potential for rotation



Epiglottic rest
Reduces the possibility of epiglottis 'down folding' and airway obstruction

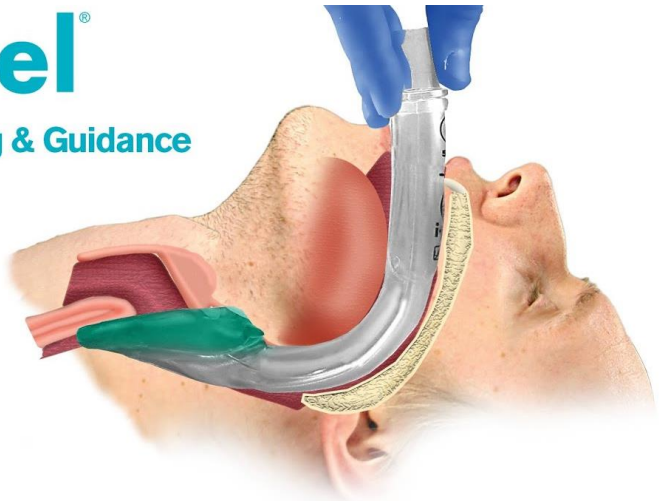
The non-inflating cuff
Eliminates the need for cuff inflation after insertion, allowing easy and rapid insertion

Distal end of gastric channel

The i-gel O_2 Resus Pack is available in 3 adult sizes and includes:

- i-gel O_2 supraglottic airway
- Sachet of lubricant – for quick and easy lubrication of the i-gel O_2 prior to insertion
- Airway support strap – to secure the i-gel O_2 in position

i-gel®
Training & Guidance



Inhaler Administration

BLS procedure

Indications:

- Bronchospasm with a prescribed inhaler

Contraindications

- Unable to follow commands

Precautions

- Maximum dose

Equipment Needed

- **Patient's prescribed metered-dose inhaler (with spacer if available)**

Procedure

1. **Shake canister and mouthpiece well**
2. **Hold the device upright and close to the patient's mouth**
3. **Advise patient to exhale, pushing as much air from lungs as possible**
4. **Place mouthpiece in patient's mouth and instruct patient to close his / her lips loosely around the mouthpiece with tongue underneath**
5. **Advise patient to inhale deeply, press down on canister quickly then release it**
6. **Instruct patient to hold his / her breath for 5 to 10 seconds before exhaling**
7. **Monitor patient for desired effects**

Intravenous Fluid Preparation

BLS procedure

Indications:

- Patient requires IV fluids.

Contraindications

- None

Precautions

- IV administration is an ALS skill
- Pulmonary edema should be considered (auscultate lung sounds)

Equipment Needed

- **IV fluids**
- **Administration set**

Procedure

1. **Examine IV solution for type, color, clarity, sedimentation, and expiration date.**
2. **Assure proper administration set and remove from wrapper**
3. **Clamp off administration set and hold distal end at level of IV fluids**
4. **Attach the administration set (spike the bag)**
5. **Squeeze the drip chamber until half full**
6. **Open the flow of the administration set to flush the line**
7. **Assure there is no air bubbles in the administration set**

Mucosal Atomization Device (MAD)

BLS procedure

Indications:

- To administer intranasal medication

Contraindications

- None

Precautions

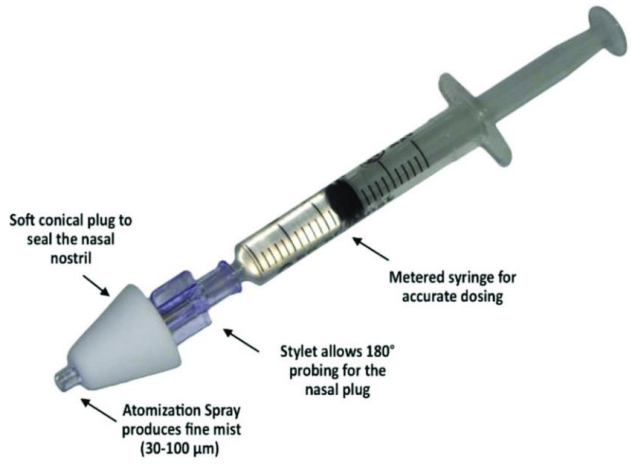
- Absorbtion may be incomplete or hindered

Equipment Needed

- **MAD device**
- **Appropriate syringe**
- **Needle/Blunt tip**
- **Medication**

Procedure

1. **Draw up the appropriate amount of medication**
    a. **(add an extra 0.1ml of medication to account for the dead space in the device)**
2. **Attach the MAD device**
3. **Confirm the 6 Rights and perform partner cross-check**
4. **Administer a half dose in each nostril (not to exceed 1mL per nostril)**



Nasal Cannula

BLS procedure

Indications:

- Spontaneously breathing patients without airway compromise
- Patient unable to tolerate mask
- Apneic oxygenation

Contraindications

- None

Precautions

- Epistaxis

Equipment Needed

- **Nasal Cannula**
- **Capnography Nasal Prongs**
- **Oxygen cylinder with regulator**

Procedure

1. **Explain procedure**
2. **Attach cannula to oxygen**
3. **Adjust flow to 2 to 6 lpm based on oxygenation of patient (do not exceed 5lpm if measuring EtCO2**
4. **Apply nasal cannula to patient**
5. **Adjust tightness**
6. ***If using capnography, plug device into monitor***

Nasopharyngeal Airway (NPA)

BLS procedure

Indications:

- Patient with gag reflex
- Any patient requiring airway assistance

Contraindications

- Basilar skull fracture

Precautions

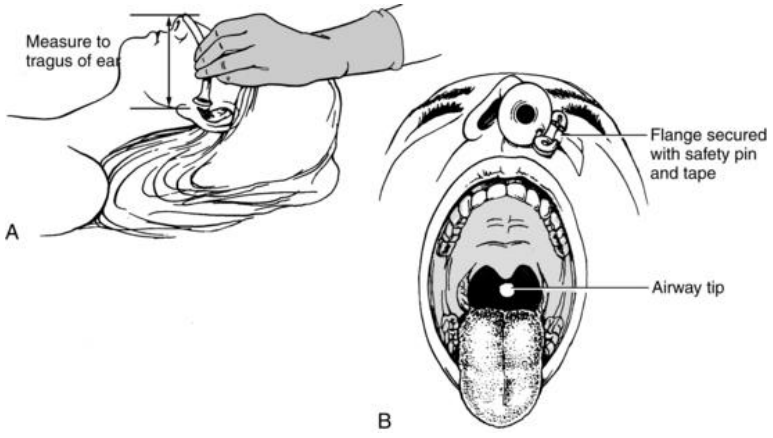
- Epistaxis
- Facial fracture

Equipment Needed

- **Properly sized NPA**
- **Water soluble lubricant**

Procedure

1. **Explain procedure to patient if necessary**
2. **Select appropriate airway by measuring from the tip of the nose to the ear lobe**
3. **Lubricate airway with a water soluble lubricant**
4. **Lift the tip of the nose and insert the airway into the larger or more open nostril with the bevel facing towards the septum**
5. **If you meet resistance, gently rotate from side to side as you insert. If resistance continues remove and try the other nostril**
6. **Airway should rest against the flare of the nostril**



Nebulizer Therapy

BLS procedure

Indications:

- Bronchospasm

Contraindications

- None

Precautions

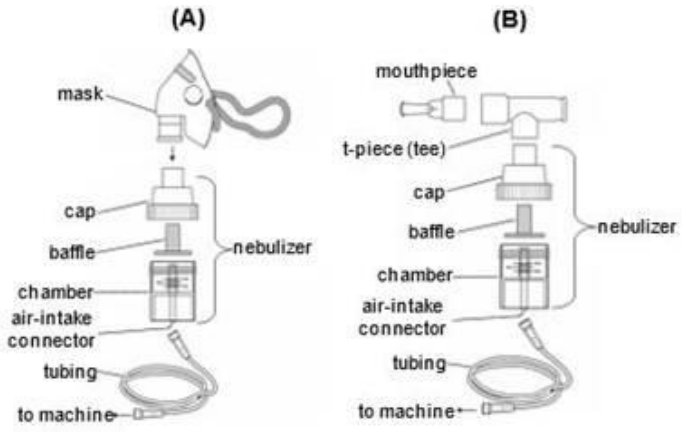
- If unable to ventilate, medication may not be absorbed/effective

Equipment Needed

- **Proper medication**
- **Nebulizer device/kit**
- **Oxygen source**

Procedure

1. **Assemble nebulizer per manufacturer's instructions**
2. **Place medication in bowl of nebulizer**
3. **Attach to oxygen with tubing and place at 4-6 LPM**
4. **Have patient begin treatment when mist is visible**
5. **Repeat treatment as necessary per guideline**



Picture 2 The nebulizer is used with either a mask (A) or a mouthpiece (B).

Neo-Tee® Resuscitator

BLS procedure

Indications:

- Infant/Neonate patient under 10 kg (22lb) requiring positive pressure ventilation
- Infant/Neonate patient under 10 kg (22lb) in respiratory arrest
- Infant/Neonate patient under 10 kg (22lb) in severe respiratory distress

Contraindications

- None

Precautions

- Assure good seal and proper mask size
- Do not exceed 15 lpm of O2 flow
- Uncover PEEP knob hole as soon as breath is delivered
- Remove red protective cap from the T-piece circuit prior to connecting the T-Piece

Equipment Needed

- **Neo-Tee T-Piece Resuscitator**
- **Oxygen tubing**
- **Oxygen bottle with regulator**
- **Assorted masks.**

Procedure

Pre-Use Check

1. **Connect oxygen tubing to oxygen blender.**
2. **Adjust the flow on the flowmeter between 5 and 15 LPM.**
3. **Connect an infant/neonatal test lung to the patient port or use Red protective cap for testing pressures if test lung is not available.**
4. **Check the inspiratory pressure by occluding the PEEP knob hole with thumb (or index finger). Use the adjustable PIP knob on the controller to set the PIP as indicated by the manometer.**
5. **Release thumb (or index finger) from PEEP knob hole and adjust variable PEEP knob to desired value as indicated on the manometer.**

Directions for Use

1. **Connect patient circuit to mask and place over patient's mouth and/or nose or connect patient circuit to masked laryngeal airway or endotracheal tube.**
2. **Resuscitate by placing and removing thumb or index finger over the PEEP knob hole to allow inspiration and expiration at the desired breath rate.**
3. **Adjust the input flow rate on the device to increase or decrease the depth of each breath to provide adequate chest excursion of the patient.**
4. **Adjust oxygen blender to provide desired delivered oxygen concentration.**

Neo-Tee T-Piece Resuscitator

Remember: "10/12/20/5 Rule"

1) "10": set the oxygen flowmeter at 10LPM and attached the Neo-Tee oxygen tubing
2) "12": set the PIP controller to the 12 o'clock position
    - "20": PIP controller set at 12 o'clock yields 20cmH_20 Peak Inspiratory Pressure
3) "5": set the PEEP at 5cmH_20
4) Confirm settings – 20/5
5) Ventilate

Oropharyngeal Airway (OPA)

BLS procedure

Indications:

- Patient without gag reflex
- Any unresponsive patient requiring airway assistance

Contraindications

- Intact gag reflex
- Responsive patient

Precautions

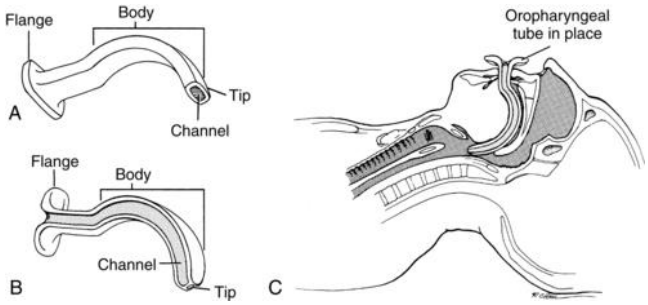
- None

Equipment Needed

- **Properly sized OPA**
- **Suction**

Procedure

1. **Select appropriate size airway by measuring from the center of the mouth to the angle of the jaw or corner of the mouth to the ear lobe**
2. **Insert airway using the cross finger technique upside down with the tip pointing to the corner of the mouth**
3. **While inserting, gently rotate 90 degrees while continuing to advance the airway until the flat flange at the top of the airway rests on the patients front teeth**
4. **Alternate technique: utilize a tongue depressor to displace the tongue and follow the natural curvature of the airway**
5. **In pediatrics place directly in following the natural curvature of the airway**



SAM Chest Seal

BLS procedure

Indications:

- Penetrating Back/Chest Wound
- Sucking Chest Wound

Contraindications

- None

Precautions

- None

Equipment Needed

- **Something to clean the area**
- **Sam Chest Seal**

Procedure

1. **Clean area with absorbent pad.**
2. **Grip tab and remove clear liner.**
3. **Place dressing, adhesive side down, centered over wound.**
4. **Press dressing firmly to ensure adhesion**

SAM Pelvic Sling

BLS procedure

Indications:

- Suspected pelvic fracture
- Open book pelvic fracture

Contraindications

- Hip fracture (isolated trochanter fracture)

Precautions

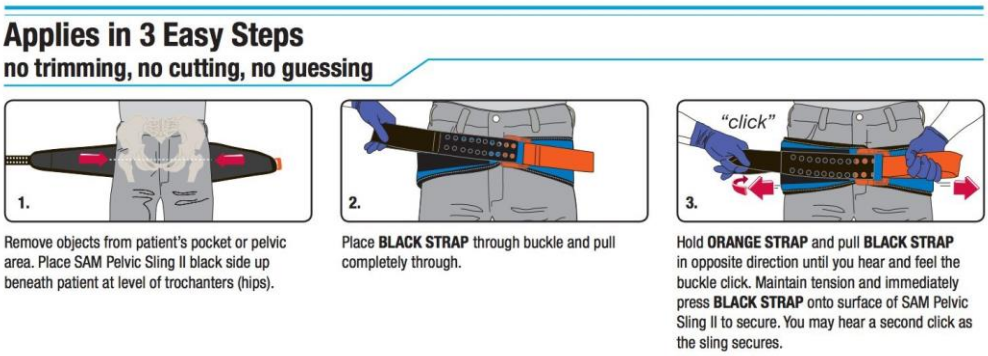
- Proper placement is imperative

Equipment Needed

- **SAM Pelvic Sling**

Procedure

1. **Unfold sling with black surface up**
2. **Place black side of sling beneath patient at the level of the buttocks (greater trochanters / symphysis pubis)**
3. **Firmly close the sling by placing black Velcro side of flap down on black Velcro strip. Fold back material as needed. Try to place buckle close to midline**
4. **Grab orange free handle on outer surface of flap and release from flap by pulling upward**
5. **With or without assistance, firmly pull both handles in opposite directions to tighten sling**
6. **Keep pulling free handle until you feel or hear the buckle click**
7. **As soon as the buckle clicks, maintain tension and firmly press orange handle onto the black Velcro strip**



Slishman Traction Splint

BLS procedure

Indications:

- Simple midshaft femur fracture

Contraindications

- Open/complex fracture

Precautions

- None

Equipment Needed

- **Slishman Traction Splint**

Procedure

1. **Attach ankle strap to effected extremity**
2. **Attach groin strap on same side**
3. **Apply coarse traction by extending pole and inserting distal end into ankle strap**
4. **Apply fine traction by releasing the thumb screw on red pole and pulling the cord to desired traction.**
5. **Tighten thumb screw on red pole clamp and release cord**
6. **Reassess and monitor**

HOW TO APPLY

Prior to application assess CMS (circulation, motor and sensory) function and pain level per local protocol.

1. Attach Ankle Strap

- Remove ankle strap and end cap from pole
- Unroll ankle strap and apply with end cap lateral and facing up to receive splint pole
- Secure with Velcro wrap

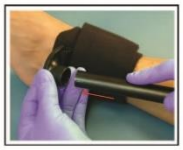
NOTE: May apply ankle strap above calf in cases of lower leg injury

2. Attach Groin Strap

- Rest female buckle on anterior thigh
- Wrap male buckle and strap behind thigh
- Snap male to female buckle and tighten

3. Apply Coarse Traction

- Extend distal pole after releasing thumb screw on black pole clamp
- Insert distal pole into ankle strap end cap
- After achieving desired length, tighten thumb screw



4. Apply Fine Traction

- Release thumb screw on red pole clamp
- Pull cord to apply desired traction
- Tighten thumb screw on red pole clamp and release cord

5. Reassess and Monitor

- Reassess CMS and pain level
- Adjust traction as needed to minimize pain, while maintaining perfusion
- For rotational stability attach mid leg strap to splint and wrap (one or both legs) below knee

PEDIATRIC APPLICATION

For patients under 110 cm (approx. 43 inches) in height and/or 3 years or less in age, lengthen the groin strap allowing the splint to rest more proximal to the hip.

Click on **QR code** to see instructional video OR visit **YouTube.com** and search **"Slishman Traction Splint"**

Rev. 1.1 9/13

Splinting

BLS procedure

Indications:

- Suspected bone/joint injury

Contraindications

- None

Precautions

- Only attempt reduction for neurovascular compromise (absent distal pulse)

Equipment Needed

- **SAM Splint**
- **Kling**
- **Triangular Bandage/Sling (for arm or shoulder)**
- **Vacuum Splint (for long bone)**
- **Pillow (for ankle)**

Procedure

1. **Check pulses, sensation, and motor function before splinting**
2. **Splint joints and bone ends above and below**
3. **Immobilize open and closed fractures in the same manner**
4. **Cover open fractures to minimize contamination**
5. **Check pulses, sensation, and motor function after splinting**
6. **Stabilize the extremity in the position of comfort**
7. **Apply cold to reduce swelling and pain**

Suctioning

BLS procedure

Indications:

- Removal of small obstructions from the airway (blood, emesis, secretions, food particles, etc)

Contraindications

- None

Precautions

- Ensure oxygenation and adequate ventilation

Equipment Needed

- **Suction device**
- **Suction catheter**

Procedure

1. **Ensure pre and post oxygenation**
2. **Turn on and prepare suction device**
3. **Assure presence of mechanical suction**
4. **Select proper suction catheter**
5. **Limit suction times: adult 10 seconds | infants and children 5 seconds**

Tourniquet

BLS procedure

Indications:

- Severe arterial hemorrhage (spurting blood)

Contraindications

- Neck wound

Precautions

- Junctional injuries may be better managed with wound packing

Equipment Needed

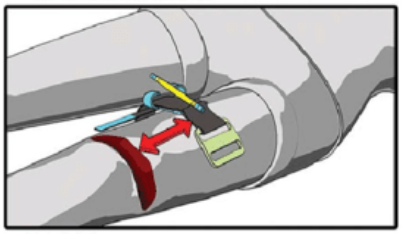
- **Tourniquet**

Procedure

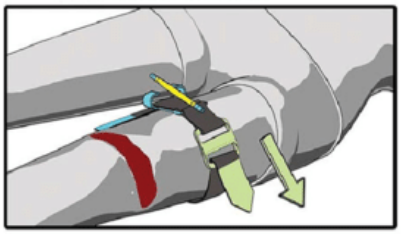
1. **Remove any clothing on or near the extremity to avoid concealment of injury, tourniquet or to interfere with tourniquet placement and tightness**
2. **Place tourniquet proximal to wound**
3. **Tighten per manufacturer instructions until hemorrhage stops and distal pulse is eliminated**
4. **Secure tourniquet per manufacturers instruction**
5. **Note time of tourniquet application and communicate this to receiving care providers**
6. **Dress wound if possible**
7. **An additional tourniquet can be placed next to the initial tourniquet if bleeding control is inadequate following initial placement**

Tourniquet Application Instructions

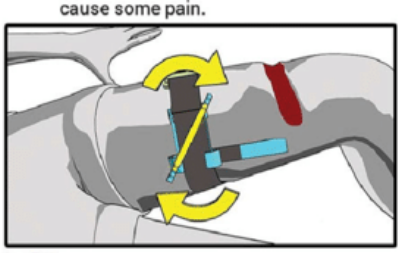
Place the tourniquet 2-3 inches above the wound. It should be between the torso and the wound.



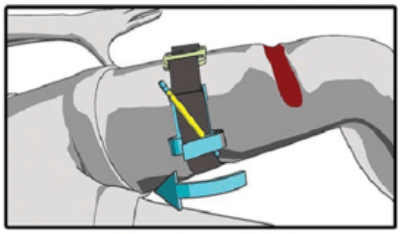
1. Pull the free end of the Velcro strap. Thread it through the buckle. Securely fasten it back onto itself.



2. Twist the rod. Keep twisting until bleeding stops. It is normal for this to cause some pain.



3. Clip and secure the rod with the small Velcro strap so that it does not untwist.If bleeding hasn't stopped, apply a second tourniquet above the previous one, closer to the torso.



STOP THE BLEED®
APPLY PRESSURE

Wound Packing

BLS procedure

Indications:

- Severe hemorrhage

Contraindications

- None

Precautions

- Central wound packing may be inappropriate

Equipment Needed

- **Hemostatic Z-fold gauze**

Procedure

1. **Take appropriate PPE precautions**
2. **Expose the simulated injury by opening or cutting away clothing**
3. **If possible, remove excess blood from the wound while preserving any clots in the wound that may have formed.**
4. **Remove the hemostatic gauze from package.**
    a. **Multiple gauze rolls may be required to control the hemorrhage.**
5. **Locate source of bleeding, hold direct pressure with glove hand.**
6. **Pack gauze into wound without releasing pressure over bleeding,**
7. **Apply Direct Pressure for three minutes.**
8. **Reassess the wound to ensure bleeding has stopped.**
9. **Apply a pressure dressing over the bandage to secure it in place.**
10. **Thermopreservation and immediate transport.**