

AIRWAY - AIRWAY MANAGEMENT

05/04/2021

The goal of good airway management is good gas exchange.

ASSESSMENT

Each patient presents unique problems that cannot be fully outlined in any algorithm. As such, the provider must rely on thorough assessment techniques and consider each of the following:

1. **Airway Patency:** Assess for airway obstruction or risk of impending obstruction due to facial injuries, mass, foreign body, swelling, etc. Assess for presence/absence of gag reflex.
2. **Ventilatory Status:** Assess for adequate respiratory effort and impending fatigue/failure/apnea. Assess for accessory muscle use, tripod positioning, and the ability of the patient to speak in full sentences. If available, assess quantitative waveform capnography.
3. **Oxygenation:** Any oxygen saturation <90% represents relatively severe hypoxia and should be considered an important warning sign. In addition to oxygen saturation, assess for cyanosis.
4. **Airway Anatomy:** Before attempting airway maneuvers or endotracheal intubation, especially with the use of RSI, assess patient anatomy to predict the probability of success and the need for backup device or technique.
 - First, assess for difficulty of mask seal. Patients with facial hair, facial fractures, obesity, extremes of age, and pathologically stiff lungs (COPD, acute respiratory distress syndrome, etc.) may require special mask techniques or alternatives.
 - Next assess for difficulty of intubation using the LEMON mnemonic.
 - L - Look for facial/airway features that will affect management (e.g. facial hair, deformities, etc.)
 - E - Evaluate the 3-3-2 rule. The patient should be able to open their mouth three fingerbreadths. The distance between the chin and the hyoid bone should be three fingerbreadths and the distance between the hyoid bone and the larynx should be 2 fingerbreadths.
 - M - Mallampati score assesses visualization by asking the patient to open their mouth (See diagram) A Score of 3 or 4 indicates the likely difficult airway.
 - O - Obstruction, including stridor or foreign bodies
 - N - Neck Mobility – The less the mobility, the greater the difficulty.

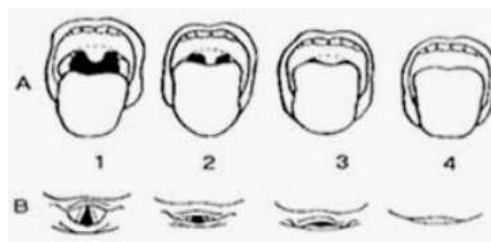


Figure A.

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DEVISE A PLAN

1. Each patient will present unique challenges to airway management. Therefore, before any intervention is attempted, the provider should contemplate a plan of action that addresses the needs of the patient, and anticipates complications and management plan.
2. Airway management is a continuum of interventions, not an “all or none” treatment. Frequently patients may only need airway positioning or a nasal or oral airway to achieve adequate ventilation and oxygenation. Others will require more invasive procedures. The provider should choose the least invasive method that can be employed to achieve adequate ventilation and oxygenation.
3. Continually reassess the efficacy of the plan and change the plan of action as the patient’s needs dictate.
4. In children basic airway maneuvers and basic adjuncts followed by bag-valve-mask ventilation are usually effective.

BASIC LIFE SUPPORT AIRWAY SKILLS

Mastery of basic airway skills is paramount to the successful management of a patient with respiratory compromise. Ensure a patent airway with the use of:

- Chin-lift/jaw-thrust.
- Nasal airway. (Can be used in combination with oral airways, use with caution if suspected facial fractures)
- Oral airway. (Can be used in combination with nasal airways)
- Blow By Oxygen → Nasal Cannula → Non-rebreather Mask (NRB)
- Suction.
- Removal of foreign body.

ADVANCED LIFE SUPPORT AIRWAY SKILLS

Only after basic procedures are deemed inappropriate or have proven to be inadequate should more advanced methods be used. Use the least invasive method to accomplish adequate oxygenation and ventilation: Continuous Positive Airway Pressure (CPAP) → Bag-Valve-Mask (BVM) → Supraglottic Airway (SGA) → Endotracheal Intubation (ETT) → Cricothyrotomy (Cric). Procedures documenting the use of each device/ technique listed below are found elsewhere in these protocols.

- **CPAP:** Continuous positive airway pressure (CPAP) has been shown to be effective in patients with COPD, CHF, Pulmonary edema, Pneumonia, Drowning, eliminating the need for intubation and in decreasing mortality in properly-selected patients with acute respiratory distress.
- **Bag Valve Mask transitioning to Supraglottic Airways (SGA):** Utilization of a SGA is recommended in patients with Apnea/respiratory failure, impaired or absent gag reflex. Use of a SGA is an acceptable airway as both a primary device and a back-up device when previous attempt(s) at ETT placement have failed. Each device has its own advantages/disadvantages and requires a

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unique insertion technique. Providers should have access to, and intimate knowledge of, at least one SGA. (Examples include the King, Igel, LMA, Etc.)

- **Endotracheal Tube (ETT) (Paramedic):** Utilization of ETT is recommended in patients with Apnea/respiratory failure, impaired or absent gag reflex. The optimal method for managing an airway will vary based on provider experience and the patient's condition. Some patients may be better suited for a SGA placement. Use of video laryngoscopy should be used if available.
- **Bougie (Paramedic):** All providers who attempt ETT placement should be familiar with the use of a Bougie for helping guide placement of an ETT.
- **Cricothyrotomy (Paramedic):** This procedure is indicated only when all other measures fail or you are presented with a situation in which intubation is contraindicated or in which you cannot intubate or otherwise ventilate the patient. (Examples include massive facial trauma and upper airway obstruction due to edema, mass or foreign body.)

DOCUMENTATION

All efforts toward airway management should be clearly documented and, at the minimum, should include the following:

Pre/post intervention vital signs including:

- Oxygen saturation
- Capnography

Procedures performed/attempted, including:

- Number of failed attempts
- Who performed each attempt/procedure?

Device(s) placed,

- Size
- Depth of placement (if applicable).

Placement confirmation methods should include:

- Auscultation,
- Condensation in the ETT,
- Symmetrical chest wall rise,
- Quantitative waveform capnography, if available.

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Follow Assessment, General Procedures Protocol	
EMR	Follow ASSESSMENT, GENERAL PROTOCOL. <ol style="list-style-type: none"> 1. Establish airway patency. <ul style="list-style-type: none"> • Open the airway. • Suctioning as needed. • Clear foreign body obstructions. 2. If breathing is adequate, administer oxygen as needed to maintain O₂ saturation of 94% to 99% using Blow By → NC → NRB - SEE OXYGEN ADMINISTRATION. 3. Consider inserting an oropharyngeal or nasopharyngeal airway adjunct. 4. Assist ventilations at a normal tidal volume at a rate of 12-14 breaths/minute (adult) with a bag-valve-mask using a PEEP device and supplemental oxygen. Do not hyperventilate. SEE OXYGEN ADMINISTRATION. 5. Manage ETCO₂ - See AIRWAY-Capnography/ ETCO₂. 6. Monitor vitals 7. Consider spinal precautions if there is evidence of trauma.
EMT	<ul style="list-style-type: none"> • Check blood glucose • Obtain 12 lead ECG; if time permitted. – See CARDIAC - ECG/12-Lead • Use least invasive method for respiratory failure: NRB → CPAP → BVM → SGA
A-EMT	<ul style="list-style-type: none"> • IV – NS with standard tubing or saline lock (using a catheter ≥ 20g. inserted proximal to wrist); Do Not Delay Transport • Titrate fluids to vitals
EMT-I	Monitor cardiac rhythm - See CARDIAC - ECG/12-Lead
PARAMEDIC	Use least invasive method for respiratory failure: NRB → CPAP → BVM → SGA → ETT → Cric. <p>For apnea/respiratory failure or impending respiratory failure with impaired or absent gag reflex: consider SGA device or ETT placement. SEE SUPRAGLOTTIC AIRWAY PROCEDURE OR INTUBATION PROCEDURE</p> <p>For adults with immediate, severe airway compromise where respiratory arrest is imminent and other methods of airway management are ineffective: consider Rapid Sequence Intubation - See AIRWAY- RSI Procedure.</p>

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Consider placing an OGT to decompress the stomach.

If you cannot establish an airway or ventilate:

- Consider [Surgical Cricothyrotomy](#).
- Patients are subject to respiratory depression and vomiting.
- Consider intubation – **See AIRWAY- RSI**
- Signs of increased intracranial pressure may be mitigated some by increasing ventilation rate. – **See AIRWAY – Capnography/ ETCO₂**

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AIRWAY - AUTOMATIC TRANSPORT VENTILATORS**02/02/2021****[EMT, A-EMT, EMT-I, PARAMEDIC]**

The ATV provides an automatic specific tidal volume, respiratory rate, and minute ventilation to a patient.

INDICATIONS

1. Use of the Automatic Transport Ventilator (ATV) is appropriate for patients weighing over 20 kg requiring short-term ventilatory support while being monitored by an EMT trained in its use.
2. The Automatic Transport Ventilator (ATV) may be used as a method of ventilating the patient once airway control has been established by other means (intubation, BVM, or Supraglottic Airway)

CONTRA-INDICATIONS

1. Patient weight of <20Kg.
2. Pneumothorax/Tension pneumothorax.

PROCEDURE

1. Determine the need for ATV and assure a clear airway using approved methods.
2. Insure all tubing is free from kinks, and all components are properly attached.
3. Set tidal volume (8-10 ml/kg). Begin with the Tidal Volume (TV) setting at the lower limit appropriate to the patient.
4. Set the inspiratory time control knob to the desired adult or child position. Rotate the control knob to either position until it is against the end stop.
5. Set the Breaths Per Minute (BPM) control to the desired rate of 12 for an adult and 20 for a child.
6. Occlude the outlet port of the patient valve assembly (or non-rebreathing valve). The audible pressure limit alarm should sound as the ventilator cycles through the delivery phase indicating proper operation.
7. Connect patient valve assembly to the resuscitation mask, endotracheal tube, tracheostomy tube or SGA. *NOTE: follow approved methods for opening and maintaining a patent airway.
8. When assisting the unintubated patient, the rescuer may use both hands on the face mask to maintain a seal and proper airway position. Cricoid pressure may be applied with one hand as the other maintains a mask seal.
9. Check the following parameters immediately after connecting the device to the patient:
 - BPM - verify the number of breaths delivered to the patient for one full minute as indicated on the BPM knob. Adjust accordingly to achieve the desired rate.

AIRWAY - AUTOMATIC TRANSPORT VENTILATORS

02/02/2021

[EMT, A-EMT, EMT-I, PARAMEDIC]

	<p>Verify after each adjustment.</p> <ul style="list-style-type: none"> • Tidal Volume (TV) - Observe patient's chest rise and fall. Expansion should appear normal and equal on both sides. Observation of adequate chest rise and fall is the desired goal. Do not rely solely on ATV setting. Verify TV occasionally. • Inspiratory Time (IT) - Verify the IT setting is set to the appropriate position and against the end stop. <p>10. If ventilating by mask, check oral cavity frequently for emesis. If vomiting occurs, clear airway by approved manner.</p>
<p>PRECAUTIONS</p>	<ol style="list-style-type: none"> 1. Automatic Transport Ventilators (ATVs) augment staffing by allowing personnel to perform tasks other than ventilation. The patient must always be attended while an auto-vent is in use. 2. If the pressure limit alarm sounds during the inspiratory phase and adequate chest movement does not occur, an increase in airway resistance, a blocked airway and/or stiff lung is probable. <u>Discontinue the use of the device and attempt to ventilate via other means.</u> 3. Monitor the compressed gas cylinder frequently. The cylinder should be changed at or near 200 psi. The ATV may not operate properly at cylinder pressures of less than 200 psi. 4. Biomedical service checks and maintenance of the ATV should be performed on a schedule to be developed by each agency using the ATV.

AIRWAY - CAPNOGRAPHY/ETCO₂**02/02/2021****[EMT, A-EMT, EMT-I, PARAMEDIC]**

INDICATIONS	<p>Capnography/End Tidal Carbon Dioxide (ETCO₂) is used to measure effectiveness of ventilation by measuring the amount of carbon dioxide in exhaled air. It may be helpful for the following:</p> <ol style="list-style-type: none"> 1. Monitoring severity of pulmonary disease and evaluating response to therapy 2. Determining tracheal vs. esophageal intubation. 3. Predicting outcomes in cardiac arrest patients. A sudden rise in ETCO₂ can indicate an increase in metabolic activity/ROSC. Conversely, after working a cardiac arrest using ALS guidelines ≥ 20 minutes and having an ETCO₂ of ≤ 10 the likelihood of ROSC is poor and is used as a benchmark for stopping resuscitation efforts. 4. Guiding ventilation in patients with acidosis or increased intracranial pressure.
PROCEDURE	<ol style="list-style-type: none"> 1. Apply ETCO₂ device. 2. If patient is being mechanically ventilated, attempt to maintain ETCO₂ output between 35-45 mm Hg. If patient is suspected to be acidotic and/or compensating with hyperventilation prior to RSI target ETCO₂ to 15-20 range. This may require ventilatory rate in the range of 20-30 /min. This does not apply to patients suspected of head injury. In patients suspected of increased ICP (head injury/stroke) ventilate at rate to maintain ETCO₂ value of 35-40. 3. In patients with signs of herniation, ventilate at a rate to maintain an ETCO₂ value of 30-35. 4. Document ETCO₂ values
KEY POINTS	<ol style="list-style-type: none"> 1. A sudden drop in ETCO₂ with wave form changes may indicate any of the following events: <ol style="list-style-type: none"> a. A change in the minute volume (increased respiratory rate & increase in tidal volume.) b. Decrease in metabolic rate c. Decrease in cardiac output. d. Possible pulmonary embolus. e. ET tube misplaced 2. DO NOT rely on ETCO₂ monitoring solely to determine the efficacy of intubation.

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AIRWAY - CPAP**06/07/2022****[EMT, A-EMT, EMT-I, PARAMEDIC]**

INDICATIONS	<ol style="list-style-type: none"> 1. CHF 2. COPD 3. Respiratory Distress 4. Bariatric patients with respiratory distress or hypoxia (SpO₂<92%) when placed in a supine position or LBB.
INCLUSION CRITERIA	<p>Respiratory distress with any of the following:</p> <ol style="list-style-type: none"> 1. Retractions or accessory muscle use 2. Pulmonary edema 3. Hypoxia despite supplemental oxygen (SpO₂ <92%) 4. Respiratory fatigue 5. Respiratory rate>25 6. Asthma with signs of impending respiratory failure
EXCLUSION CRITERIA	<ol style="list-style-type: none"> 1. Resp/Cardiac Arrest 2. BP < 90 Systolic 3. Unresponsive to speech 4. Inability to maintain patent airway 5. Major Trauma/Pneumothorax 6. Vomiting or active GI bleeding 7. Not indicated for pediatric patients. 8. Drowning
PROCEDURE	<ol style="list-style-type: none"> 1. Monitor vital signs every ten minutes, <ul style="list-style-type: none"> • 1st set with SpO₂ at room air or home oxygen 2. Oxygen therapy, NRB Mask 3. Administer CPAP using max. FiO₂ <ul style="list-style-type: none"> • Asthma or COPD 5cm H₂O • CHF 10cm H₂O 4. If patient is stable/improving, continue CPAP, reassess and consider decreasing FiO₂ to maintain SpO₂ ≥ 94% 5. If the patient is Agitated/Claustrophobic with mask placement. Consider Interventional Analgesia - See Pain Management Protocol - Paramedic Only 6. If patient is deteriorating, consider intubation– See RSI Protocol-Paramedic Only

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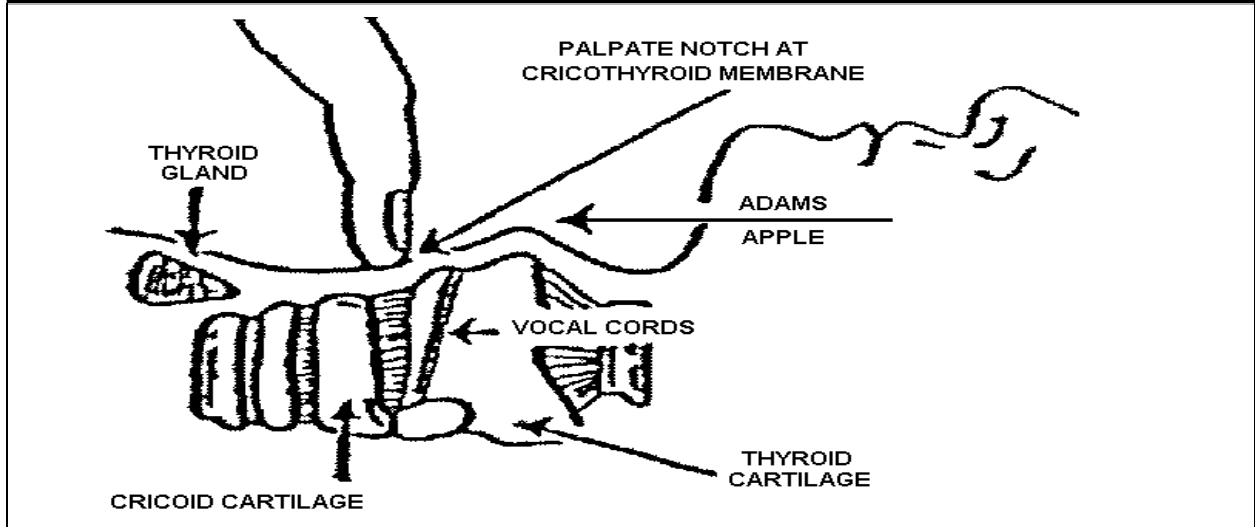
AIRWAY - CRICOTHYROTOMY**02/02/2021****[PARAMEDIC]**

INDICATIONS	<p>Used when other attempts to establish an airway have been unsuccessful and definite airway compromise exist such as:</p> <ul style="list-style-type: none"> • Foreign body obstruction • Facial or laryngotracheal trauma • Inhalation, thermal, or caustic injury of the upper airway • Oropharyngeal/tongue swelling with airway compromise (angioedema) • Upper airway hemorrhage • Epiglottitis or croup <p>**CRICOTHYROTOMY BY ANY MEANS IS NOT RECOMMENDED FOR ANY PATIENT < 10 kg (22 lbs)</p>
PROCEDURE: SURGICAL CRICOTHYROTOMY (Patients ≥ 8 years)	<ol style="list-style-type: none"> 1. Assemble equipment: Antiseptic, #15 Scalpel, Trach Hook, #6 cuffed ETT with stylet, 4 x 4 sponges, umbilical tape. 2. Cleanse the site. 3. Stabilize the trachea with non-dominant hand and locate cricothyroid membrane. 4. Make a generous vertical incision through the skin to expose/locate the trachea and cricothyroid membrane. 5. Make a horizontal/stab incision into the cricothyroid membrane. 6. Insert tracheal hook and provide inferior traction to open incision and stabilize trachea. 7. Insert #6 cuffed ETT with a stylet or bougie and inflate cuff. 8. Confirm placement. 9. Secure tube.
PROCEDURE: NEEDLE CRICOTHYROTOMY (Patients < 8 years)	<ol style="list-style-type: none"> 1. Assemble equipment. Antiseptic, 14g or 16g Angiocath, 5ml Syringe, 3.0 mm ETT adapter, oxygen, BVM. 2. Expose the neck. 3. Identify cricothyroid membrane. 4. Prep area. 5. Stabilize trachea by holding the thyroid cartilage between the thumb and fingers. 6. Attach syringe to needle. Insert at 45 degree angle caudally into trachea. 7. Aspirate with syringe. 8. Advance the catheter over the needle until hub is resting on skin then remove needle. 9. Attach 3.0 mm ETT adapter and ventilate with BVM. 10. Confirm placement 11. Secure device.

AIRWAY - CRICOTHYROTOMY

02/02/2021

[PARAMEDIC]



AIRWAY - GASTRIC DECOMPRESSION**02/02/2021****[EMT-I, PARAMEDIC]**

Gastric decompression relieves gastric distention.

INDICATIONS

1. To alleviate gastric distention with either an ET tube or Supraglottic Airway (SGA).
2. Persistently hypotensive patients with obvious gastric distention secondary to BVM ventilation (time permitting).

CONTRA-INDICATIONS

- Patients with:
- known esophageal varices
 - caustic ingestion
 - obvious skull fracture
 - severe head/facial injuries
 - suspected skull fracture

PROCEDURE

1. Assemble equipment:
 - Proper size gastric tubes (12 or 18 Fr), lubricant, 30 or 60 cc syringe, tape and suction unit.
2. Measure tube length from mouth to earlobe, then down to tip of xiphoid process.
3. Lubricate end of tube.
4. Slightly flex head if not in spinal precautions.
5. In intubated patient:
 - Have partner manually stabilize ET tube
 - Gently insert laryngoscope to move tongue out of the way.
 - Insert gastric tube gently and advance toward stomach to premeasured depth.
6. In patient with SGA:
 - Have partner manually stabilize SGA,
 - Gently advance the gastric tube through the accessory port adjacent to the ventilation port.
7. Confirm placement by:
 - Aspirating gastric contents and by auscultation over the epigastrium while injecting 20-30 cc of air into the tube.
8. Secure the tube.
9. Mark and document tube size and depth.

PRECAUTIONS

1. Never forcefully advance gastric tubes. They should advance easily and with minimal resistance.
2. Monitor oxygen saturation carefully to ensure gastric tube was not passed into the trachea.

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AIRWAY - INTUBATION**11/03/2020****[PARAMEDIC]**

INDICATIONS	<p>Endotracheal Intubation is indicated in the following:</p> <ol style="list-style-type: none"> 1. Inadequate oxygenation (persistent O₂ sat < 85% despite maximal assistance with adjuncts/CPAP) 2. Inadequate ventilation (respiratory rate <8 or ETCO₂ >50) despite maximal assistance with adjuncts/CPAP 3. Patient expected to deteriorate, i.e. airway burns, etc. 4. Inability to maintain adequate airway, GCS <9, clenched jaw with airway obstruction, copious blood/emesis with evidence of aspiration despite suctioning/positioning efforts, etc.
CONTRA-INDICATION	<ol style="list-style-type: none"> 1. Airway can be adequately maintained by alternative means. 2. Any situation in which the paramedic feels that a Supraglottic Airway would be a safer alternative for the patient, i.e., unstable c-spine injury
PROCEDURE	<ol style="list-style-type: none"> 1. Assess for difficult intubation and have a fallback plan, i.e., Supraglottic airway 2. Utilize video laryngoscope if available 3. Open airway and place oral/nasal airway 4. Pre-oxygenate with passive ventilation. See Oxygen Administration Protocol. 5. Suction if necessary – See AIRWAY- Suctioning Protocol 6. Consider RSI - See AIRWAY- RSI Protocol 7. Assemble equipment including: suction, draw and label RSI medications, lubed ET tube and the next size smaller, 10cc syringe, supraglottic airway, verify ETT cuff functions properly, laryngoscope handle and blade, verify laryngoscope light functions properly, bougie, monitor, pulse ox, and ETCO₂ 8. Place NC with O₂ at 25LPM or max and maintain throughout ETT attempt 9. Intubate with a bougie, then pass ETT over the bougie with controlled but timely technique 10. Pass ETT until black line, proximal to ETT cuff, passes the glottic opening being mindful of depth 11. If first attempt fails, re-oxygenate, consider back up airway if further attempts are likely to fail. Make a change to intubation plan for subsequent intubation attempt.

AIRWAY - INTUBATION

11/03/2020

[PARAMEDIC]

	<ol style="list-style-type: none"> 12. Discontinue ETT attempt if SpO₂ falls below 90% unless oxygenation/ventilation cannot be maintained with an alternative method 13. Verify placement with ETCO₂ device, equal chest rise, and auscultation of epigastrium and equal bilateral lung field. 14. Secure tube, minimize cervical motion to prevent tube displacement 15. Document the following: <ol style="list-style-type: none"> a. Pre-oxygenation/adjuncts used b. Number of attempts/operator(s) c. SpO₂ before, during, and post intubation d. ETCO₂ post intubation and quality of waveform e. Visualization of cords f. Tube size and depth at teeth/gum line g. Method of confirmation (primary and secondary) h. Medications administered i. Any patient changes during contact j. Confirmation of tube placement after movements
<p>KEY POINTS</p>	<p>If Ventilating through the ETT is difficult, troubleshoot the situation using the DOPE Pneumonic:</p> <p>D – Dislodgement – auscultate or visualize</p> <p>O – Obstruction – suction the tube</p> <p>P – Pneumothorax – auscultate – check for JVD or mediastinum shift , percussion.</p> <p>E – Equipment Failure – cuff failure, etc.</p>

AIRWAY- PEEP Valve (Positive End Expiratory Pressure Valve)
05/07/2019 [EMT, A-EMT, EMT-I, PARAMEDIC]

Description and Purpose:

- A. Positive End Expiratory Pressure (PEEP) Definition: The pressure in the lungs (alveolar pressure) above atmospheric pressure (the outside of the body) that exists at the end of expiration.
- B. PEEP valve- A device that maintains airway pressure that is above atmospheric pressure at the end of exhalation.
- C. How PEEP valves work - The PEEP restricts expiration to maintain the alveolar pressure above atmospheric pressure.
- D. Advantages of PEEP:
 - Increased end expiratory airway pressure
 - Increased functional residual capacity (prevention of airway and alveolar collapse)
 - Increased arterial oxygen tension (PaO₂)
 - Maximized recruitment of alveoli by preventing cyclic de-recruitment on expiration
 - Decreased airway resistance
 - Reduction in left ventricular (LV) afterload

INDICATIONS	Use PEEP on all patients, to include pediatrics, requiring manual ventilations with the use of a BVM (except patients meeting contraindication criteria). Some indication examples are: <ol style="list-style-type: none"> 1. Routine mechanical ventilation 2. Acute respiratory distress syndrome (ARDS) 3. Cardiogenic pulmonary edema (CHF) 4. Chronic obstructive pulmonary disease (COPD)
CONTRA-INDICATIONS	<ol style="list-style-type: none"> 1. Severe asthma (Patients with severe asthma already have higher levels of intrinsic PEEP) 2. Tension pneumothorax 3. Hypovolemic shock/hypotension (Cardiac output may decrease)
PROCEDURE	Attach PEEP valve to the BVM at 5 cm H ₂ O on all patients not meeting contraindication criteria. During the restocking process all BVM's shall have the PEEP valve placed on the BVM, set at 5cm H ₂ O.

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AIRWAY - PLEURAL DECOMPRESSION

06/06/2017

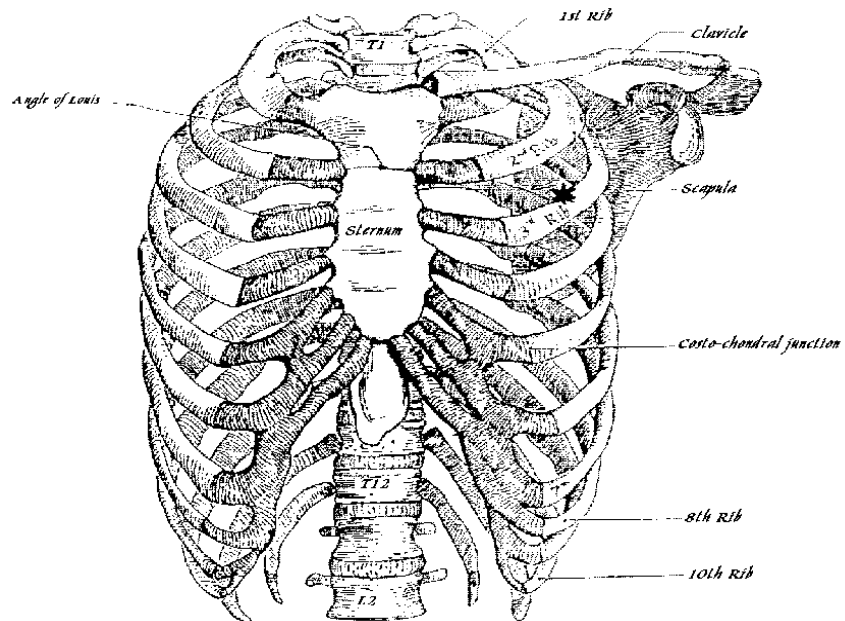
[PARAMEDIC]

INDICATIONS

Known or suspected tension pneumothorax

ANTERIOR PLACEMENT PARAMEDIC

1. Second intercostal space, mid-clavicular line on the side of the tension pneumothorax
2. Insert just over third rib
3. Use 10 or 14 gauge over-the-needle catheter (2-6 inches long)
4. Use 18 gauge for young child and infants
5. Secure catheter
6. Reassess patient status



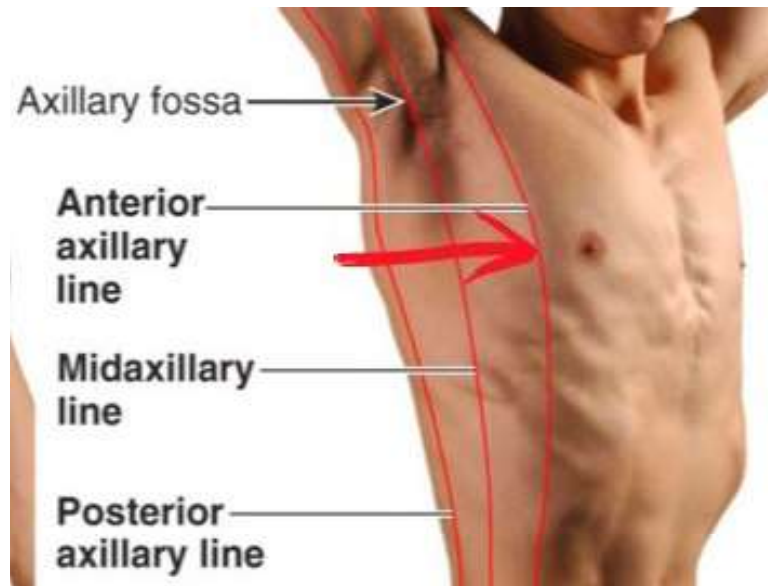
AIRWAY - PLEURAL DECOMPRESSION

06/06/2017


[PARAMEDIC]

AXILLARY PLACEMENT PARAMEDIC

1. Should only be used when there is massive chest trauma present or access issue/body armor on the patient.
2. Landmarks are the fourth or fifth intercostal space, at the anterior axillary line on the side of the tension pneumothorax
3. The Insertion site is at the anterior axillary line, lateral to the nipple or lateral to the superior aspect of the inframammary crease.
4. Use 10 gauge over-the-needle catheter (2-6 inches long)
5. Secure catheter
6. Reassess patient status



AIRWAY - RSI (Rapid Sequence Induction)**02/02/2021****[PARAMEDIC]**

INDICATIONS	Rapid Sequence Induction (RSI) is used for facilitation of airway management that cannot be accomplished without the use of paralytics.
KEY POINTS 	<ol style="list-style-type: none"> 1. Trauma Patient by standing order 2. Medical Patient by MD Order (excluding cardiac/respiratory arrest) 3. Pediatric patients less than 8 years of age require on-line medical consultation and an MD Order prior to initiating RSI.
PROCEDURE	<ol style="list-style-type: none"> 1. PRE-OXYGENATE – See Oxygen Administration Protocol. 2. PRE-TREATMENT FOR HEAD INJURY/SUSPECTED INCREASED ICP: <ol style="list-style-type: none"> a. ADULT: <ul style="list-style-type: none"> • Lidocaine (give 3-5 min before intubation) • Fentanyl (give immediately prior to intubation) b. PEDIATRIC: <ul style="list-style-type: none"> • Lidocaine (give 3-5 min before intubation) • Fentanyl (give immediately prior to intubation) 3. INDUCTION/ PARALYSIS For All RSI patients: <ul style="list-style-type: none"> • Induction Agent - Etomidate or Ketamine (First line for Hypotension, Severe Respiratory Disease process, and Pediatrics). • Paralytic –Succinylcholine/Rocuronium <ul style="list-style-type: none"> • Rocuronium is first line for patients suspected of hyperkalemia or any other time succinylcholine is contra-indicated. 4. TUBE PLACEMENT – See Endotracheal Intubation Protocol 5. POST INTUBATION MANAGEMENT <ol style="list-style-type: none"> a. Post intubation continued sedation <ul style="list-style-type: none"> • Midazolam • Fentanyl b. Post intubation continued paralysis: <ul style="list-style-type: none"> • Rocuronium c. Post intubation hypotension: <ul style="list-style-type: none"> • Normal Saline: 500 ml bolus

AIRWAY - RSI (Rapid Sequence Induction)**02/02/2021****[PARAMEDIC]*****RSI Medication Doses by volume***

	10kg	20kg	30kg	40kg	50kg	60kg	70kg	80kg	90kg	100kg
Lidocaine (20mg/ml) (1.5mg/kg)	0.75ml	1.5ml	2.25ml	3.0ml	3.75ml	4.5ml	5.25ml	6.0ml	6.75ml	7.5ml
Fentanyl (50mcg/ml) (3mcg/kg)	0.6ml	1.2ml	1.8ml	2.4ml	3.0ml	3.6ml	4.2ml	4.8ml	5.4ml	6.0ml
Ketamine (100mg/ml) (2mg/kg)	0.2ml	0.4ml	0.6ml	0.8ml	1.0ml	1.2ml	1.4ml	1.6ml	1.8ml	2.0ml
Etomidate (2mg/ml) (0.3mg/kg)	1.5ml	3.0ml	4.5ml	6.0ml	7.5ml	9.0ml	10.5ml	12.0 ml	13.5ml	15.0ml
Succinylcholine (2mg/kg) (20mg/ml)	1.0ml	2.0ml	3.0ml	4.0ml	5.0ml	6.0ml	7.0ml	8.0ml	9.0ml	10.0ml
Midazolam (1mg/ml) (0.1mg/kg)	1.0ml	2.0ml	3.0ml	4.0ml	5.0ml	6.0ml max dose	6.0ml	6.0ml	6.0ml	6.0ml
Rocuronium Paralyzing dose: (10mg/ml) (1 mg/kg)	1.0ml	2.0ml	3.0ml	4.0ml	5.0ml	6.0ml	7.0ml	8.0ml	9.0ml	10.0ml
Rocuronium Maintenance dose: 0.2 mg/kg bolus	0.2 ml	0.4ml	0.6ml	0.8ml	1.0ml	1.2ml	1.4ml	1.6ml	1.8ml	2.0ml

AIRWAY - RSI (Rapid Sequence Induction)

02/02/2021

[PARAMEDIC]

RSI Medication Doses (in mgs or mcgs)

	10kg	20kg	30kg	40kg	50kg	60kg	70kg	80kg	90kg	100kg
Lidocaine (20mg/ml) (1.5mg/kg)	15 mg	30 mg	45 mg	60 mg	75 mg	90 mg	105 mg	120 mg	135 mg	150 mg
Fentanyl (50mcg/ml) (3mcg/kg)	30mcg	60mcg	90mcg	120mcg	150mcg	180mcg	210mcg	240mcg	270mcg	300mcg
Ketamine (100mg/ml) (2mg/kg)	20 mg	40 mg	60 mg	80 mg	100 mg	120 mg	140 mg	160 mg	180 mg	200 mg
Etomidate (2mg/ml) (0.3mg/kg)	3 mg	6 mg	9 mg	12 mg	15 mg	18 mg	21 mg	24 mg	27 mg	30 mg
Succinylcholine (2mg/kg) (20mg/ml)	20 mg	40 mg	60 mg	80 mg	100 mg	120 mg	140 mg	160 mg	180 mg	200 mg
Midazolam (1mg/ml) (0.1mg/kg)	1 mg	2 mg	3 mg	4 mg	5 mg	6 mg (max dose)	6 mg	6 mg	6 mg	6 mg
Rocuronium Paralyzing dose: (10mg/ml) (1 mg/kg)	10mg	20mg	30mg	40mg	50mg	60mg	70mg	80mg	90mg	100mg
Rocuronium Maintenance dose: 0.2 mg/kg bolus	2 mg	4 mg	6 mg	8 mg	10 mg	12 mg	14 mg	16 mg	18 mg	20 mg

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AIRWAY - SUCTIONING 10/06/2020 [EMR, EMT, A-EMT, EMT-I, PARAMEDIC]	
INDICATIONS	Patients that have signs of respiratory distress or hypoxia due to secretions or blood in the airway, or when there is concern for aspiration.
SPECIAL INFORMATION	Suctioning of the oropharynx and tracheal suctioning are crucial skills in maintaining a patient's airway and optimizing ventilatory status. When possible, suctioning should be performed prior to initiating positive pressure ventilation (i.e. bag-valve-mask ventilation) to minimize the risk of aspiration.
ORAL SUCTIONING [EMR, EMT, A-EMT, EMT-I, PARAMEDIC]	<ol style="list-style-type: none"> 1. Pre-oxygenate patient with high-flow O₂. 2. Attach pulse oximeter and establish baseline. 3. Don appropriate PPE. 4. Prepare and assemble suction equipment: <ul style="list-style-type: none"> • Check suction unit for mechanical suction. • Tonsil tip or soft catheter in place. 5. Suction: <ul style="list-style-type: none"> • Insert tip without suction. • Cover aperture to begin suctioning. • Apply suctioning for <10 seconds. • Stop immediately if significant desaturation event occurs (O₂ sat <90% or drop >5% from baseline during suctioning) or significant increase in respiratory distress. 6. Re-oxygenate patient for at least 2-3 minutes between suction attempts.
TRACHAEL SUCTIONING [EMT, AEMT, EMT-I, PARAMEDIC]	<p>Tracheal suctioning may be achieved via oral, nasal, endotracheal or tracheostomy routes.</p> <ol style="list-style-type: none"> 1. Pre-oxygenate patient with high-flow O₂ for at least 3 minutes (or 5 tidal-volume breaths with BVM). 2. Attach pulse oximeter, ECG and establish baseline 3. Don appropriate PPE. 4. Prepare and assemble suction equipment <ul style="list-style-type: none"> • Check suction unit for mechanical suction. • Measure for correct size suction catheter.

AIRWAY - SUCTIONING

10/06/2020

[EMR, EMT, A-EMT, EMT-I, PARAMEDIC]

	<ul style="list-style-type: none"> • Open sterile rinse. <ol style="list-style-type: none"> 5. If patient is being ventilated prior to suctioning, have partner remove BVM or ventilator tubing prior to suction attempt 6. Insert catheter maximally without applying suction. 7. Withdraw catheter slowly using intermittent suction while rotating catheter. 8. Limit suctioning for no more than <10 seconds. Stop if a significant desaturation event occurs or significant dyspnea. 9. Rinse catheter in sterile rinse. 10. Re-oxygenate patient for at least 2-3 minutes between suction attempts.
<p>MECONIUM SUCTIONING [PARAMEDIC]</p>	<p>Suctioning with meconium aspirator is only indicated if there is thick meconium and the infant is in extremis (i.e. hypoxic, bradycardic, or under CPR). A trial of oral suctioning may be attempted first. However, if meconium is light and newborn is vigorous do not suction infant.</p> <ol style="list-style-type: none"> 1. Don appropriate PPE. 2. Prepare and assemble equipment: <ul style="list-style-type: none"> • Check suction unit for mechanical suction, • Gather appropriate size ET tube(s) • Gather meconium aspirator. 3. Intubate infant with a non-cuffed ET tube, or do not inflate if cuffed. 4. Attach meconium aspirator to the ET tube and immediately begin suctioning by covering the thumb hole. 5. Suction while slowly withdrawing the ET tube. 6. Do not suction for more than 3-5 seconds. 7. Re-oxygenate patient for at least 2-3 minutes with BVM and high-flow O₂. 8. Repeat procedure if O₂ sat is persistently low and/or if patient remains under CPR. 9. If patient stabilizes, consider simply assisting ventilation with BVM (intubation not necessary for ventilation).

AIRWAY - SUCTIONING

10/06/2020

[EMR, EMT, A-EMT, EMT-I, PARAMEDIC]

SUCTION-ASSISTED LARYNGOSCOPY & AIRWAY DECONTAMINATION (SALAD)

Technique:

[PARAMEDIC]

Consider SALAD technique to clear copious contaminants or continuous secretions from airway to facilitate ETT placement.

1. Hold SSCOR Ducanto Catheter in right hand using over hand grip with suction tip extending below palm. Your thumb will point upward towards suction tubing.
2. Lead view into airway using SSCOR rigid catheter to elevate tongue and clear contaminants for laryngoscope.
3. Identify vallecula and cuneiform/corniculate cartilage and decontaminate larynx.
4. Remove SSCOR Catheter and place to the left of laryngoscope blade, extending into the esophagus below larynx.
5. Release SSCOR Catheter and leave in esophagus while ETT is performed, the shape of the Catheter may improve view of tracheal opening with a little downward pressure from your forearm while holding laryngoscope.

In the event it is necessary, an ETT Introducer/Bougie device can be placed into the trachea through the SSCOR Catheter to facilitate ETT placement. It may be necessary to perform tracheal suctioning prior to ventilating the patient.

https://www.sscor.com/ducanto_catheter_videos_hospital

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AIRWAY - SUPRAGLOTTIC AIRWAY**05/07/2019****[EMT, A-EMT, EMT-I, PARAMEDIC]****KING AIRWAY****INDICATIONS**

1. Acute airway compromise
2. First line advanced airway in medical cardiac arrest patient ≥ 15 years of age
3. Second line advanced airway in medical cardiac arrest patients < 15 years of age and meets size appropriate criteria
4. May be used as part of a plan post intubation failure.

CONTRA-INDICATIONS

1. Patients with an intact gag reflex
2. Patients with a known esophageal disease
3. Patients who have ingested caustic substances
4. Patients less than 35 inches tall

PROCEDURE

1. Choose the Correct Size

Size	Height	Cuff Volume
2	35-45 Inches	25-35 cc
2.5	41-51 Inches	30-40 cc
3	4-5 Feet	60 cc
4	5-6 Feet	80 cc
5	6+ Feet	90 cc

2. Pre-oxygenate with NRB Mask for 1-2 min. when conditions permit.
3. Test cuffs for leaks.
4. Lubricate using water soluble lubricant.
5. Pull tongue and jaw forward using gloved hand.
6. Suction if necessary – **See Suctioning Protocol**
7. Insert with blue orientation line touching corner of mouth.
8. Advance past base of the tongue.
9. As tip passes tongue, rotate tube to midline (blue orientation line faces chin).
10. Do not force tube. If the tube does not advance easily, redirect it or withdraw and reinsert.
11. Advance until base of connector is aligned with teeth or gums.
12. Inflate cuffs.
13. Ventilate, verify placement with ETCO₂ device, chest rise, and auscultation of epigastrium and lung fields
14. Document method of confirmation.
15. Consider insertion of a Gastric Decompression Tube. – **See Gastric Decompression Protocol**

AIRWAY - SUPRAGLOTTIC AIRWAY**05/07/2019****[EMT, A-EMT, EMT-I, PARAMEDIC]****I-GEL****INDICATIONS**

1. Apneic patient when endotracheal intubation is not possible or not available.
2. Patient must be unconscious, without a gag reflex
3. No history of esophageal foreign body, disease or caustic ingestion
4. Failed airway
5. May be used as part of a plan post intubation failure.

CONTRA-INDICATIONS/PRE CAUTIONS

1. Obstructive lesions below the glottis.
2. Trismus, limited mouth opening, pharyngo-perilaryngeal abscess, trauma or mass.
3. Conscious or semi-conscious patients with an intact gag reflex
4. Do not allow peak airway pressure of ventilation to exceed 40cm H₂O.
5. Do not use excessive force to insert the device.
6. As with all supraglottic airway devices, particular care should be taken with patients who have fragile and vulnerable dental work, in accordance with recognized airway management.
7. Use care to avoid the introduction of lubricant in or near the ventilatory openings

AIRWAY - SUPRAGLOTTIC AIRWAY**05/07/2019****[EMT, A-EMT, EMT-I, PARAMEDIC]****PROCEDURE**

1. Choose the Correct Size

I-gel size	Patient size	Patient weight guidance (kg)
1	Neonate	2-5kg
1.5	Infant	5-12 kg
2	Small Pediatric	10-25 kg
2.5	Large Pediatric	25-35kg
3	Small Adult	30-60 kg
4	Medium Adult	50-90 kg
5	Large Adult	90+ kg

2. Pre-oxygenate with NRB Mask for 1-2 min. when conditions permit.
3. Grasp the lubricated I-gel firmly along the integral bite block (tube portion of the device). Position the device so that the i-gel cuff outlet is facing toward the chin of the patient.
 - a. NOTE: be sure that there is only a thin layer of lubricant on the end of the I-gel to avoid blowing it into the lungs with bagging
 - b. Suction the upper airway PRIOR to insertion as needed
4. The patient should be in the “sniffing” position, with head extended and neck slightly flexed forward. If cervical injury is suspected, use modified “jaw thrust” instead of any flexion at the neck. The chin should be gently pressed down/inferior before proceeding to insert the I-gel
5. Introduce the leading soft tip into the mouth of the patient in a direction toward the hard palate.
6. Glide the device downwards and backwards along the hard palate with a continuous, but gentle push until a definitive resistance is felt.
7. **WARNING:** Do not apply excessive force on the device during insertion. It is not necessary to insert your fingers or thumbs into the oral cavity of the patient during insertion of this device. If there is resistance during insertion, a ‘jaw thrust’ and slight rotation of the device is recommended.
8. At this point, the tip of the device should be located into the upper esophageal opening and the cuff should be located against the laryngeal framework. The incisors should be resting on the integral bite block.
9. Auscultate breath sounds, check for chest rise and confirm placement with ETCO₂ monitoring and SpO₂ monitoring
10. Attach SpO₂ monitor and capnometer ETCO₂ monitor
11. Secure the tube
12. Place NG tube in side port and advance to appropriate position, apply suction to decompress the stomach
13. Continue to monitor, sedate per protocol as necessary

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BLOOD SPECIMEN COLLECTION**02/02/2021****[A-EMT, EMT-I, PARAMEDIC]**

INDICATIONS	<p>Blood collection is indicated for:</p> <ul style="list-style-type: none"> • Source patient testing in the event of an exposure in a patient that is not transported. <p>Blood collection is at the discretion of the medic, and requires the initiation of an I.V in the field. The collection of blood should not delay care to the patient.</p>
PROCEDURE	<p>Use the following tubes for collection of a blood specimen:</p> <ul style="list-style-type: none"> • Two (2) tiger top tubes for source patient testing. <p>All specimens must be placed in a properly labeled collection kit.</p> <ul style="list-style-type: none"> • Label to include: (Template) <ul style="list-style-type: none"> ○ Patient Name: Last, first, middle initial (Smith, Sally A.) ○ Date of Birth ○ Date and Time Collected: (04/24/2012, 1500hrs) ○ Initials of the person who collected the specimen <p>For Source Blood in addition to the Patient Name include the last 4 of the exposed care giver's SSN with the first and last initial of the exposed care giver.</p> <p>For exposures, when the patient is not transported, agencies should ensure that the blood is delivered to a lab for exposure testing. If taking the blood to RBH, the charge nurse should be alerted. All agencies should follow their established procedures.</p>
SPECIAL INFORMATION	<ol style="list-style-type: none"> 1. It is understood that there will be occasions in which the patient's critical condition will necessitate the omission of obtaining a blood specimen in the field. If this was an exposure, the medic should contact the charge nurse to ensure that source patient testing is completed. 2. The minimum size IV catheter which can be used to collect a blood specimen is a 20 gauge.

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CARDIAC - CARIOVERSION

09/13/2022

[PARAMEDIC]

- Synchronized cardioversion is only for rhythms generating a pulse - **See Cardiac Tachyarrhythmia with A Pulse**

INDICATION	<ul style="list-style-type: none"> • Supraventricular or ventricular tachyarrhythmia with hemodynamic compromise
PROCEDURE	<ol style="list-style-type: none"> 1. Place defib pads on patient's chest 2. Consider Interventional Analgesia – See Pain Management 3. Turn on synchronization 4. Charge monitor to 100J 5. Deliver shock 6. Check patient 7. If patient is shocked into V-Fib, ensure synchronization mode is off and defibrillate the patient. 8. If patient does not convert, check that synchronization is still on, increase the energy (120J, 150J, 200J) and synchronize cardiovert again.

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CARDIAC - DEFIBRILLATION**02/02/2021****[EMR, EMT, A-EMT, EMT-I, PARAMEDIC]**

Defibrillation with either an Automatic External Defibrillation (AED) device or a manual defibrillator involves the delivery of non-synchronized direct electric current to the myocardium.

INDICATIONS

Patients who are unconscious and are not breathing normally that have:

- Ventricular fibrillation.
- Ventricular tachycardia without a pulse.
- Ventricular tachycardia with inadequate perfusion, and for whom effective and rapid synchronized cardioversion is impossible.

SPECIAL INFORMATION

- Always check the leads if clinical findings are at odds with monitor rhythm.
- Avoid direct contact with the patient during defibrillation.
- Ensure no one else is in contact with the patient.
- Dry chest wall if wet.
- Defibrillation may not be successful in ventricular fibrillation due to severe hypothermia until core temperature is above 86°F (30°C).
- Patients with Automatic Implantable Cardioverter-Defibrillators (AICD) will need external defibrillation if the AICD is ineffective.
- If defibrillation is needed on a patient with a permanent implanted pacemaker or AICD, the defibrillator pads should be placed at least 1 inch from the device.

DEFIBRILLATION DELIVERY DEVICE**ADULT (AED)**EMR, EMT, A-EMT,
EMT-I, PARAMEDIC

1. Establish unresponsiveness.
2. Turn the AED on
3. Follow the prompts of the device
4. Place pads on the chest as recommended by the manufacturer.


PEDIATRIC (AED)EMR, EMT, A-EMT,
EMT-I, PARAMEDIC

1. Establish unresponsiveness.
2. Turn the AED on
3. Switch the AED to Pediatric Mode if possible.
4. Follow the prompts of the device
5. Place pads on the chest as recommended by the manufacturer. If pediatric mode is unavailable place pads anterior posterior.

CARDIAC - DEFIBRILLATION

02/02/2021

[EMR, EMT, A-EMT, EMT-I, PARAMEDIC]

<p>MANUAL DEFIBRILLATOR ADULT EMT-I, PARAMEDIC</p>	<ol style="list-style-type: none"> 1. Establish unresponsiveness 2. Turn the defibrillator on 3. Place pads on the chest as recommended by the manufacturer 4. Select the energy to be delivered as per the defibrillator manufacturer or agency specific guidelines 5. Charge the defibrillator 6. Clear the patient 7. Deliver the defibrillation
<p>MANUAL DEFIBRILLATOR PEDIATRIC EMT-I, PARAMEDIC</p> 	<ol style="list-style-type: none"> 1. Establish unresponsiveness 2. Turn the defibrillator on 3. Place pediatric pads on the chest as recommended by the manufacturer or anterior posterior 4. Initial energy selection should be 2 J/kg 5. Charge the defibrillator 6. Clear the patient 7. Deliver the defibrillation 8. Subsequent energy selection should be 4 J/kg until conversion.

CARDIAC - ECG MONITORING -12 LEAD

02/05/2019

[EMT, AEMT, EMT-I, PARAMEDIC]

Single Monitoring leads help establish the rate and regularity of the heartbeat. They also help identify if there is an arrhythmia.

The 12-Lead ECG is used to evaluate patients for the possibility of acute myocardial infarction (AMI) and improve the evaluation of arrhythmias.

INDICATION

1. Evaluate patient for the possibility of acute myocardial infarction (AMI), with or without chest pain.
2. Evaluation of arrhythmias (including trauma, electrical electrolyte abnormalities (e.g. hyperkalemia), and many other conditions.)

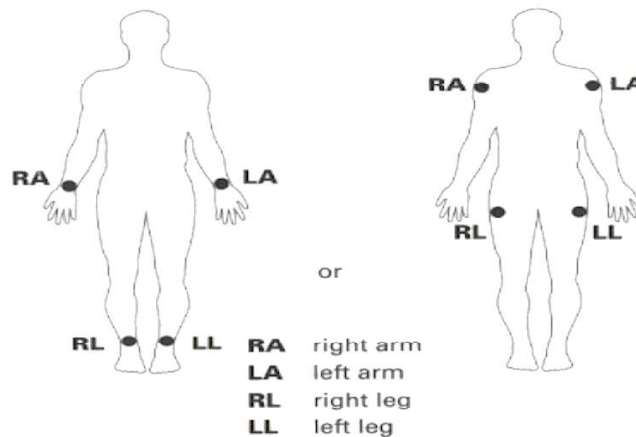
PROCEDURE

Limb Leads

The Limb Leads record activity from a vertical plane of reference.

Lead	Placement
RA/White	Right mid-clavicular line (MCL), below clavicle; or above anterior wrist
LA/Black	Left (MCL), below clavicle; or above anterior wrist.
LL/Red	Between 6th and 7th intercostal space, left MCL line; or ankle or thigh.
RL/Green	Between 6th and 7th intercostal space, right MCL line; or ankle or thigh.

Limb Leads



Precordial Leads

Certain landmarks help with the location of electrode placement

- Angle of Louis - this structure is a ridge on the sternum directly below the manubrial notch at the top of the sternum. Directly below and to the sides of the Angle of Louis is the second

CARDIAC - ECG MONITORING -12 LEAD

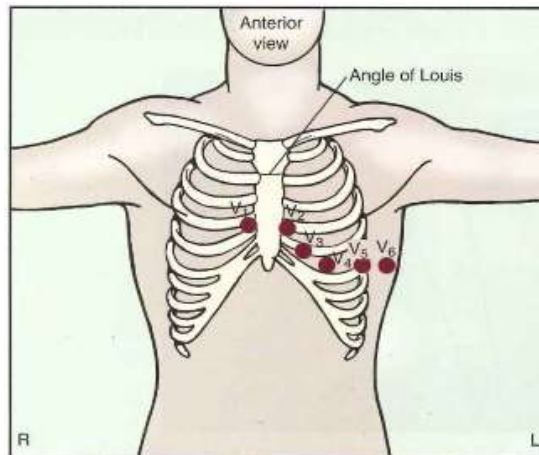
02/05/2019

[EMT, AEMT, EMT-I, PARAMEDIC]

intercostal space. Use this to count down two more spaces for placement of V1 & V2.

- Mid-Clavicular Line - from MCL runs down to 5th intercostal space for V4.
- Axilla - left armpit, point where axilla meet the chest determines the Anterior Axillary line. V5 is positioned in horizontal alignment with V4 on the left Anterior Axillary line. Midway down the axilla is the Mid-Axillary Line. V6 is placed in horizontal alignment with V5 on the Mid-Axillary Line.

	Placement
V1	4 th Intercostal space to the right of the sternum.
V2	4 th Intercostal space to the left of the sternum
V3	Midway between V2 and V4
V4	On the mid-clavicular line, at the 5 th intercostal level.
V5	On the anterior axillary line, at the 5 th intercostal level.
V6	On the mid-axillary line, at the 5 th intercostal level.



AMI Recognition

1. Common abnormal findings:

- ST Elevation (presumptive evidence of AMI)
- ST Elevation with Q Waves
- ST Depression (ischemia)
- T wave inversion (Subendocardial infarct or ischemia)
- Peaked T wave (Hyper-acute Infarction)
- The presence of Q waves with ST elevation usually indicates an old infarction.

2. Basic Lead Groups

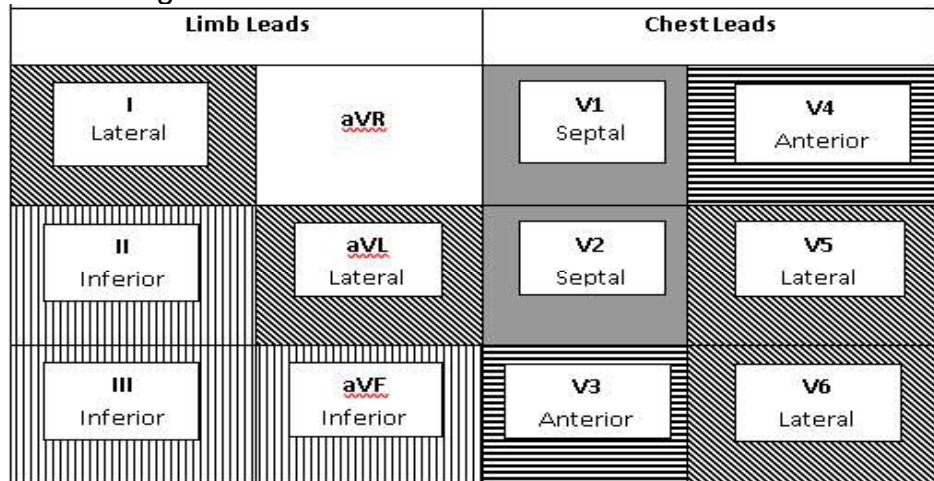
CARDIAC - ECG MONITORING -12 LEAD

02/05/2019

[EMT, AEMT, EMT-I, PARAMEDIC]

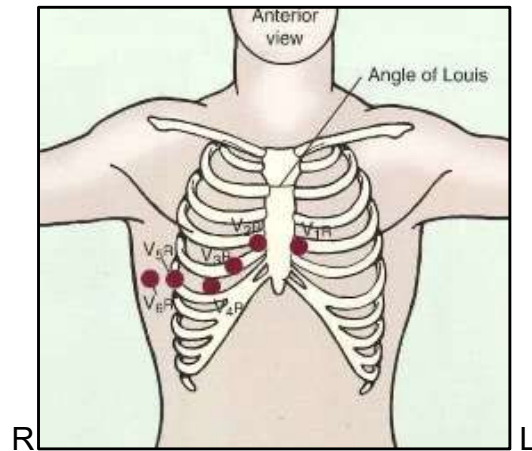
Leads	Areas of the Heart Muscle Seen
II, III, aVF	Inferior leads - lower portion of the heart.
V1 & V2	Septal leads - muscle between right & left ventricles.
V2, V3, V4	Anterior leads - front of the heart.
V4, V5, V6	Lateral pre-cordial leads - lateral aspects of the heart.
I & aVL	High lateral leads - lateral aspect from above

3. AMI Recognition Location:



4. V4R - Indicated when there is elevation in leads II, III, aVF.

- Move the V4 Lead to the right side at the mid-clavicular line at the 5th intercostal space.
- Repeat the 12-lead and check for ST elevation in V4R. This indicates right ventricular involvement.
- Use caution if administering nitroglycerin to a patient that has elevation in V4R.

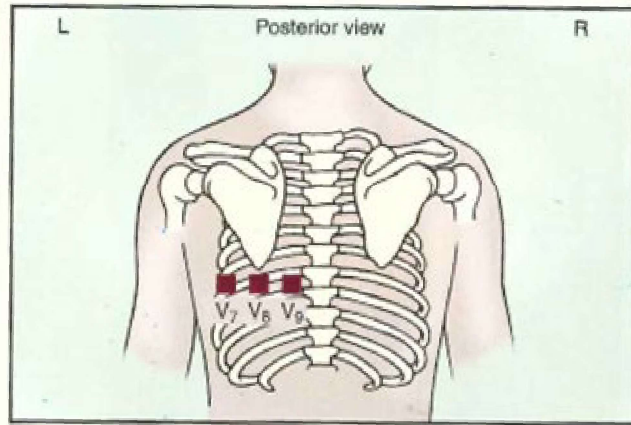


CARDIAC - ECG MONITORING -12 LEAD

02/05/2019

[EMT, AEMT, EMT-I, PARAMEDIC]

5. Posterior 12-Lead – Indicated for ST depression in 2 or more contiguous leads V1-V4.
- Move V4, V5, V6 into V7, V8, V9 placement.
 - Repeat 12-lead and look for ST elevation in V7, V8, V9. Elevation in lead V7, V8, V9 indicates posterior wall involvement.



CARDIAC - MECHANICAL CPR DEVICE**06/07/2022****[EMR, EMT, A-EMT, EMT-I, PARAMEDIC]****Lucas Device****INDICATIONS**

1. Adult cardiac arrest patients meeting resuscitation guidelines.
2. Patients having received ROSC and requiring transport (placement only).

CONTRA-INDICATIONS

1. Patients who have not yet reached the age of puberty
2. Patients who are too large and with whom you cannot attach upper part to back plate without compressing chest.
3. Patient who are too small and with whom you cannot pull the pressure pad down to touch the sternum.

PROCEDURE

1. Initial arriving responders should follow ACLS or CCR guidelines and immediately initiate high quality CPR.
2. During the first rhythm check integrate the placement of back plate, minimizing chest compression interruption to < than 10 seconds.
3. Continue with manual high-quality compressions and appropriate cardiac arrest algorithm.
4. During the second round of CPR or when available, one responder should prepare the device for placement.
5. Place the device during the rhythm check pause between the second and third round of CPR, minimizing chest compression interruption to < 10 seconds.
6. After proper placement press the continuous mode for continuous compressions. Device will deliver 110 compressions per minute with a brief .8-.9 second pause every 6 seconds to deliver a synchronized breath. An audible noise will be heard when it is time to administer a breath.
7. Secure device per manufacturer's instructions and mark on the patient's chest, using a sharpie, the placement of the suction cup.
8. Continue to follow appropriate cardiac algorithm pressing the "pause" button every two minutes for rhythm analysis.
9. Defibrillators and AEDs require a pause for analysis; however the play button should be pressed to resume CPR during charge and shock delivery phases.
10. If ROSC is obtained the device should be turned off by pressing and holding the power button, however the device should be left in place. If resuscitation is terminated device should be removed and disinfected.

CARDIAC- MECHANICAL CPR DEVICE**06/07/2022****[EMR, EMT, A-EMT, EMT-I, PARAMEDIC]****Special Considerations**

1. Most patients should still only be transported after ROSC has occurred. The presence of a Lucas Device does not change normal transport policy.
2. A patient that has not achieved ROSC, may have transport initiated with a Lucas Device in operation at paramedic discretion. Paramedic should base this decision off patient needs that are not available on scene or unusual circumstances. Examples may include pregnant patients with a potential viable fetus, cold water drowning or hypothermic arrest patients, patients that regain consciousness with compressions but deteriorate as soon as compressions are stopped, or other atypical situations.
3. If patient achieves ROSC without the device in place, the Lucas Device, when available, should be placed prior to transport to prepare for possible re-arrest
4. Care should be taken not place pads, cables, or electrodes beneath the suction cup. If feedback pucks are in place, they should be removed prior to placement of the suction cup.
5. Excessively hairy or wet individuals may require skin prep prior to placement of the suction pad.
6. If an error occurs the device will give an audible alarm. Press and hold the power button and check device to ensure in fits and is appropriately placed. Repeat the placement steps.
7. If a failure or error occurs that cannot be quickly remedied, remove the device and continue with high quality manual CPR
8. **If patient has disruptive movement during use of the mechanical CPR device, consider use of Interventional Analgesia – See Pain Management Protocol**

CARDIAC - PACING, EXTERNAL TRANSCUTANEOUS 09/15/2022		[PARAMEDIC]
INDICATION	Symptomatic bradycardia	
CONTRA-INDICATIONS	<ol style="list-style-type: none"> 1. Weight under 25 kg (55 lbs.) 2. Patients with penetrating or blunt thoracic trauma 3. Severe hypothermia 	
PROCEDURE	<ol style="list-style-type: none"> 1. Attach cardiac monitor leads 2. Place defib/pacer pads on patient anterior/posterior* or leave them anterior lateral if patient was initially defibrillated or as recommended by manufacturer. 3. Set monitor to PACER, the unit should be set on DEMAND. 4. Increase pacer output (mA) until capture is obtained. 5. Set the rate at 80. 6. Once capture is obtained, increase output by 10% to ensure capture is not lost. 7. When capture is obtained, check for pulse at femoral, right brachial, or right radial site. 8. On Zoll Monitor, use 4:1 button to view underlying rhythm. 9. If patient is uncomfortable during pacing, initiate Interventional Analgesia – See Pain Management Protocol 10. If capture is not obtained with increased current and the pads were initially placed anterior lateral, replace pads and place anterior posterior. 11. If no response to pacing and ACLS drugs, consult MD. 12. If there is not capture and no pulse, follow Cardiac Pulseless Arrest CCR Protocol. 13. Monitor and document vital signs every 5 minutes. 14. Document ECG rhythm pre and post pacing. <p style="color: red; margin-top: 10px;">*If using the Zoll pads with the CPR Puck attached, the pad with the CPR puck goes on the posterior of the patient. (“Red to the Bed”) If the patient goes back into arrest, where CPR is needed, attach a new set of pads to the patient.</p>	



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EZ-IO/IO INFUSION

02/01/2022

[EMT-A, EMT-I, PARAMEDIC]

Any substance which can be given intravenously can be administered via Intraosseous Infusion (I.O)

INDICATIONS	<ol style="list-style-type: none"> 1. Peripheral IV cannot be established in 2 attempts or 90 seconds AND the patient exhibits one or more of the following: <ol style="list-style-type: none"> a. An altered mental status (GCS \leq 8) b. Respiratory compromise (SaO₂ 80% after appropriate oxygen therapy) c. Respiratory rate < 10 or > 40 min d. Hemodynamic instability (Systolic BP of < 90) 2. May be considered PRIOR to peripheral IV attempts in the following situations: <ol style="list-style-type: none"> a. Cardiac Arrest b. Profound hypovolemia with altered mental status c. Patient in extremis with immediate need for delivery of medications and or fluids
CONTRA-INDICATION	<ol style="list-style-type: none"> 1. Fracture of the bone selected for IO insertion 2. Excessive tissue at insertion site with the absence of anatomical landmarks 3. Previous orthopedic procedures near insertion site 4. IO within 24 hours at the same site 5. Infection at the site selected for insertion
PROCEDURE	<ol style="list-style-type: none"> 1. Gather and assemble equipment from the EZ-IO/IO Kit 2. Insert IO 3. Slowly administer lidocaine 2% IO to <u>conscious patients</u> <u>Adult: 20-40 mg slowly prior to saline flush</u> <u>Pediatric: 0.5 mg/kg slowly prior to saline flush</u> 4. Rapid flush immediately with NS <ul style="list-style-type: none"> • Adult: 10cc • Pediatric: 5cc 6. Secure the device

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GCS**09/13/2022****[EMR, EMT, A-EMT, EMT-I, PARAMEDIC]**

Glasgow Coma Score (GCS) should be evaluated on all patients Total GCS is the three categories added together. The best possible is 4/5/6=15, the lowest possible is 1/1/1=3.

Children and Adults

Activity	Score	Children & Adults
Eye Opening	4	Spontaneous
	3	To Verbal Stimuli
	2	To Pain
	1	No Response
Total_____		
Best Verbal Response	5	Oriented
	4	Confused
	3	Inappropriate words
	2	Incomprehensible sounds
	1	No Response
Total_____		
Best Motor Response	6	Obeys commands
	5	Localizes pain
	4	Withdraws from pain
	3	Abnormal Flexion
	2	Abnormal Extension
	1	No response
Total_____		
TOTAL:_____		

Infants

Activity	Score	Infants
Eye Opening	4	Spontaneous
	3	To Speech
	2	To Pain
	1	No Response
Total_____		
Best Verbal Response	5	Coos, babbles
	4	Irritable, cries
	3	Cries to pain
	2	Moans to pain
	1	No Response
Total_____		
Best Motor Response	6	Normal Movement
	5	Withdraws to touch
	4	Withdraws from pain
	3	Abnormal Flexion
	2	Abnormal Extension
	1	No response
Total_____		
TOTAL:_____		

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IMMUNIZATION ADMINISTRATION 02/02/2021 [EMT-I,PARAMEDIC]	
INDICATIONS	<ol style="list-style-type: none"> 1. Prepare and administer immunizations in the event of an outbreak or epidemic as declared by the Governor of the State of Oregon, the State Public Health Officer or a county health officer, as part of an emergency immunization program. 2. Prepare and administer immunizations for seasonal and pandemic influenza according to the CDC Advisory Committee on Immunization Practices (ACIP), and/or the Oregon State Public Health Officer's recommended immunization guidelines. 3. Prepare and administer routine or emergency immunizations and tuberculosis skin testing, as part of an EMS Agency's occupational health program, to EMS agency personnel.
PROCEDURE	<p>IM VACCINE ADMINISTRATION</p> <ol style="list-style-type: none"> 1. Draw the vaccine into a syringe. 2. Attach a 21 – 23 gauge needle to the syringe. 3. Select an appropriate site(s) based on access, muscle mass and volume: <ul style="list-style-type: none"> • Deltoid - 0.5 -2.0 ml • Quadricep - 0.5 -5.0 ml • Gluteal - 0.5 -5.0 ml • For infants and toddlers, IM vaccine administration is only recommended in the quadriceps 0.5-3.0 ml 4. Prep site and administer the medication. <p>SUB-DERMAL SKIN TESTING</p> <ol style="list-style-type: none"> 1. Draw the vaccine into a syringe. 2. Attach a 25-27 gauge needle to the syringe. 3. Select an appropriate site – Typically volar forearm 4. Prep site and administer the test solution
SPECIAL CONSIDERATIONS	<p>All personnel who are administering vaccinations should receive additional training.</p> <p>Vaccine information should be made available to anyone who receives vaccinations.</p>

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IV THERAPY
09/03/2020

[A-EMT, EMT-I, PARAMEDIC]

Patients showing signs of distress or with an appropriate mechanism of injury should have IV access initiated as a precautionary measure.

With the exception of hyperthermia patients, use warmed fluid if available.

INDICATIONS

Fluid replacement or medication administration

1. Use a standard drip set with 10-15 gtts/ml
2. Initiate a second IV line during transport if the patient is exhibiting obvious signs of volume loss.
3. If the patient is showing signs of **shock** give a fluid challenge of up to 20 ml/kg except neonates (< 1 month of age), give 10 ml/kg.
4. If the patient is showing signs of shock from traumatic hemorrhage than follow permissive hypotension guidelines.
5. **Use stopcock & syringe or Soluset for pediatric fluid administration.**
6. For medication administration a TKO (to keep open) rate should be established or a saline lock may be used.

SPECIAL INFORMATION

Crews may respond to assist nursing staff in the establishment of an IV. In these cases, as long as there is staff present that is qualified to monitor the IV, the crew may establish the IV and leave the patient at the scene. Crews should use their equipment to start the IV and should document the call as a patient/facility assist or aid call.

If there is not qualified staff or enough appropriate staff at the scene to monitor the IV, the patient should be transported to the hospital. In these cases the facility should be reported to Senior and Disabled Services for potential improper patient placement.

If an IV can't be established, the patient may be transported to the hospital.

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MEDICATION ADMINISTRATION**10/04/2016****[EMT, A-EMT, EMT-I, PARAMEDIC]**

Administration of medication is indicated in patients where there is an identified medical emergency.

Medications come packaged in multiple ways. Crews should always reference medication by name and not by color or shape of packaging.

Medications are often stored together in close proximity to one another in kits or in the same compartment on the medic unit. It is recommended that medications that look similar not be stored next to one another.

Medications will be administered with the Five Rights –

- Right Patient
- Right Drug
- Right Dose
- Right Route
- Right Time

See medication protocols for specifics on each medication.

Medications ideally will be drawn up and administered by the same person. In emergency medicine, it is recognized that this may not always be possible. In an effort to reduce the potential for medication errors, the following should be done.

- The person drawing up the medication should tape the empty vial to the syringe for identification by the person administering the medication.
- The person drawing up the medication should verbalize visual identification of the drug and confirmation of the order.
- In the event of a second crew member present during medication administration, verbalize the 5 rights to the second crew member.

INTRANASAL ADMINISTRATION

INDICATIONS	Intranasal administration of medication is indicated in patients where an IV is unable to be initiated or where in medic judgment it is in the best interest of the patient and the medication is authorized to be administered IN.
CONTRA-INDICATIONS	<ul style="list-style-type: none"> • Epistaxis (nosebleed) • Nasal trauma • Nasal septal abnormalities • Nasal congestion or discharge

MEDICATION ADMINISTRATION**10/04/2016****[EMT, A-EMT, EMT-I, PARAMEDIC]**

PROCEDURE	<ol style="list-style-type: none"> 1. Patient should blow their nose, if possible, to clear the nares 2. The dose of the medication should be drawn into a syringe with a MAD device attached. 3. One half (1/2) the total dose is administered in each nare. 4. Administer medication by briskly compressing the plunger to expel and atomize the medication.
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INTRAMUSCULAR ADMINISTRATION

INDICATIONS	Intramuscular administration of medication is indicated in patients where an IV is unable to be initiated or where in medic judgment it is in the best interest of the patient. See medication protocols for reference of which medications may be administered IM.
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PROCEDURE	<ol style="list-style-type: none"> 1. Draw the medication into a syringe. 2. Attach a 21 – 23 gauge needle to the syringe. 3. Select an appropriate site(s) based on access, muscle mass and volume: <ul style="list-style-type: none"> • Deltoid - 0.5 -2.0 ml • Quadriacep - 0.5 -5.0 ml • Gluteal - 0.5 -5.0 ml • For infants and toddlers, IM medication administration is only recommended in the quadriceps 0.5 -3.0 ml 4. Prep site and administer the medication.
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ENDOTRACHEAL ADMINISTRATION

INDICATIONS	Endotracheal administration of medication is indicated when an IV or IO can't be established in a patient that is intubated. The dose of medication will be 2 x the IV dose unless otherwise specifically noted in the medication protocol.
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PROCEDURE	<ol style="list-style-type: none"> 1. Most of the medications that are given during cardiac arrest are already diluted for administration. In the event that a pre-load is not available, the medication will need to be diluted in 5-10 cc of sterile water or NS. 2. Stop compressions to limit regurgitation of meds up the ET Tube. 3. Inject the medication directly into the ET tube.
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MORGAN LENS
02/02/2021

[PARAMEDIC]

INDICATIONS	Removal of chemical splash from the eye, especially when the agent is caustic.
PRECAUTIONS	Use only on an intact globe
PROCEDURE	Follow directions included with the Morgan Lens for Insertion and removal.
SPECIAL INFORMATION	<ol style="list-style-type: none">1. To help prevent corneal abrasions, change IV solution bag or DC lens as soon as bag runs dry2. Coach patient to avoid blinking with lens in place3. If only one eye is being irrigated, tilt head to keep from contaminating other eye
KEY POINTS	Rapid initiation of eye irrigation is the most important aspect of chemical eye injury care.

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NEUROLOGIC ASSESSMENT

11/07/2017

All patients presenting with stroke-like symptoms shall receive a complete neurologic assessment.

A complete neurologic assessment requires assessment of the following:

- Level of Consciousness (Glasgow Coma Score)
- Cranial Nerves (Eye/facial movement and sensation)
- Cerebral Function (Cincinnati Stroke Score; sensation/movement of extremities, speech)
- Cerebellar Function (Finger to Nose, Heel to Shin)
- Cortical Function (C-STAT)

Remember that brainstem and cerebellar strokes may present with atypical stroke symptoms: nausea/vomiting, vertigo, abnormal eye movements or double vision, swallowing difficulties, decreased LOC, or crossed (bilateral) neurologic findings.

Level of Consciousness	<p>See Glasgow Coma Score Procedure</p> <ul style="list-style-type: none"> • Remember that GCS is based on patient's BEST neuro response. • If patient does not respond to voice commands, deep painful stimulus must be employed to adequately assess LOC
Cranial Nerve Assessment	<p>The cranial nerves control the movement and sensation from the neck up.</p> <ul style="list-style-type: none"> • Ask the patient to do the following: <ul style="list-style-type: none"> - Raise their eyebrows - Close their eyes tightly - Follow your finger with their eyes (should travel symmetrically; watch for nystagmus) - Show you all their teeth (or smile) - Stick their tongue straight out (should not deviate from midline) - Say "ahhhh" (palate/uvula should elevate symmetrically) - Shrug their shoulders • Touch the patient's face on both sides in 3 places: forehead, cheek, jaw. The sensation should feel equal on both sides as described by the patient.
Cerebral Function	<p>Use Cincinnati Stroke Score. (Facial Droop, Arm Drift, Speech), add lower extremity movement as well. (eg, have patient lift leg off of bed)</p>

NEUROLOGIC ASSESSMENT

11/07/2017

Cerebellar Function

Have patient perform Finger to Nose, and/or Heel to Shin testing:

- **Finger to Nose:** Hold your finger out in front of patient, at full arm's length. Ask them to touch their nose, then your finger. Move your finger slowly back and forth in front of them, and have them repeat at least 3 times each arm. **Test both sides!** Movements should be smooth, not jerky, and symmetrical on both sides.
- **Heel to Shin:** Have patient pick up one leg, touch a heel to the opposite knee, and then scrape that heel **straight** down the top of their shin to the ankle. Tell them to go slow, and to be as precise as possible. **Test both sides.** Movements should be smooth and reasonably straight, not jerky.

Be mindful that the elderly, or those with underlying neurologic disability (eg, prior stroke), may have difficulty performing these tests. If difficulties are symmetrical, this **does not constitute a positive test.

NEUROLOGIC ASSESSMENT

11/07/2017

Cortical Function

C-STAT SCORE

GAZE	
Conjugate gaze deviation present	2
CONSCIOUSNESS/COMMANDS	
<ul style="list-style-type: none"> Ask patient the following LOC questions: <ul style="list-style-type: none"> Their age? Ask the current month? Ask patient to do the following commands: <ul style="list-style-type: none"> Close eyes open them? Close hand? <p><i>Incorrectly answers at least one of the two LOC questions AND does not follow at least one of two commands.</i></p>	1
MOTOR ARM	
Cannot hold arm up (left, right or both) for 10 sec before it falls to bed.	1
TOTAL SCORE	0-4

POSITIVE if ≥ 2

Mechanical thrombectomy is standard of care for the treatment of Emergent Large Vessel Occclusion (ELVO). If a patient is C-STAT positive, crews should:

- Direct the patient to a hospital capable of emergency thrombectomy. *(If transport time is greater than 30 minutes to a stroke center, consider transport to a closer hospital for stabilization and preparation for transfer.)*
- Notify the receiving hospital of **positive or negative** C-STAT results.
- Consider the use of air transport in the interest of time.

For patients that have been administered tPA at the hospital and are being transferred to another hospital, the abbreviated National Institute of Health Stroke Scale (NIHSS) should be completed every 15 minutes along with a complete set of vitals. This information should be documented on the transfer paperwork as well as in the ePCR documentation.

This is an abbreviated NIHSS for use by Pre-hospital providers during the transfer:

	Scale Definition / Function
LOC: <i>level of consciousness</i>	0 = Alert, keenly responsive; 1 = Not alert, arousable; 2 = Not alert, requires stimulation; 3 = Reflex or no response
LOC Questions: <i>Ask patient the month and their age</i>	0 = Answers both correctly; 1 = Answers one correctly; 2 = Performs no task correctly;
LOC Commands <i>Open & close eyes, make fist- let-go</i>	0 = Performs both tasks correctly; 1 = Performs one task correctly; 2 = Performs no task correctly

NEUROLOGIC ASSESSMENT

11/07/2017

Right Arm Motor	0 = No drift; 1 = Drift down before 10 sec; 2 = Drifts to bed; 3 = No effort against gravity; 4 = No movement; UN = Amp or fusion
Left Arm Motor	0 = No drift; 1 = Drift down before 10 sec; 2 = Drifts to bed; 3 = No effort against gravity; 4 = No movement; UN = Amp or fusion
Right Leg Motor	0 = No drift; 1 = Drift down by end 5 sec; 2 = Drifts to bed; 3 = No effort against gravity; 4 = No movement; UN = Amp or fusion
Left Leg Motor	0 = No drift; 1 = Drift down by end 5 sec; 2 = Drifts to bed; 3 = No effort against gravity; 4 = No movement; UN = Amp or fusion


PHYSICAL RESTRAINT/ CHEMICAL SEDATION

05/07/2019

[EMR, EMT, AEMT, EMT-I, PARAMEDIC]

****EMS personnel should withdraw to a safe location immediately if the patient has any type of weapon or potential weapon and await law enforcement to secure the scene.**

<p>INDICATIONS</p>	<p>Combative or disoriented patients who present a physical danger to themselves or the crew.</p>
<p>EQUIPMENT/ PROCEDURE</p>	<ol style="list-style-type: none"> 1. Gurney/backboard straps: The patient may be placed in standard full C-spine precautions. 2. Commercial restraints: Roll gauze, soft-restraints, or leather restraints may be utilized on patients who are mildly combative or disoriented. 3. Flexi-cuffs: Offer a quick and effective restraint for more combative or strong patients. Flexi-cuffs should not be used on patients with fragile skin conditions (e.g., elderly or patients on prednisone). 4. Sheets or blankets may be used to restrain a patient’s torso or legs. 5. Law enforcement applied handcuffs: are acceptable as long as a police officer accompanies the patient to the hospital. When handcuffed, the patient should be positioned to be able to easily treat the patient. Consider securing the patient to a LBB. 6. To prevent a patient from spitting, oxygen, surgical masks or spit sock may be used; but the patient’s airway must be constantly and carefully monitored. 7. Adhesive tape will not be used to restrain patients except as part of cervical immobilization. 8. If a patient becomes violent while being transported and ambulance personnel are unable to restrain the patient, the driver should immediately stop the ambulance, notify dispatch of the situation and location, and all EMS personnel should leave the vehicle. When leaving the vehicle under such circumstances, personnel should attempt to take the ignition keys and portable radio(s). 9. Immediately following any use of physical restraints, monitor airway status, vital signs, and neurocirculatory status distal to restraints frequently and document every 15 minutes.

	<p>10. If verbal defusing and physical restraint fails to achieve the goal of patient and care giver safety, sedative medications may be utilized.</p>
<p>CHEMICAL SEDATION (Paramedic Only)</p> 	<p>Chemical Sedation</p> <ul style="list-style-type: none"> • May be used to treat the agitated or violently combative patient who presents a danger to themselves or others. • Once the treatable causes are ruled out, follow necessary procedure. <p>Pharmacological agents:</p> <ul style="list-style-type: none"> • Ketamine (1st Line) • Midazolam (2nd Line as needed) • Once a patient is in the process of being chemically sedated, the medics must continually monitor the patient for respiratory depression. Pulse oximeter and ETCO₂ monitoring should be done along with vitals, including level of consciousness every 5 minutes.
<p>KEY POINTS</p>	<ol style="list-style-type: none"> 1. Law Enforcement should be requested and present if possible prior to restraining patient. 2. When approaching these patients and attempting to gain voluntary compliance, the following standard shall be utilized and clearly documented: <ol style="list-style-type: none"> a. Request for compliance b. Explanation of why compliance is necessary c. Actions taken: <ul style="list-style-type: none"> - Voluntary Compliance - Chemical sedation/Physical restraint - Retreat and wait until law enforcement arrives to place patient on a police officer hold. 3. The patient shall not be restrained in a face-down or prone position, nor shall a backboard or scoop stretcher be placed on top of him/her.

TRAUMA - MAJOR TRAUMA ASSESSMENT & TREATMENT PRIORITIES**9/16/2020****[EMR, EMT, AEMT, EMT-I, PARAMEDIC]**

INDICATIONS	MARCHH Assessment for significant trauma mechanisms.
CONTRA-INDICATIONS	Patients deemed to be non-viable in multiple patient incidents.
PROCEDURE	<ol style="list-style-type: none"> 1. (M)assive Hemorrhage Control: (find & stop life threatening bleeding) <ul style="list-style-type: none"> • 10 second head-toe blood sweep. • Tent & cut clothing at blood or deformity. • Direct pressure on bleed. • Tourniquet extremity or inguinal bleed. • Wound packing at junctional area. • Consider TXA <p>See TRAUMA- Bleeding & External Hemorrhage Control Protocol & Tranexamic Acid Protocol.</p> 2. (A)irway: (prevent anoxic brain injury by opening airway) <ul style="list-style-type: none"> • Place NPA • Suction if needed. • Place in recovery position for MCI. <p>See AIRWAY- Airway Management Protocol</p> 3. (R)espirations: (support ventilation) <ul style="list-style-type: none"> • Decompress tension pneumothorax • Chest seals on penetrating wounds of thorax. • Ventilate with airway adjuncts/oxygen delivery. <p>See AIRWAY- Pleural Decompression & AIRWAY- Airway Respiratory Emergencies Protocols</p> 4. (C)irculation: (prevent and treat for shock) <ul style="list-style-type: none"> • Establish IO/IV • Follow permissive hypotension protocol <ul style="list-style-type: none"> ➢ Systolic BP <80? ➢ Mentation GCS <14? • Administer 250cc NS, repeat once. • Contact MD for additional fluid administration. <p>See Shock Protocol</p> 5. (H)ead/(H)ypothermia: <ul style="list-style-type: none"> • Limit ICP from TBI • Limit trauma triad of death: (Hypothermia, Acidosis, Hypo-coagulopathy) • Protect from hypothermia <ul style="list-style-type: none"> ➢ Remove clothing while in route to hospital. ➢ Active and passive thermic measures. ➢ 2nd assessment: ensure bleeding has stopped. • Prevent 2nd head injury <ul style="list-style-type: none"> ➢ Consider spinal precautions & prevent hypoxia ➢ Prevent hyperventilation, hypotension & hypoglycemia <p>See TRAUMA- Head Trauma & Hypothermia Emergencies Protocol</p>

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TRAUMA- Spine Trauma

09/02/2020

_ [EMT, AEMT, EMT-I, PARAMEDIC

Immobilize using a Long Backboard (LBB) if the patient has a mechanism with the potential for causing spinal injury and meets ANY of the following clinical criteria:

- Altered mental status.
- Evidence of being under the influence of intoxicants. – **See Intoxicated Patient Protocol**
- Distracting pain/injury (extremity fracture, drowning, etc.).
- Neurologic deficit (numbness, tingling, paralysis).
- Spinal pain or tenderness.
- Comorbid age factors (<12 or >55 years) may impact the EMS Provider’s ability to assess the patient’s perception and communication of pain. A conservative approach to immobilizing these patients is strongly recommended.
- Distracting situation (communication barrier, emotional distress, etc.).
- Inability to communicate.
- For isolated penetrating head/neck trauma when there is neurologic deficit or an adequate physical exam cannot be performed, e.g., the unconscious patient.
- Any patient meeting Step 3 Trauma entry criteria.

Special Considerations

- On arrival, if the patient is complaining of neck pain and is ambulatory on scene, a C-Collar alone is adequate.
- If extricating a patient using a LBB would cause excess spine manipulation, possibly causing more harm, consider having patient self-extricate with C-Collar in place to gurney.
- If any immobilization techniques cause an increase in pain or neurologic deficits, immobilize patient in the position found or position of greatest comfort.
- Stabilize C-Spine manually until the patient is fully immobilized on a LBB.
- Carefully assess the patient’s respiratory status during transport. Loosen straps as needed to avoid respiratory compromise.
- Patients in the third trimester of pregnancy should have the right side of the backboard elevated six inches.
- Obese patients should have the head of the LBB elevated to decrease respiratory compromise.
- Pad backboards for all inter-facility transports. If feasible, especially in prolonged scene transports, pad backboards.
- Patients felt at low risk for spinal injuries but meeting above criteria, may be transported with C-Collar only.

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TRAUMA- SPLINTING**09/02/2020****[EMR, EMT, A-EMT, EMT-I, PARAMEDIC]**

INDICATIONS	Immobilization due to suspected fracture, sprain, or injury
SPECIAL INFORMATION	<p>Splint the following injuries as directed:</p> <ul style="list-style-type: none"> • Poor neurovascular status – make one attempt to realign to anatomical position and improve circulation. Splint in anatomical position • Joint injury – splint in position found
SPLINTING DEVICES	
EXTREMITY SPLINT EMR, EMT, A-EMT, EMT-I, PARAMEDIC	<ol style="list-style-type: none"> 1. Used for suspected limb injuries 2. Traction splint – EMT, A-EMT, EMT-I, PARAMEDIC <ol style="list-style-type: none"> a. Suspected closed femur fracture with no evidence of pelvic fracture b. Traction is to be no more than 15lbs or 10% of the patient's body weight whichever comes first
PELVIC SPLINT EMR, EMT, A-EMT, EMT-I, PARAMEDIC	<ol style="list-style-type: none"> 1. Used for suspected pelvic fracture <ol style="list-style-type: none"> a. Splint with sheet or pelvic sling
KED EMR, EMT, A-EMT, EMT-I, PARAMEDIC	<ol style="list-style-type: none"> 1. Used for suspected spinal injury in stable seated patients <ol style="list-style-type: none"> a. Can be used in place of LBB – See Spine Trauma Protocol
FULL BODY SPLINT EMR, EMT, A-EMT, EMT-I, PARAMEDIC	<ol style="list-style-type: none"> 1. Used for suspected spinal injury as an alternative to LBB – See Spine Trauma Protocol <ol style="list-style-type: none"> a. Patients who would benefit from a full body splint: <ul style="list-style-type: none"> • Elderly • Kyphosis • Extended transport 2. Used for suspected hip fracture/dislocation

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TRAUMA- TRIAGE & FIELD TRIAGE SCORE (FTS)
09/02/2020 [EMR, EMT, AEMT, EMT-I, PARAMEDIC]

INDICATIONS	For use in Mass Casualty Incidents (MCI) where trauma is suspected. The Field Triage Score (FTS) provides a simple method to classify patients into categories in order to prioritize evacuation.
PROCEDURE	<ol style="list-style-type: none"> 1. Evaluate for a radial pulse. <ul style="list-style-type: none"> • Radial pulse present: 1 point • Radial pulse absent: 0 points 2. Evaluate the patient’s mental status. <ul style="list-style-type: none"> • Follows commands: 1 point • Unable to follow commands: 0 points <p>2 points: Minor: Lowest initial transport priority.</p> <p>1 points: Intermediate: Intermediate transport priority.</p> <p>0 points: Critical: Critical life threat and must have rapid transport to survive.</p> 3. Visibly mark the patient’s Field Triage Score (M, I, C) on the back of their hand or forehead with the permanent ink marker. <p>Patients will be divided in to groups according to their FTS in the casualty collection point or treatment/triage area.</p> <p>Reassess patients often and make changes to the FTS as needed.</p>
CAUTION	<p>Be aware of CRITICAL patients who are ambulatory on the scene. Patients may not have signs and symptoms of life-threatening injuries early in the event. Frequent reassessment is very important.</p> <p>During an Active Violent Incident (AVI) do not triage patients until all the life- threatening injuries have been treated. Triage happens when the patient arrives at the Casualty Collection Point (CCP) or treatment triage area.</p>

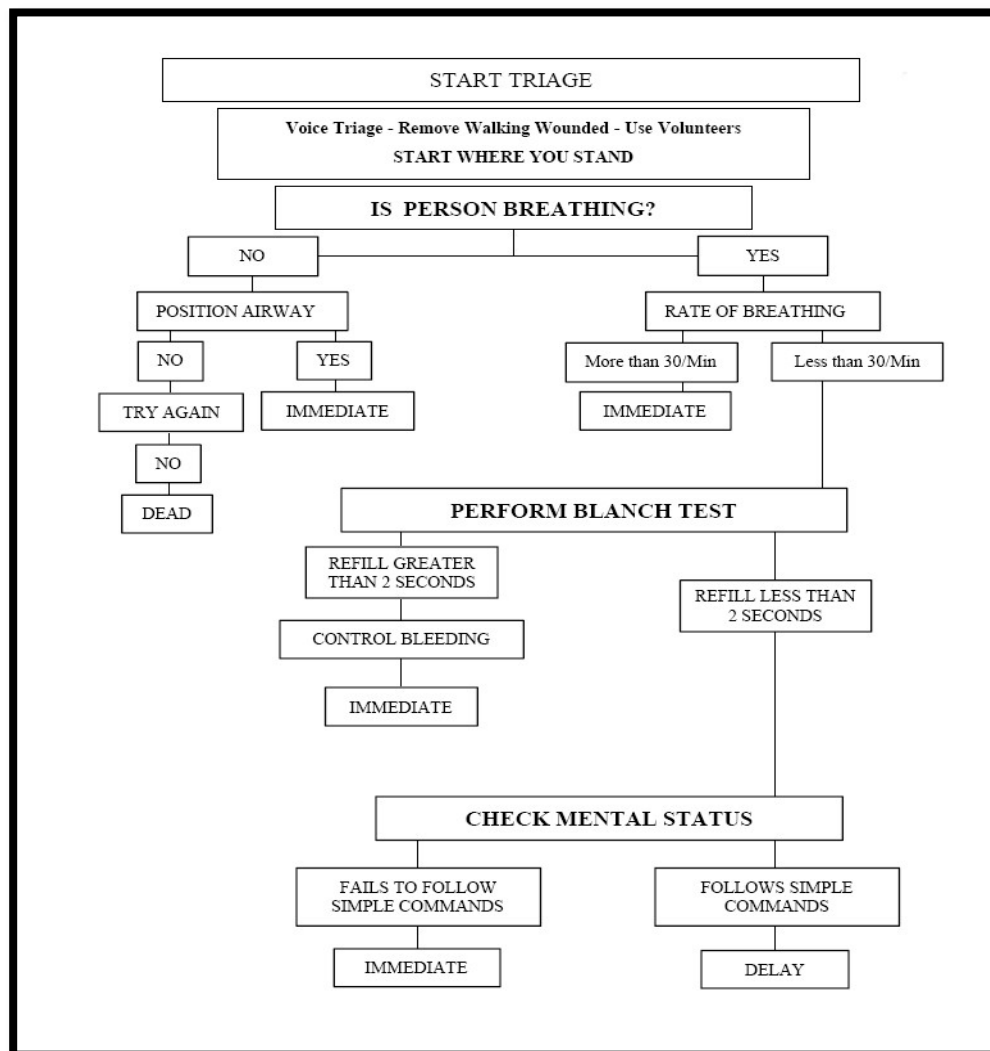
TRAUMA- TRIAGE & FIELD TRIAGE SCORE (FTS)

09/02/2020

[EMR, EMT, AEMT, EMT-I, PARAMEDIC]

START triage is an additional method of triage that may be used by some EMS response agencies. Crews should be familiar with this method of triage in addition to FTS. In blending the two methods the outcome language is important especially when communicating with the hospital –

- **Minor = WALKING WOUNDED/DELAY (Green/Yellow)** : Lowest initial transport priority.
- **Intermediate = IMMEDIATE (Red)**: Intermediate transport priority.
- **Critical = IMMEDIATE (Red)**: Critical life threat and must have rapid transport to survive.



**TRAUMA- Tympanic Membrane Examination with Otoscope
09/02/2020**

- Any significant blast or pressure mechanism should lead to suspicion of internal organ rupture and massive bleeding leading to shock.
- Complete loss of hearing in one or both ears should lead EMT to suspect membrane rupture.

**EMR/EMT
A-EMT/EMT I
PARAMEDIC**

1. Explain the procedure to the patient.
2. Ask the patient:
 - a. Which is your better hearing ear?
 - b. Do you have pain or tenderness?
 - c. Can you smile for me?
 - *Facial weakness suggests ear disease or injury.
3. Inspect auricle (external ear).
 - a. Note abnormal color, discharge, shape, and scars.
4. Choose largest speculum based on patient's ear canal.
5. During exams, hold the Otoscope like a pen, balancing it between your thumb and index finger. Extend the pinky finger and rest it against the patients face. This technique will ensure that the patient is not injured by the speculum should they move their head.
6. To examine the right ear, hold the Otoscope in your right hand and use your left hand to pull the auricle upwards, outwards, and backwards to straighten the external ear canal to permit a better view of the tympanic membrane. In children pull the auricle down and back instead.
7. Insert the Otoscope into the external auditory meatus (ear canal) until the tympanic membrane is visualized. Gently move the speculum around to view the whole tympanic membrane.
8. To examine the left ear, hold the Otoscope in your left hand and use your right hand to pull the auricle upwards, outwards, and backwards to straighten the external ear canal to permit a better view of the tympanic membrane. In children pull the auricle down and back instead.

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