

KEY LARGO EMS COMMON MEDICAL PROTOCOL

Authorized Paramedics Only – must be trained and approved to perform this procedure:

Equipment needed: 14 gauge 3/4 catheters, 20cc syringe, betadine, 3 way stop cock, 2" tape. Stethoscope

- ♥ Determine affected side of chest
- ♥ Locate insertion site: 2nd ICS anterior mid-clavicular line
- ♥ Prep with alcohol and betadine
- ♥ Attach catheter to syringe and draw back on syringe to break seal and then restore plunger to original position
- ♥ Insert catheter using a 90 degree angle, "just above 3rd rib"
- ♥ Begin negative pressure on the syringe: a rush of air indicates a tension pneumothorax
- ♥ Disconnect the syringe and remove needle
- ♥ Place 3-way stop cock on catheter: if tension pneumothorax redevelops, briefly turn valve to relieve trapped air
- ♥ If syringe fills with blood on decompression, withdraw needle and stabilize catheter and heparin lock: monitor for hypotension
- ♥ Secure catheter with tape

Diagnostic bilateral pleural decompressions should be performed on traumatic arrest patients

Basic Airway Management (BAM): is defined as follows: Assisted Ventilation's while using basic airway adjuncts (OPA, NPA) King Tube and a Bag Valve Mask.
Advanced Airway Management (AAM): Includes all Basic procedures with the addition of Endotracheal, NasoTracheal, Surgical airways.

CHEST DECOMPRESSION

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CPAP CONCEPTS

EMT / Paramedic

Indications:

- Any patient in respiratory distress with signs and symptoms of COPD, Asthma, CHF, pulmonary edema or pneumonia
- Is alert and able to follow commands with the ability to maintain an open airway
- **Over 12 years old** and able to obtain a proper mask fit

Contraindications:

- Respiratory Arrest
- Pneumothorax or chest trauma
- Actively vomiting or upper GI bleed
- Seizures
- Inability to cooperate or tolerate CPAP. Severe asthmatic patients may not be able to tolerate due to the difficulty of exhalation.

Procedure:

- Check all O₂ equipment before starting CPAP, make sure enough oxygen is available and all equipment is connected properly
- Continuously monitor SaO₂
- Place patient in comfortable position (usually sitting upright), discuss the procedure and reassure them
- Connect CPAP unit to oxygen outlet and turn main oxygen tank on
- Apply mask to patient's face and adjust head strap to secure a tight fit on patient's face
- Adjust the air pressure on PEEP valve to appropriate level by rotating/turning the white adjustment "knob":
 - Asthma/COPD: 5cm H₂O
 - CHF: 10cm H₂O
- Continually monitor patient comfort and improvement and check for air leaks
- Contact receiving facility as early as possible to ensure that respiratory will have BiPAP available for transfer of patient
- Albuterol can be given in-line with CPAP if needed for Paramedics only (see diagram on next page) by inserting nebulizer assembly at connection between mask and pressure regulator using "blue plastic tube" adapters.
- Paramedic only: Administer Nitro x 2 (unless contraindicated – V4R positive, erectile meds within 24 hours, BP < 100) to CHF patients if needed while CPAP is in place

Special things to consider:

- ♥ If BP falls below 100 or mental status deteriorates, discontinue CPAP, assist ventilations and prepare for intubation
- ♥ CPAP therapy should be continuous and not removed unless patient is unable to tolerate it or directed by hospital to stop
- ♥ Procedure may be performed on patient with DNRO

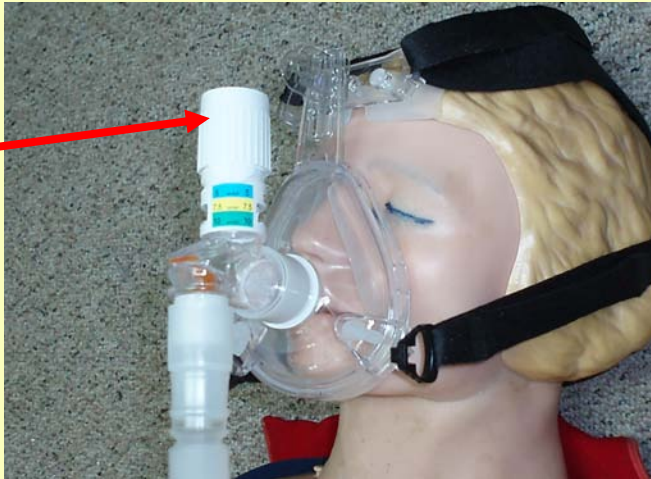
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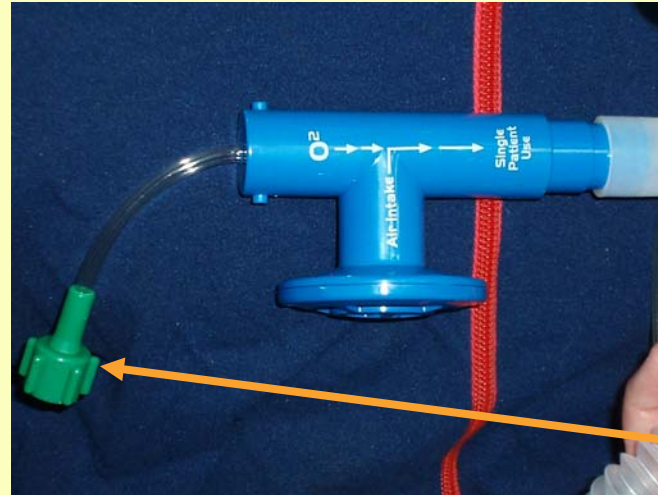
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To adjust the pressure, rotate the white knob to the desired setting (5.0, 7.5 or 10.0)



Three dial-in pressure levels are available:
(5.0, 7.5, and 10.0 cm H₂O).



CPAP Mask with Nebulizer Setup

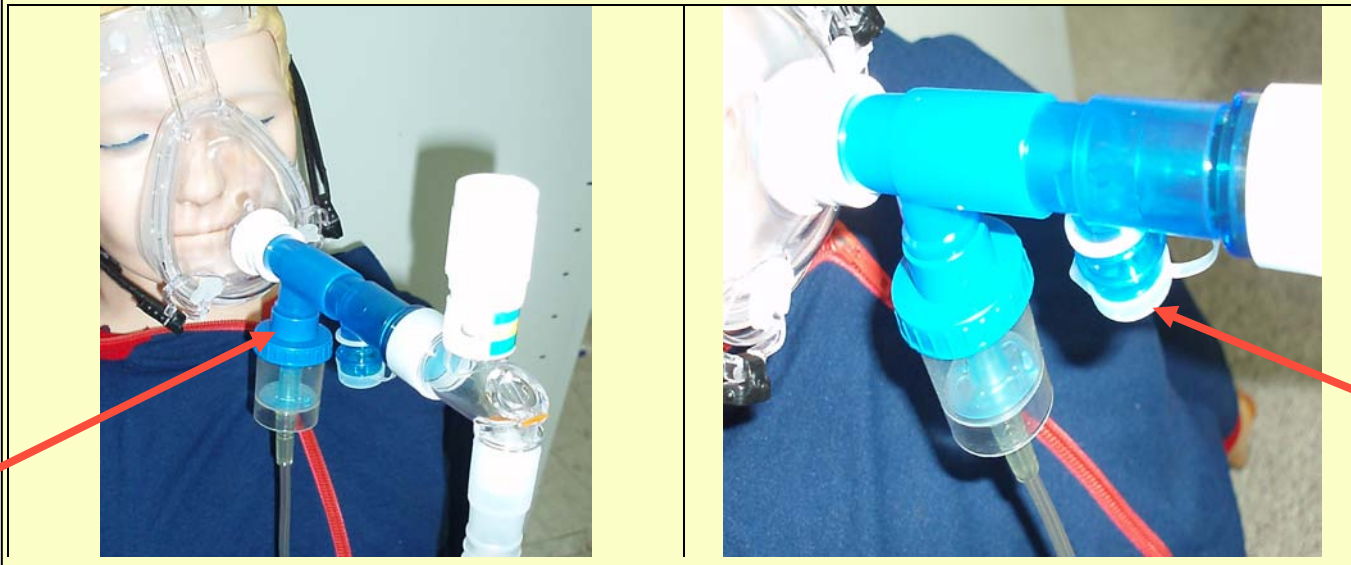
The threaded green end either screws into the oxygen wall outlet (remove green nipple) or by using screw-on adapter on the portable oxygen bottle.

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CPAP BASIC ASSEMBLY

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The Nebulizer attaches between the mask and the pressure regulator assembly using the blue adapter tubing.

Ensure that the cap is in the "closed" position before using the Nebulizer with the CPAP.

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CPAP ASSEMBLY WITH NEBULIZER

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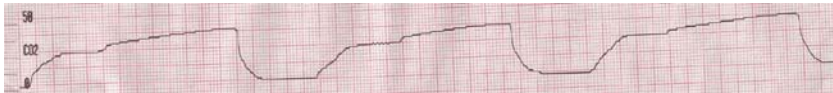
Normal ETCO₂ Waveform
(between 35 to 45 are normal levels for CO₂)



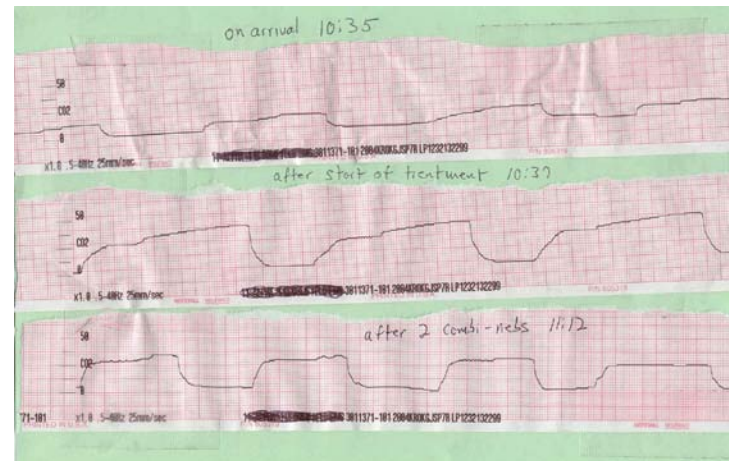
Hyperventillation



Hypoventilation



Bronchospasm (typical for Asthma)



Typical response of Bronchospasm to Nebulizer

All intubated patients should have the ETCO₂ monitor attached to the tube to ensure tube placement.

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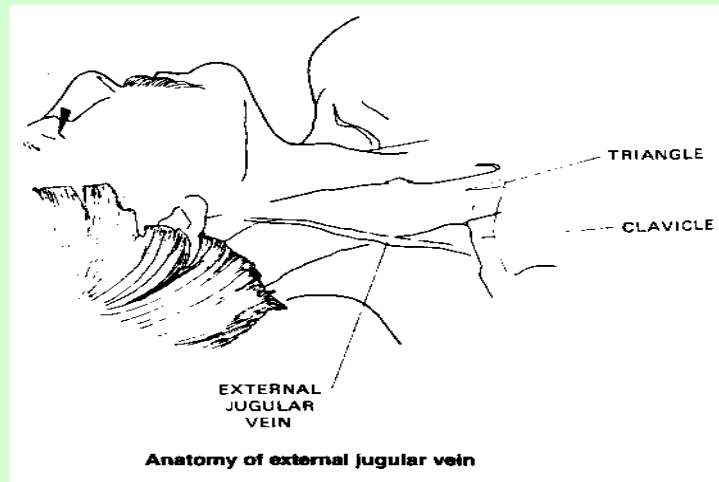
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KEY LARGO EMS COMMON MEDICAL PROTOCOL

Paramedic

Equipment Needed: IV catheter, IV solution and tubing, venigaurd, alcohol prep

- ♥ Place patient in supine or Trendelenberg position
- ♥ Turn patients head opposite side of access: the right jugular vein is preferable to the left
- ♥ Cleanse the site with alcohol
- ♥ Occlude venous return by placing finger on the external jugular just above the clavicle
- ♥ Point catheter at the medial third of the clavicle and insert it (bevel up) at a 10-30 degree angle
- ♥ After good flash is seen, advance catheter, remove needle and connect IV tubing
- ♥ If patency is questionable, attach a 10cc syringe to the catheter and aspirate a small amount of blood
- ♥ Carefully secure with venigaurd
- ♥ Continuously monitor IV site to assure patency



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EXTERNAL JUGULAR IV ACCESS

KEY LARGO EMS COMMON MEDICAL PROTOCOL

PARAMEDICS TRAINED IN THIS PROCEDURE ONLY:

Equipment Needed: EZ-IO driver and appropriate needle, Betadine, NS or LR with drip set, 10cc syringe, EZ-IO connector tubing, pressure infuser and 2" tape

Indications: For the administration of fluids or medications in patients in traumatic or cardiac arrest, or patients severely unconscious and hemodynamically unstable in which a peripheral IV cannot be established

Contraindications:

- Fracture to the tibia or femur of the selected leg
- Previous orthopedic surgeries (evidenced by scars on the knee or leg)
- Infection at insertion site or peripheral vascular disease
- Excessive tissue at insertion site
- Inability to locate 3 landmarks for proper placement

Select appropriate needle:

- Adult: > 40 kg – there are two lengths; regular and long
- Pediatric: 3- 39 kg or patients that fit on the Broselow tape (if child has excessive tissue, adult needle may be used)

Procedure:

- Locate landmarks: identify patella, approximately 2 finger widths below patella is tibial tuberosity, then **1 finger width medial is the final landmark**
- Clean site with Betadine
- Select appropriate needle and prepare driver
- Stabilize leg and power the needle set through the skin at a 90 degree angle to the surface of the bone until you feel the needle set tip encounter the bone itself
- **The 5mm mark on the catheter(mark closest to the flange) should be visible**
- **If 5mm mark not visible abandon the procedure, the needle is not long enough**
- Apply firm and steady pressure on the driver and power through the cortex (hard, outer surface of the bone), ensuring the driver is maintained at a 90 degree angle
- Stop when the flange touches the skin or sudden decrease in resistance is felt
- Remove the driver from needle set and withdraw Stylet from catheter
- If patient is unable to tolerate pain due to fluid pressure inside the bone, consider administering **Lidocaine 25mg IO, up to 50mg** to reduce pain
- Attach primed EZ-IO extension tubing and confirm placement with fluid bolus: **failure to flush will result in no flow**
 - Adults: 10cc fluid bolus
 - Pediatrics: 5cc fluid bolus

Secure tubing and catheter with tape and document time of insertion as the EZ-IO is good for 24 hours

Pressure infuser may be used to maintain adequate flow rates

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KEY LARGO EMS
COMMON MEDICAL PROTOCOL

EZ IO LANDMARKS

Paramedics trained in this procedure only

<p>Locate landmark</p>	<p>Clean insertion site</p>	<p>Power driver through the cortex</p>
<p>Remove needle</p>	<p>Attach extension tubing, flush, and consider Lido (25mg to 50mg IO) for bone pain in conscious patients.</p>	<p>Pressure infusion for adequate flow rates</p>

In the unlikely event of a driver failure consider manual insertion

No Flush = No Flow

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EMT/ Paramedic:

Equipment Needed: Appropriate size King Tube based on height, 60cc syringe, KY Jelly, 2” tape, ETCO₂, pulse ox, stethoscope, NG Tube (12 French)

- Choose correct size tube from chart below
- Test cuff for bulb integrity
- Apply lubricant to distal end, avoid ventilatory openings
- Pre-oxygenate patient
- Position patient’s head in “sniffing” position
- Hold tube with one hand and apply chin lift, lift tongue and jaw to insert tube midline, advance the tube at a 45 degree angle
- Rotate the tube back to the midline as the tube passes behind the base of the tongue
- Using a 60cc syringe, inflate the cuff with the appropriate volume of air
- Ventilate patient with 100% O₂ with BVM, slightly pull back on tube until ventilations become less resistant
- Confirm placement by auscultation of the lungs and continuous ETCO₂ and pulse oximeter monitoring
- Insert NG tube (see NG tube placement) in open area of the tube
- Secure tube with tape
- Secure the King Airway using endo-lock

King Tube Sizing Chart:

<u>Size</u>	<u>Height</u>	<u>Color</u>	<u>Inflation Volume (Air)</u>
3	4-5 feet	Yellow	45-60 mL
4	5-6 feet	Red	60-80 mL
5	Taller than 6 feet	Purple	70-90 mL

To avoid bulb rupture, do not inflate the cuff with more than specified amount of air

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Paramedic Only:

Nasotracheal intubation may be necessary if:

- King tube and oral endotracheal intubation is not desired, accepted or possible
- Difficult airway with bleeding and obscured hypopharynx
- Jaw fracture with unstable airway and unable to control patient secretions

Pre-oxygenation is particularly important for a few minutes to get the pulse ox up and buy some time if this airway is to be attempted safely. Recognize that the majority of NTI attempts will not succeed on the first time. About 25% of the cases are impossible to NTI. Prolonged attempts are associated with hypoxemia and glottic edema secondary to local trauma. Either of these complications can worsen the situation substantially. Nasotracheal intubation takes longer and has a higher failure rate. It also has a higher complication rate and requires smaller tube sizes than oral tracheal intubation. It is **contraindicated** in:

- combative patients
- those with anatomically disturbed airways
- those with neck hematomas
- in cases of increased intracranial pressure
- in the context of severe facial trauma
- upper airway infection or abscess
- in the presence of bleeding disorders

It should be performed with great reservation in any patient who needs rapid intubation, because, despite optimistic claims to the contrary, intubation usually requires several minutes to complete using this technique, unless you get very lucky! It is a poor choice in patients with respiratory failure, such as the asthmatic in extremis, who cannot be oxygenated during the prolonged intubation attempts. In multiple injury patients with potential cervical spine injury, oral RSI by the Air Transport crew with in-line stabilization is the preferred route.

When the tube is advanced, one of three things can happen:

- If the trachea is entered, a series of long-wheezy coughs will usually emanate from the patient. Confirmation of tube placement should immediately be sought with ETCO₂.
- If the trachea is not entered, the tube will either slide easily down the esophagus;
- Or will come to an abrupt halt as it tries to pass anterior to the vocal cords or abuts against the anterior wall of the larynx

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NASOTRACHEAL INTUBATION CONCEPTS

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Paramedic Only:

Equipment Needed: NPA, BVM, oxygen, appropriate size endotracheal tube, stethoscope, ETCO² detector, pulse ox, BAAM, Neosynepherine, Lidocaine jelly, suction, 1" tape and laryngoscope

- ♥ Pre-oxygenate patient and have suction readily available
- ♥ Select an appropriate sized nasopharyngeal airway and generously lube with K-Y jelly
- ♥ Prepare the selected nare by spraying 2-3 times Neosynepherine into the nostril
- ♥ Insert lubricated nasopharyngeal airway
- ♥ Next, select appropriate size ET tube(usually 6.0-7.0) and prepare for insertion by checking cuff integrity and lubricating with Lidocaine jelly
- ♥ **DO NOT USE A STYLETTE**
- ♥ Place the pt's head in a neutral position
- ♥ Remove the nasopharyngeal airway and insert the ET tube perpendicular to the patient's face with the bevel facing the nasal septum following the curve of the Nasopharynx
- ♥ Gently advance the ET tube during inspiration until the distal cuff is just past the vocal cords. At this point, the patient may cough
- ♥ A rush of air should be heard and felt as the tube passes through the cords or the BAAM should whistle loudly
- ♥ Inflate the cuff with 5-10cc air
- ♥ Ventilate the tube, checking for bilateral breath sounds and absent epigastric sounds
- ♥ Secure ET tube and reconfirm placement
- ♥ If breath sounds are diminished pull the ET tube back slightly and reposition head and insert ET tube again on inspiration
- ♥ If difficulty is encountered passing the tube, then the tube may be carefully guided using your laryngoscope and Magill forceps
- ♥ Continuously monitor ETCO² and pulse oximeter to confirm the placement and patency

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NASOTRACHEAL INTUBATION

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Paramedic Only:

Equipment Needed: Appropriate size NG Tube, 60cc syringe, K-Y jelly, 1" tape, stethoscope, suction

- An 18 fr. NG tube is preferred for all adult patients that require a nasogastric tube
- Measure the tube from the tip of the patient's nose around his ear and then to the bottom of his xyphoid process
- Mark the tube with tape at the nose to maintain appropriate length
- Lubricate the tip tube with K-Y jelly and Lidocaine jelly
- Insert the tube into the nostril and gently passing it into the posterior pharynx. If the patient is able, instruct them to swallow as you advance the tube. The patient may gag.
- Allow the patient to rest for a few moments and continue to insert until marked depth is reached
- Confirm the correct placement of the tube:
 - With 60cc syringe aspirate stomach contents. Be sure to replace stomach contents once confirmed.
 - Insert 60cc of air and simultaneously Auscultate over the stomach with a stethoscope
- Secure the tube to the nose with tape
- Connect the end of the tube to suction on low
- If you pass the tube into the trachea, pt will have difficulty talking. If this occurs, remove tube immediately.

This procedure should not be attempted if there are facial injuries

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NG TUBE - NASOGASTRIC TUBE

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Paramedic

Equipment Needed: OPA or NPA, BVM, oxygen, appropriate size endotracheal tube, stylette, 20cc syringe, stethoscope, ETCO² detector, suction and laryngoscope

- **Use the 3-3-2 rule for the airway to estimate the likelihood of success; the first look is the best look. Pre-oxygenation gives you the time to gently look.**
 - Attach pulse oximeter and have suction readily available
 - Perform appropriate BLS airway maneuver to open the airway
 - Head tilt chin lift or jaw-thrust maintaining inline stabilization
 - Insert oropharyngeal airway and/or nasopharyngeal airway
 - Check the integrity of the ET tube by inflating the cuff and deflate
 - Pre-oxygenate with BVM 15 lpm O₂ at a rate of 10-12 per minute
- Using the laryngoscope, insert ET tube with direct visualization of the vocal cords
 - **YOU MUST SEE ET TUBE PASS THROUGH THE VOCAL CORDS**
- **Optionally, use the SALT airway and insert it until the end rests against the teeth**
- **Insert the ET tube through the orifice on the SALT airway until the ET tube is in the trachea**
- **Remove the SALT airway leaving the ET tube in place**
- Inflate the cuff on the ET tube
- Auscultate epigastric area to confirm no sounds present
- Auscultate lung sounds bilaterally:
 - If breath sounds absent, withdraw ET tube and re-oxygenate
 - If left breath sounds absent, withdraw the ET tube slightly and auscultate again
 - If bilateral breath sounds present, secure ET tube and record cm depth at lips
- **Attach ETCO² detector**, square waveforms should appear on the monitor: **pulse ox should improve and chest should rise with insufflation**
- Secure the patient's neck with C-collar and CID on backboard
- Upon arrival to the ED, immediately have the receiving physician confirm tube placement and document this and the name of the physician on your PCR narrative.

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ORAL ENDOTRACHEAL INTUBATION

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EMT / Paramedic

Equipment Needed: Long backboard, 3 immobilization straps, head stabilization device, cervical collar

Adults

- Determine need for spinal precautions
- Assure and maintain manual c-spine immobilization
- Assess pulses, motor and sensation of the extremities
- Apply appropriate sized C-collar and long backboard
- Fill voids with paddings/towels as needed
- Apply 4 straps using the chest cross-strap technique
- Apply head stabilizing device
- Reassess pulses, motor and sensation after immobilizing patient
- Do not strap the patient directly over the abdomen

Strap the patient to the backboard before securing the patients head

Pediatrics

- Apply appropriate size c-collar
- Pad under the shoulders using pillow cases or towels to prevent flexion of the spine
- Utilize the pediatric immobilization device if patient fits properly
- Secure to long backboard

Pregnant Patients

- Immobilize as above and tilt the backboard left lateral recumbent to a 20 degree angle
- Assure patient comfort

The KED may also be used in clinically stable adult patients



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SPINAL MOTION RESTRICTION

KEY LARGO EMS COMMON MEDICAL PROTOCOL

Paramedic:
(Must be trained and signed off by the Medical Director to perform)

Equipment Needed: BVM, ETCO² detector, 1" tape, Surgical Cric Kit, suction unit, stethoscope

Performed as a last resort effort to establish a patent airway in patients who have an obstructed airway secondary to foreign body, infection, trauma, severe inflammation or allergy and when other airway procedures have failed or are futile.

- Locate the cricothyroid membrane. **If landmarks cannot be identified, DO NOT ATTEMPT PROCEDURE AND CLEARLY DOCUMENT**
- Prep the area with Betadine
- Using a scalpel, make a small light horizontal incision (1-2cm) through the superficial tissue
- Using hemostats spread the tissue
- Make another light incision and using hemostats, spread the tissue
- Continue lightly incising and spreading the tissue until the cricothyroid membrane is exposed. Normally 2-3 sequences
- Make a small transverse (vertical) incision through the membrane
- Insert an un-cuffed ET tube through the incised membrane using hemostats to facilitate passage
- Advance the ET tube 1-3cm and secure
- Assure bilateral lung sounds.
- Check the ETCO² to confirm the placement & patency
- Secure tube with tape and 4x4's

Do not perform in children under 12 years old. The cricothyroid membrane is too small and underdeveloped thus refer to needle cric.

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SURGICAL CRICOTHYROIDOTOMY

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Paramedic Only:

Hemodynamically unstable, unconscious or decreased mental status, hypotension, dyspnea, chest pain
If possible, sedate with **Versed 2.5 mg (up to 10 mg max)**

Biphasic:

- Synchronized cardioversion 100 joules, if unsuccessful
- Synchronized cardioversion 200 joules, if unsuccessful
- Synchronized cardioversion 300 joules, if unsuccessful repeat subsequent shocks at 360 joules

If patients rhythm converts, then re-enters dysrhythmias, repeat cardioversion at last joule setting administered

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SYNCHRONIZED CARディオVERSION

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Paramedic Only:

- ♥ Apply Combo pads to patients chest
 - ♥ Apply first pad to anterior right chest, just below clavicle and second pad lower left lateral, mid axillary, or anterior / posterior.
- ♥ Connect the multifunction cable to the extremity leads
- ♥ Sedate the patient as needed with **Versed 2.5 mg (up to 10 mg max)**
- ♥ Print an ECG rhythm strip prior to pacing
- ♥ Turn on the external pacer and set the rate at 70 beats per minute
- ♥ Turn milliamps to lowest amount and slowly increase until electrical capture is noted
 - ♥ **Electrical capture is noted when each pacer spike is followed by a wide R wave**
- ♥ If electrical capture is achieved, check central pulses at the femoral and carotid
 - ♥ **If palpable pulses are present, mechanical capture has been achieved and pacing is successful**
- ♥ If both electrical and mechanical capture have **not** been achieved, pacing should be discontinued and the need for chest compressions assessed
- ♥ If pacing has been successful the patient's mental status, perfusion and blood pressure should improve
- ♥ Maintain pacing until ED is fully prepared to assume pacing efforts for the patient

It is imperative to have correct placement of pads and good contact to the chest wall to successfully pace

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TRANSCUTANEOUS EXTERNAL PACING

**KEY LARGO EMS
REFERENCE**

Pediatric Vital Signs

Age	Weight In Kg	Minimum Systolic BP	Normal Heart Rate	Normal Respiratory Rate
Premature	< 2.5	40	120-170	40-60
Term	3.5	60	100-170	40-60
3 months	6	60	100-170	30-50
6 months	8	60	100-170	30-50
1 year	10	72	100-170	30-40
2 years	13	74	100-160	20-30
4 years	15	78	80-130	20
6 years	20	82	70-115	16
8 years	25	86	70-110	16
10 years	30	90	60-105	16
12 years	40	94	60-100	16

Typical blood pressure in children 1 to 10 years of age: 80mmHg + (child's age in years x 2)

Lower limits of systolic blood pressure in children 1 to 10 years of age: 70mmHg + (child's age in years x 2)

Synchronized Cardioversion

Initial 0.5 joules per kg, subsequent shocks at 1 joule per kg.

Transcutaneous External Pacing

Follow Broselow tape recommendations

KEY LARGO EMS COMMON MEDICAL PROTOCOL

Paramedic Only:

Field Paramedics are to perform blood draws requested by Law Enforcement Officers provided the patient is going to be transported by EMS to the hospital and they are requested to draw blood by a Law Enforcement Officer. Also if the patient agrees to the blood draw and the EMS unit is already on scene, a legal blood draw may be performed by EMS personnel.

The rescue unit is **not** to respond to a scene for the sole purpose of performing a legal blood draw when there are no confirmed or suspected injuries; or when there is no need for medical evaluation, treatment or transport. It is more appropriate to have these types of legal blood draws performed at a hospital.

Field Paramedics are to perform legal blood testing only under the following circumstances:

- The request is made by a duly sworn Law Enforcement Officer.
- The Law Enforcement Officer provides the blood testing kit and takes custody of the sample once it is drawn.
- The Law Enforcement Officer advises the patient of the purpose of the blood test and their legal rights regarding the test.
- The Paramedic reiterates the purpose of the test and gains patient consent.
- The Law Enforcement Officer remains present during the entire procedure.
- If a patient refuses to have their blood drawn for legal blood testing, and a Law Enforcement Officer requests the use of force to obtain the blood sample, the paramedic WILL contact the Medical Director or Medical Control (ER Physician) for orders prior to performing the blood draw.

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LAW ENFORCEMENT REQUESTED BLOOD DRAWS