

Basic Airway Management

Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X

1. Assure an open airway by utilizing either the head tilt/chin lift maneuver; the modified jaw thrust maneuver or the tongue-jaw lift maneuver. The head tilt/chin lift maneuver is not to be used if there is any possibility of cervical spine injury.
2. Expose the chest and visualize for chest rise and movement, simultaneously listen and feel for air movement at the mouth and nose. This procedure will need to be done initially and after correcting an obstruction and securing the airway.
3. If the chest is not rising and air exchange cannot be heard or felt:
 - a. Deliver two positive-pressure ventilations. If resistance continues, follow AHA guidelines for obstructed airway rescue.
 - b. Reassess breathing and check for a central pulse.
 - c. If spontaneous respirations and a pulse are present, provide supplemental oxygen by non-rebreather mask or assist respirations with bag-valve mask (BVM) at 15 LPM.
 - d. If the patient remains breathless and a pulse is present, initiate ventilations with a BVM at 15 LPM at an appropriate rate.
 - e. If the patient remains breathless and a pulse is not present, initiate CPR and institute the appropriate cardiac protocol.
4. If the patient presents with stridor, “noisy breathing” or snoring respirations, render treatment for partial airway obstruction in accordance with AHA guidelines.
 - a. Reassess effectiveness of the airway maneuver.
 - b. If initially unable to resolve partial airway obstruction, suction the airway and visualize the pharynx for any evidence of foreign objects. Perform a finger sweep if a foreign object can be seen.
 - c. If partial airway obstruction persists, treat according to AHA guidelines for resolving a complete airway obstruction.
5. Once the obstruction has been corrected:
 - a. Insert an oropharyngeal airway or a nasopharyngeal airway.
6. Establish the presence and adequacy of breathing by observing the frequency, depth and consistency of respirations. Also, observe the chest

Basic Airway Management

wall for any indications of injuries which may contribute to respiratory compromise.

7. Supplemental oxygen should be delivered to any patient who exhibits signs of difficulty breathing, sensation of shortness of breath, tachypnea, use of accessory muscles, altered level of consciousness/altered mental status, cyanosis, cardiac symptoms, head injury or any indications of shock.
 - a. Supplemental oxygen should be provided by a non-rebreather mask (NRB) at a rate of 15 LPM.
 - b. If patient is unable to tolerate the NRB, administer oxygen via nasal cannula at a rate of 6 LPM.
8. Bag-valve mask ventilation with supplemental oxygen at 15 LPM should be initiated at the appropriate rate based on the age of the patient if respirations are absent, there is evidence of inadequate ventilation, respiratory rate is $< 8/\text{min}$, absent or diminished breath sounds or wounds to the chest wall.

Critical Thinking Elements

- Inadequate maintenance of the patient's airway, inappropriate airway maneuvers, using inappropriately sized airway equipment and/or failure to recognize an obstructed airway will complicate the patient's condition.
- Do not use the head tilt/chin lift maneuver on a patient with a suspected cervical spine injury.
- Proper facemask seal during artificial ventilations is imperative to assure adequate ventilation.

Airway Obstruction

Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X

An airway obstruction is life threatening and must be corrected immediately upon discovery.

1. If the patient has an obstructed airway and is still conscious:
 - a. Encourage the patient to cough.
 - b. Perform abdominal thrusts or back blows/chest thrusts in an infant if the cough is unsuccessful.
 - c. Repeat until the obstruction is relieved or the patient becomes unconscious.
 - d. Administer oxygen at 15 LPM if the patient has a partial airway obstruction and is still able to breathe.

2. If the patient is unconscious:
 - a. Perform CPR, 30 chest compressions; open the patient's airway and attempt to ventilate.
 - b. Reposition the head and reattempt to ventilate if initial attempt is unsuccessful.
 - c. Continue CPR with chest compressions and attempt to ventilate
 - d. Perform visualized finger sweep of the patient's mouth and reattempt to ventilate.
 - e. Repeat steps (c) and (d) if obstruction persists.
 - f. **ILS & ALS** may attempt direct extraction via laryngoscope and Magill forceps.
 - I. Use the laryngoscope and examine the upper airway for foreign matter and suction as needed.
 - II. Remove any foreign objects with forceps and suction.
 - III. Re-establish an open airway and attempt to ventilate.
 - IV. If the obstruction is relieved, continue with airway control, ventilations, assessment and care.
 - g. Continue abdominal thrust sequence or back blows/chest thrusts in infants if unable to relieve obstruction and expedite transport.

Critical Thinking Elements

- Maintain in-line c-spine stabilization using 2 EMTs in patients with suspected cervical spine injury.
- Poor abdominal thrust technique, inappropriate airway maneuvers, and/or failure to recognize an obstructed airway will complicate the patient's condition.

Capnography

Level of Care	EMR	EMT	ILS	ALS
Approved		Optional	X	X

Capnography, specifically waveform capnography, provides assessment of the quality of respiratory efforts as well as patency of airway adjuncts. Capnography can identify changes sooner than waiting for signs and symptoms in a patient who is not able to communicate those changes. During transport, capnography is a more reliable and easily assessable tool for verification of airway patency and effects or respiratory support.

All patients with advanced airways and complaining of respiratory distress should be monitored based on their quantitative (waveform) capnography (CPAP may not fit properly with capnography). Additional complaints such as sepsis and trauma may benefit from capnography.

1. Assemble all equipment prior to utilization.
 - a. If required by unit model, zero out unit.
2. Apply ETCO₂ adapter.
 - a. If utilizing for monitoring of conscious patient, nasal cannula can be applied.
 - b. If utilizing with ETT/King LTS-D placement location in circuit should be based on manufacturer recommendations.
3. Resume ventilations (continue spontaneous respirations)
4. Observe monitor for numeric value and waveform.
 - a. Obtain documentation strip prior to and after patient move.
 - b. If absent or low numeric value and/or absent or inappropriate waveform.
 - i. Immediately verify placement of advanced airway via direct visualization and stethoscopy.
 - ii. Assess Circulation for possible cause of low/absent/inappropriate readings
5. Unless directed otherwise by specific treatment protocol, seek to maintain ETCO₂ range of 35- 45mmHg.
 - i. A sudden decrease in ETCO₂ in any situation could signal a change in patient condition. Immediately assess patient and begin resuscitation as indicated.
 - ii. A sudden increase in ETCO₂ during cardiac arrest may indicate ROSC. Assess patient.

Critical Thinking Elements

- Know your equipment.
- Providers must know the difference between no value detected and no

Capnography

signal detected.

- Reasons for no value detected must immediately assessed and include:
 - Loss of airway
 - Apnea
 - Obstruction
 - Circulatory collapse
 - Cardiac arrest
 - Equipment failure

CPAP/PEEP/BiPAP

Level of Care	EMR	EMT	ILS	ALS
Approved		X	X	X

CPAP (Continuous Positive Airway Pressure) can be applied to achieve PEEP (Peak End Expiratory Pressure) for patients presenting with signs & symptoms of respiratory distress and need support. The patient must be alert and able to adequately ventilate spontaneously in order for CPAP to be initiated. PEEP valves should be utilized with airway management and BVM utilization. BiPAP may be utilized in place of CPAP, as long as agencies have EMS System approval and documented provider training and competency.

1. Assess vital signs
2. If the systolic BP is between 90-100mmHg contact Medical Control prior to initiating.
3. Connect the generator to the 50 psi oxygen outlet.
4. Attach the mask.
5. Attach the PEEP valve package with the CPAP circuit.
6. Attach the filter to the air entrapment port.
7. Secure the mask on the patient's face.
8. Treat continuously while en route to the receiving facility.
9. Obtain and record vital signs every 5 minutes.
10. In case of life-threatening complications:
 - a. Stop CPAP treatment.
 - b. Offer reassurance.
 - c. Institute appropriate BLS & ALS support per protocol.
 - d. Adverse reactions to CPAP are to be documented on an incident report and forwarded to the HSHS St. John's Hospital EMS System Coordinator within 24 hours of the occurrence.
 - e. On arrival at the receiving hospital, immediately communicate any adverse reactions to the ED staff.
11. Documentation in the patient care record should include:
 - a. Detailed description of the initial assessment findings.
 - b. Vitals, including pulse oximetry, prior to initiating CPAP.
 - c. Vitals (& pulse oximetry) every 5 minutes.
 - d. Patient response to treatment (positive effects, no change or adverse reaction).

Contraindications:

CPAP/PEEP/BiPAP

- Systolic BP < 90mmHg
- Severe cardiorespiratory instability and impending arrest
- Respiratory or cardiac arrest
- Upper airway abnormalities or trauma
- Penetrating chest trauma
- Compromised thoracic organs
- Persistent nausea & vomiting
- Gastric distention
- Obtunded patient/ questionable ability to protect airway

King LTS-D

Level of Care	EMR	EMT	ILS	ALS
Approved		Adult Only	Adult/Pedi	Adult/Pedi

The KING Airway is an effective airway adjunct when intubation is not available or difficult to perform. Insertion is rapid & easy and does not require specialized equipment or visualization of the larynx. It is latex-free and should be considered safe to use on latex-sensitive patients. King Airways are to be phased out and replaced with i-gel O₂TM.

Indication

- The King L TS-D is an airway device designed for emergency or difficult intubation in the apneic or unresponsive patient without a gag reflex.

Size	Pediatric				Adult		
	0	1	2	2.5	3	4	5
Patient Criteria	<5 kg	5-12 kg	12-25 kg	25-35 kg	4-5 ft.	5-6 ft.	>6 ft.
Cuff Volume	10 mL	20 mL	35 mL	40-45 mL	50-60 mL	70-80 mL	80-90 mL
Maximum Cuff Pressure	60 cm H ₂ O						
Suction Catheter	10 Fr	10 Fr	16 Fr	16 Fr	18 Fr	18 Fr	18 Fr

Contraindications:

- Responsive patients with an intact gag reflex.
- Patients with known esophageal disease.
- Patients who have ingested caustic substances.

This airway device is not proved to protect the airway from the effects of regurgitation and aspiration. The risk of regurgitation and aspiration must be weighed against the potential benefit of establishing an airway.

- Using the information provided, choose the correct size, based on patient height.
- Test cuff inflation system by injecting the maximum recommended volume of air into the cuff. Remove all air from cuffs prior to insertion.

King LTS-D

3. Apply a water-based lubricant to the beveled distal tip and posterior aspect of the tube, taking care to avoid introduction of lubricant in or near ventilator openings.
4. Have a spare airway device ready and prepared for immediate use.
5. Pre-oxygenate.
6. Ensure gag reflex is not intact.
7. Position the head into a sniffing position or neutral position.
8. Hold the device at the connector with dominant hand. With non-dominant hand, hold mouth open and apply chin lift unless contraindicated by position or c-spine precautions.
9. With the device rotated laterally 45-90° such that the blue orientation line is touching the corner of the mouth, introduce tip into mouth and advance behind base of tongue. Never force the tube into position.
10. As tube tip passes under tongue, rotate tube back to midline.
11. Without exerting excessive force, advance airway until base of connector aligns with teeth or gums.
12. Inflate cuffs using the maximum volume.
13. Attach BVM. While gently bagging, simultaneously withdraw the airway until ventilation is easy.
14. Confirm proper position by auscultation and chest movement and capnography.
15. Secure device to patient using tape.

i-gel O₂[™] Supraglottic Airway

Level of Care	EMR	EMT	ILS	ALS
Approved		Adult Only	Adult/Pedi	Adult/Pedi

Indications:

- Apneic patient when endotracheal intubation is not possible or not available.
- Patient must be unconscious, without a gag reflex.
- Failed Airway
- No history of esophageal foreign body, disease, or caustic ingestion.

Size	Pediatric				Adult		
	1	1.5	2	2.5	3	4	5
Color	Pink	Light Blue	Grey	White	Yellow	Green	Orange
Patient Type	Neonate	Infant	Small Pediatric	Large Pediatric	Small Adult	Medium Adult	Large Adult
Patient Criteria	2 - 5 kg	5 - 12 kg	10 - 25 kg	25-35 kg	30 - 60 kg	50 - 90 kg	90+ kg
Suction Catheter	N/A	10 Fr	12 Fr	12 Fr	12 Fr	12 Fr	14 Fr

Contraindications:

- Responsive patients with an intact gag reflex.
- Patients with known esophageal disease.
- Patients who have ingested caustic substances.

This airway device is not proved to protect the airway from the effects of regurgitation and aspiration. The risk of regurgitation and aspiration must be weighed against the potential benefit of establishing an airway.

1. Using the information provided, choose the correct size, based on patient weight.
2. Open the i-gel package and take out the protective cradle containing the device. Remove the accessory pack containing the sachet of lubricant and airway support strap from the protective cradle and place to side.
3. Remove the i-gel and transfer it to the palm of the same hand that is holding the protective cradle, supporting the device between the thumb and index finger.

i-gel O₂TM Supraglottic Airway

4. Open the sachet of lubricant and place a small bolus onto the middle of the smooth surface of the cradle in preparation for lubrication. Do not use silicone based lubricants.
5. Grasp the i-gel with the free hand along the integral bite block and lubricate the back, sides, and front of the cuff with a thin layer of lubricant.
6. Inspect the device carefully; confirm there are no foreign bodies or a bolus of lubricant obstructing the distal opening. Place the i-gel back into the cradle in preparation for insertion.
7. Remove the i-gel from the cradle. Grasp the lubricated i-gel firmly along the integral bite block. Position the device so that the i-gel cuff outlet is facing towards the chin of the patient. The patient should be in the sniffing position with the head extended and neck flexed. The chin should be gently pressed down before proceeding introducing the leading soft time into the mouth of the patient in a direction towards the hard palate.
8. Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt. The tip of the airway 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. Utilize the airway support strap or tape the i-gel in place maxilla to maxilla.

Orotracheal Intubation

Level of Care	EMR	EMT	ILS	ALS
Approved			Adult/Pedi	Adult/Pedi

Indications:

- Respiratory arrest
- Cardiac arrest
- Patients where complete obstruction of the airway is imminent, i.e. respiratory burns, anaphylaxis
- Inability of the conscious patient to breathe adequately
- Inability of the unconscious patient to protect their airway, i.e. overdose, ETOH, coma

Relative Contraindications:

- Severe airway trauma or obstruction that does not permit safe passage of an endotracheal tube. Emergency cricothyrotomy is indicated in such cases
- Cervical spine injury, in which the need for complete immobilization of the cervical spine makes endotracheal intubation difficult.
- Mallampati Classification of class III / IV or other determination of potential difficult airway

Side Effects:

- An endotracheal tube that is mistakenly sized or misplaced, especially in the apneic patient, can quickly lead to hypoxia and death
- Accidental intubation of the esophagus
- Oropharyngeal trauma
- Broken teeth or dentures
- Endobronchial intubation, ETT inserted too far

Tracheal Intubation Procedure:

- Check the equipment: laryngoscope, curved (Macintosh type) and straight (Miller type) blades of an appropriate size for the patient and ensure that the light works, check ETT cuff for leaks.
- Assemble all materials close at hand (laryngoscope handle, blades, assorted ET tube sizes, 10mL syringe, water - soluble lubricant, securing device, BVM, suction equipment, stethoscope).

Orotracheal Intubation

- Position of the patient: Unless contraindicated (trauma), elevate the patient's head about 10cm with pads under the occiput and extension of the head into the sniffing position serve to align the oral, pharyngeal and laryngeal axis, so that the passage from the lips to the glottic opening is almost a straight line. This position permits better visualization of the glottis and vocal cords and allows easier passage of the endotracheal tube.
- Curved blade technique:
 - Ventilate the patient with 100% oxygen for 2 minutes.
 - Open the patient's mouth with the right hand, and remove any dentures.
 - Grasp the laryngoscope in the left hand. Spread the patient's lips, and insert the blade between the teeth, being careful not to break a tooth.
 - Pass the blade to the right of the tongue, and advance the blade into the hypopharynx, pushing the tongue to the left.
 - Lift the laryngoscope upward and forward, without changing the angle of the blade, to expose the vocal cords. The cricoid pressure is used to lower the trachea to facilitate tube passage and to compress the epiglottis and prevent aspiration. A crewmember should apply gentle downward pressure on the cricoid cartilage, start off slowly and then gradually increase the downward force.
 - Pass the tube through the vocal cords.
- Straight blade technique:
 - Follow the steps outlined above, but advance the blade down the hypopharynx, and lift the epiglottis with the tip of the blade to expose the vocal cords.
- Withdraw the stylet.
- Connect the bag - valve mask and begin ventilation with 100% oxygen.
- Verify tube placement. **Bolded are mandatory.**
 - Visualize tube passing through the cords.
 - Misting of the tube with respirations (not always reliable).
 - **Movement of the chest with respirations.**
 - **Auscultation of the chest (you should hear breath sounds on both sides of the chest).**
 - **Auscultation of the stomach (you shouldn't hear gurgles here when bagging).**
 - **Wave form CO2 with numeric reading**
 - Esophageal detector device.
 - Rising or stable O2 saturation.

Orotracheal Intubation

- Clinical improvement of the patient.
- Reasons for acute deterioration of the intubated patient:
 - Displacement of the tube.
 - Obstruction of the tube (mucous plug, biting).
 - Pneumothorax, PE, pulselessness (cardiac arrest or shock).
 - Equipment failure (No oxygen, failure of the ventilator, disconnected tubing).
- Secure the tube in place with tape or a commercial device.

Endotracheal Introducer

Level of Care	EMR	EMT	ILS	ALS
Approved			Adult	Adult

Indications:

- Patient meets clinical indications for oral intubation
- Initial intubation attempt(s) unsuccessful
- Predicted difficult intubation.

Contraindications:

- Three attempts at orotracheal intubation.
- Age less than eight or ETT size less than 6.5 mm

Procedure:

- Prepare position and oxygenate the patient with 100% oxygen.
- Select proper ET tube without stylet, test cuff and prepare suction.
- Load the Bougie on to the ETT and lubricate the distal end and cuff of the endotracheal tube (ETT) and the distal 1/2 of the Endotracheal Tube Introducer (Bougie) Failure to lubricate the Bougie and the ETT may result in being unable to pass the ETT.
- Using laryngoscopic techniques, visualize the vocal cords if possible using cricoid pressure as needed.
- Introduce the Bougie with curved tip anteriorly and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized.
- Once inserted, gently advance the Bougie until you meet resistance or “hold - up” (if you do not meet resistance you have a probable esophageal intubation and insertion should be re - attempted or the failed airway protocol implemented as indicated).
- While maintaining a firm grasp on the proximal Bougie, introduce the ET tube over the Bougie passing the tube to its appropriate depth.
- If you are unable to advance the ETT into the trachea and the Bougie and ETT are adequately lubricated, withdraw the ETT slightly and rotate the ETT 90 degrees counter clockwise to turn the bevel of the ETT posteriorly. If this technique fails to facilitate passing of the ETT you may attempt direct laryngoscopy while advancing the ETT. This will require an assistant to maintain the position of the Bougie and, if so desired, advance the ETT.

Endotracheal Introducer

- Once the ETT is correctly placed, hold the ET tube securely and remove the Bougie.
- Confirm tracheal placement according to the intubation protocol, inflate the cuff with 3 to 10mL of air, auscultate for equal breath sounds and reposition accordingly.
- When final position is determined secure the ET tube, reassess breath sounds, apply ETCO₂ monitor, and record and monitor readings to assure continued tracheal intubation.

Orogastric Tube Insertion

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Indications:

- After placement of endotracheal tube or BIAD.

Contraindications:

- Known esophageal varices.
- Esophageal stricture.
- Esophageal or stomach cancer.
- Esophagectomy or partial gastrectomy.
- Gastric bypass surgery.
- Penetrating neck trauma.

Procedure:

- Estimate the length of the tube needed to reach the stomach by measuring the tube from the corner of the mouth to the earlobe and down to the xiphoid process. Mark the length with tape.
- Lubricate the OG tube with water soluble lubricant.
- Insert the tube through the oropharynx or through the gastric access lumen on the King LTS-D Airway until the marked depth is reached.
- If the tube coils in the posterior pharynx, direct laryngoscopy can be utilized to place the tube in the esophagus.
- Instill 30 mL of air into the tube and auscultate over the epigastrium for air sounds.
- Aspirate for gastric contents.
- Secure tube with tape.
- Decompress with suction as needed or continual low suction.

12 Lead ECG

Level of Care	EMR	EMT	ILS	ALS
Approved		Acquire	X	X

Indications:

Contraindications:

- None

Procedure:

- Explain the procedure to the patient.
- Lay patient on stretcher in position of comfort.
- Ensure patient does not chill, shivering may cause artifact.
- Reassure patient as tense muscles may cause artifact.
- Prepare the chest to ensure it is dry, free of debris and oil. Clip excessive hair with scissors.
- Place limb leads on the limbs, ensure placement is equal on upper and lower extremities (distal or proximal arms and distal or proximal legs).
- Place the precordial leads:
 - V1 - 4th intercostal space to the right of the sternum
 - V2 - 4th intercostal space to the left of the sternum
 - V3 - directly between V2 and V4
 - V4 - 5th intercostal space at left midclavicular line
 - V5 - 5th intercostal space at left anterior axillary line
 - V6 - 5th intercostal space at left mid-axillary line
- Obtain ECG and transmit to receiving facility.
- Contact medical control to confirm receipt of ECG.

Manual Defibrillation

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Indications:

- Patient presenting with ventricular fibrillation or pulseless ventricular tachycardia.

Contraindications:

- Patient with a pulse.

Procedure:

- Attach defibrillation pads.
- Charge the device, while performing chest compressions.
 - For adults, defibrillate per manufacture's recommendations.
 - For children and infants, defibrillate at 2 J/kg and increase doses by 2 J to a max dose of 10 J/kg.
- Clear the patient.
- Deliver shock
- Immediately resume chest compressions.

Notes:

- If pediatric pads are unavailable, you may use adult pads placed anteriorly and posteriorly.
- If the cardiac arrest is witnessed by EMS personnel, defibrillate immediately after pads have been placed.

Synchronized Cardioversion

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Indications:

- Patient presenting unstable ventricular or supraventricular tachydysrhythmias with a pulse.

Contraindications:

- Patient's without a pulse

Procedure:

- Attach the limb leads.
- Attach defibrillation pads.
- Provide sedation if time permits.
- Synchronize the monitor.
- Charge the device.
 - For adults(biphasic devices)
 - Narrow, regular: 50-100 J
 - Narrow irregular: 100-120 J
 - Wide regular: 100 J
 - Wide irregular: defibrillate (not synchronized)
 - For children and infants(biphasic devices):
 - 0.5 - 1 J/kg. If not effective, increase to 2 J/kg.
- Clear the patient.
- Deliver shock
- Note rhythm and treat according to appropriate protocol.

Notes:

- If pediatric pads are unavailable, you may use adult pads placed anteriorly and posteriorly.

Transcutaneous Pacing

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Indications:

- Symptomatic bradycardia
- Type II 2nd degree AV block
- 3rd degree AV block

Contraindications:

- Patients not meeting indications.

Procedure:

- Attach the limb leads.
- Attach defibrillation pads.
- Provide sedation if time permits.
- Activate pacer mode.
- Set the heart rate at 70 bpm.
- Set the current at the minimum and increase as needed to obtain mechanical and electrical capture.
- Assess vitals.
- Sedate and manage discomfort as needed.

Notes:

- If pediatric pads are unavailable, you may use adult pads placed anteriorly and posteriorly.
- Pacing may also be effective for a patient in asystole if performed early.
- To transfer pacing at the receiving facility. Have the ED connect their monitor and increase their rate by 2 bpm and match current. Then, turn off EMS monitor.

Intravenous Cannulation

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Procedure:

- Explain to the patient the need for and a brief description of the procedure.
- Observe universal precautions for body substance exposure.
- Gather necessary equipment.
- Attach catheter.
- Observe for appropriate site. Start distally and move proximally.
- Cleanse area.
- Obtain an appropriately sized catheter:
 - 14 or 16 for trauma patients
 - 14, 16, or 18 gauge for fluid replacement
 - 20, 22, or 24 for elderly patients, pediatric patients, or for difficult cannulations.
- Stabilize the vein by applying traction below the puncture site.
- Enter the vein directly from above or from the side of the site. With the bevel of the needle upward, puncture the skin at a 30-45 degree angle.
- If blood returns through the catheter, proceed with insertion.
 - If you do not see blood return, release the tourniquet and discontinue the attempt. If time and patient conditions allows, you may attempt another site with a new catheter. Do not exceed more than two attempts.
- Carefully advance the catheter into the vein.
- Remove the needle while occluding catheter.
- Release tourniquet and attach administration set.
- Secure catheter and tubing.
- Administer fluid per appropriate protocol.

Notes:

- Saline locks may be used if fluid replacement is not indicated.
- One liter bags of fluid should be used if more than 3 events of medication administration are expected.

Intraosseous Cannulation

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Indication:

- Emergent/urgent situations
 - Anaphylaxis
 - Altered LOC
 - Burns
 - Dehydration
 - DKA
 - Drug Overdose
 - Dysrhythmias
 - End Stage Renal Disease
 - RSI
 - Resuscitation
 - Seizures
 - Sepsis
 - Shock
 - Sickle Cell Crisis
 - Stroke
 - Trauma
- Non-Urgent/medically necessary situations; difficult vascular access
 - Analgesia
 - Antibiotic Therapy
 - Chest Pain
 - Fluid Management
 - Metabolic Disorders
 - Rescue Line
 - Sedation

Contraindications:

- Fracture in target bone
- Infection at area of insertion
- Inability to identify landmarks
- IO access or attempted IO access in target bone within previous 48 hours
- Previous, significant orthopedic procedure at the site, prosthetic limb or joint

Site Selection

- Adult
 - Proximal humerus
 - Proximal tibia
 - Distal tibia
- Pediatrics
 - Distal femur
 - Proximal humerus
 - Proximal tibia
 - Distal tibia

Intraosseous Cannulation

Studies show less pain with infusion and greater infusion rate 5 L/Hr in the proximal humerus.

Procedure:

- Observe universal precautions
- Prepare equipment
- Identify site.
 - Proximal Humerus
 - Place patient's hand over the abdomen.
 - Place your palm on the patient's shoulder anteriorly.
 - The area that feels like a ball under your palm is the general target area.
 - You should be able to feel this ball, even on obese patients.
 - Place the ulnar aspect of your hand vertically over the axilla. Place the ulnar aspect of your other hand along the midline of the upper arm laterally.
 - Place our thumbs together over the arm.
 - This identifies the vertical line of insertion on the proximal humerus.
 - Palpate deeply up the humerus to the surgical neck.
 - The insertion site is 1 to 2 cm above the surgical neck, on the most prominent aspect of the greater tubercle.
 - Point the needle tip at a 45 degree angle to the anterior plane and posteromedial
 - Proximal Tibia - Adult
 - Extend the leg
 - Insertion site is approximately 2 cm medial to the tibia tuberosity or approximately 3 cm below the patella and 2 cm medial, along the flat aspect of the tibia.
 - Insert the needle at a 90 degree angle to the bone.
 - Proximal tibia insertion site - Infant/Child
 - Extend the leg.
 - Insertion site is approximately 1 cm medial to the tibia tuberosity, or just below the patella and slightly medial, along the float aspect of the tibia.
 - Insert the needle at a 90 degree angle to the bone.
 - Distal Tibia - Adult

Intraosseous Cannulation

- Insertion site is approximately 3 cm proximal to the most prominent aspect of the medial malleolus. Palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat center aspect of the bone.
- Insert the needle at a 90 degree angle to the bone.
- Distal Tibia – Pediatric
 - Insertion site is located approximately 1-2 cm proximal to the most prominent aspect of the medial malleolus.
 - Palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat center aspect of the bone.
 - Insert the needle at a 90 degree angle to the bone.
- Distal Femur
 - Secure the leg out-stretched to ensure the knee does not bend. Identify the patella.
 - The insertion site is approximately 1 cm proximal to the superior border of the patella and approximately 1-2 cm medial to midline.
 - Insert the needle at a 90 degree angle to the bone.
- Select the correct needle
 - Red hub – 3 -39 kg weight range
 - Blue hub – 3 kg and overweight range
 - Yellow hub – 40 kg and overweight range and/or excessive tissue depth
 - At least one black line must be visible above the skin prior to inserting into the bone.
- Open set and prime the extension set.
 - If the patient is unresponsive to pain, attach a saline flush to the extension set and prime the tubing with saline.
 - If the patient is responsive to pain, prime the extension set with lidocaine.
- Prep the area of insertion.
- Stabilize the extremity
- Gently press the needle though the skin until the tip touches the bone.
 - Ensure 1 black mark is visible above the skin.
- Squeeze the trigger and apply gentle steady pressure. Release once the pop or give is felt.
- Stabilize the hub and remove the driver.
- Place the stabilizer over the hub.
- Attach the primed extension set, firmly secure by twisting the hub.

Intraosseous Cannulation

- Remove the adhesive cover from the stabilizer and attach to the skin.
- Aspirate for blood/bone marrow return.
- Flush with normal saline

Infusion Pain Management

- Infuse lidocaine over 120 seconds (adults - 40 mg, pediatric - 0.5 mg/kg)
- Let lidocaine sit in IO space for 60 seconds.
- Flush with 5 mL of normal saline
- Slowly administer a second dose (adult/pediatric dose - ½ initial dose).
Repeat PRN.
- Consider **Acute Pain Management Protocol 1115**, if patient is not responsive to lidocaine.

For patient's less than 3 kg; utilize manual IO needle in place of EZIO. Procedure is the same with the exception of manually inserting needle.

External Jugular Cannulation

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Indication:

- Situation when traditional extremity cannulation cannot be established and the patient requires immediate stabilizing fluid replacement and/or drug administration route.

Contraindications:

- Suspected cervical spine injury.

Procedure:

- Observe universal precautions
- Prepare equipment
- Position patient supine with the feet elevated.
- Turn the patient's head in the direction away from the side to be cannulated.
- Cleanse the site.
- Stabilize the vein by applying traction just above the clavicle.
- Enter the vein midway between the angle of the jaw and the clavicle. With the bevel of the needle upward, puncture the skin using a 30 degree angle and aim toward the shoulder on the same side.
- Once you obtain flash, advance the catheter.
- Distally occlude the catheter and withdraw the needle.
- Attach extension set and secure.

Only one attempt at EJ vein cannulation may be attempted in the prehospital setting.

Medication Administration

Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X

Preparation:

- Observe universal precautions.
- Confirm drug order.
- Verify patient allergies.
- Explain to the patient what medication they are receiving and why.
- Check the medication
 - Correct medication
 - Color and clarity
 - Expiration date
- Assemble the necessary equipment.
- Calculate and draw up desired dose amount.
 - Pediatric doses should not exceed adult dose.
- Eject air.
- Confirm 6 rights:
 - Right medication.
 - Right patient.
 - Right dose.
 - Right route.
 - Right time.
 - Right documentation.

Intranasal (IN) Medication Administration

- Approved Medications
 - Narcan
 - Fentanyl
 - Glucagon
 - Versed
- Contraindications
 - Nasal trauma or recent sinus or nasal surgery.
 - Epistaxis, nasal congestion, or significant nasal discharge.
- Procedure
 - Select desired medication and draw up appropriate dose.
 - Attach the Mucosal Atomizer Device (MAD) to syringe.

Medication Administration

- Place tip of MAD snugly against nostril aiming slightly superior and lateral.
- Rapidly administer $\frac{1}{2}$ the dose of medication into one nostril and repeat in the other.
- Maximum volume per nostril is 1mL.
- Properly dispose of equipment.
- Document intervention and response.
- Monitor vitals.

Intravenous (IV)/Intraosseous (IO) Medication Administration

- Procedure
 - Cleanse the injection port or luer port with alcohol prep pad.
 - Attach the syringe or insert needle.
 - Inject desired amount.
 - Remove syringe and flush with at least 10mL of normal saline or lactated ringers.
 - Properly dispose of equipment.
 - Document intervention and response.
 - Monitor vitals.

Endotracheal Medication Administration

- Approved Medications
 - Naloxone
 - Atropine
 - Epinephrine 1:10,000
 - Lidocaine
- Procedure
 - Double the dose of medication and prepare for delivery.
 - Disconnect the BVM.
 - Inject the medication directly into the ETT or attach MADett®.
 - Reconnect BVM and deliver ventilations.
 - Properly dispose of equipment.
 - Document intervention and response.
 - Monitor vitals.

Subcutaneous Medication Administration

- Procedure
 - Identify an injection site (tissue over tricep muscle is commonly used).

Medication Administration

- Prep the injection site with alcohol prep pad.
- Pinch the site.
- Insert needle at 45 - 90 degree angle into the subcutaneous tissue and administer medication.
- Withdraw needle and apply gauze pad and pressure.
- Properly dispose of equipment.
- Document intervention and response.
- Monitor vitals.

Intramuscular Medication Administration

- Procedure
 - Identify an injection site.
 - Left or right deltoid.
 - Upper outside quadrant of the gluteus muscle.
 - Prep the area with alcohol prep pad.
 - Stretch the skin.
 - Insert the needle at a 90 degree angle into the muscle tissue. Draw back to confirm needle is not placed in vascular space.
 - Administer medication.
 - Withdraw needle and apply pressure to the site with a gauze pad.
 - Properly dispose of equipment.
 - Document intervention and response.
 - Monitor vitals.

Central Lines and Fistula Access

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Indications

- Unable to establish IV, IO or EJ access, and;
 - Cardiac arrest
 - Systolic BP < 80 mmHg

Central Line Procedure

- Utilize a 10 mL syringe or larger.
- Clean hub with alcohol prep pad twice with different pads prior to accessing each time.
- Draw up 5 mL of blood and discard prior to use.
- Do not remove cap.
- Do not allow IV fluids to run dry.
- Ensure all air is expelled from syringe prior to accessing.

Fistula Procedure

- Access fistula with 14ga or 16ga catheter.
- Do not obtain blood pressure or peripheral IV access in arm with shunt.
- In the event the shunt tubing is pulled out. Apply direct pressure, elevate the arm, and transport immediately.

Internal Medi-port

- EMS does not carry specialized needles required to access ports; therefore, they cannot utilize internal medi-port.

Patient Restraint

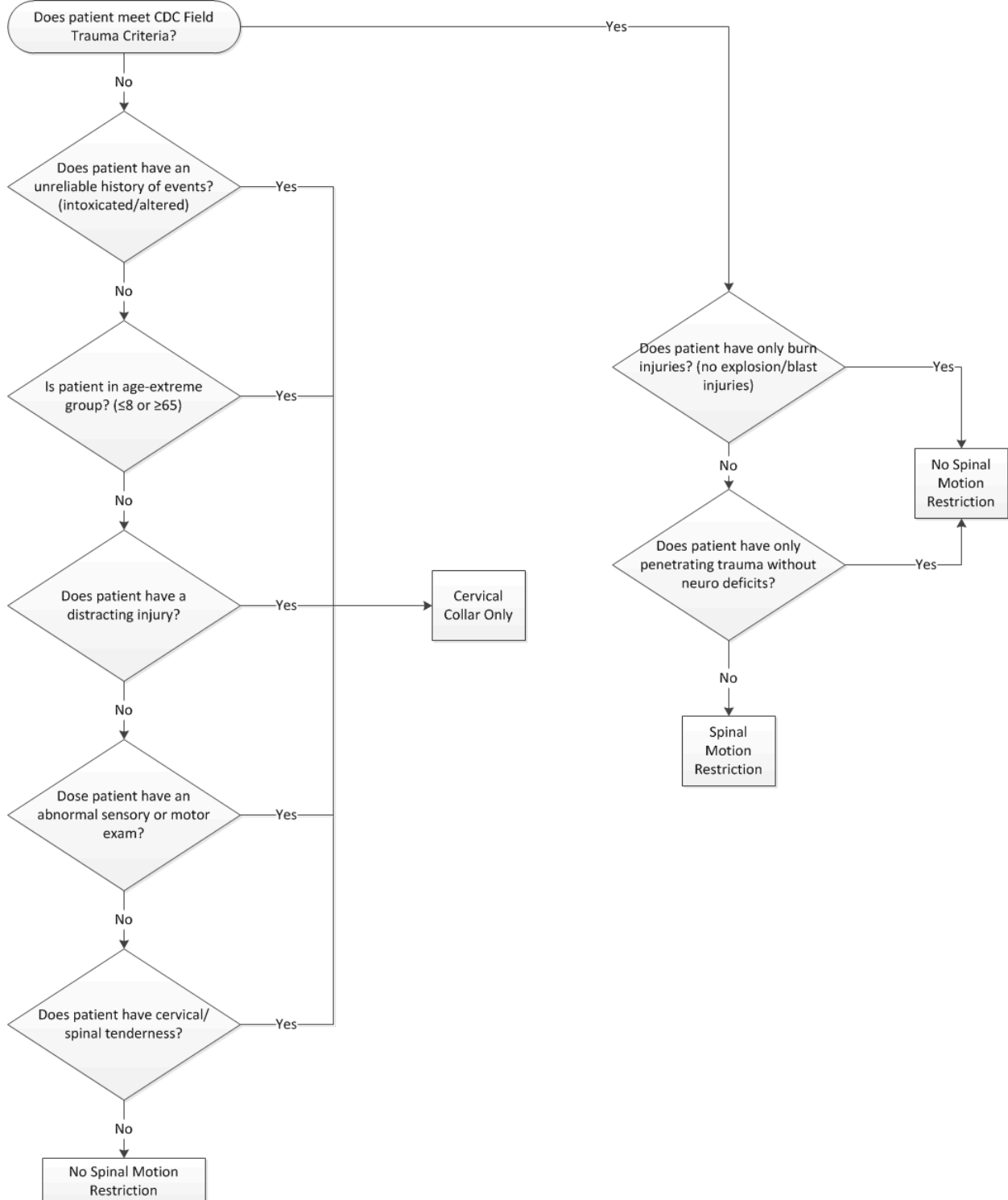
Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X

Procedure:

- Use a minimum of four people.
- Contact **Medical Control** as soon as possible for an order/guidance.
- If available, utilize law enforcement.
- Explain the procedure to the patient (and family) if possible. The team leader should be the person communicating with the patient.
- If attempts at verbally calming the patient have failed and the decision is made to use restraints, do not waste time bargaining with the patient.
- Remember to remove any equipment from your person which can be used as a weapon against you.
- Assess the patient and surroundings for potential weapons.
- Approach the patient, keeping the team leader near the head to continue communications and at least one person on each side of the patient.
- Move the patient to a backboard or stretcher.
- Place the patient supine and place soft, disposable restraints on 2 to 4 limbs and fasten to the backboard or stretcher. Avoid restraining the patient prone at all costs.
- Transport as soon as possible.
- Document circulation checks every 15 minutes for each restrained limb.
- Ensure thorough documentation including reasons for restraining, time of application, condition of patient before and after application, method of restraint, and any law enforcement involvement.
- Do not remove restraints until released by medical personnel at the receiving hospital.

Spinal Motion Restriction

Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X



Tourniquet

Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X

Procedure:

- Render care according to **Routine Trauma Care 7105**.
- Recognize bleeding is uncontrollable with direct pressure, elevation, and pressure points. In cases of severe bleeding, do not delay tourniquet application.
- Apply Combat Application Tourniquet (CAT)
 - Place CAT around extremity as 2 - 3 inches proximal to the wound directly on the skin.
 - If you are unable to locate wound due to time or other circumstances, place tourniquet as proximal as possible on the limb.
 - Pull self-adhering band tight and secure back against itself.
 - Twist tension rod until bleeding stops.
 - Lock tension rod in the windlass clip
 - Secure tension rod with the windlass clip strap.
- Make note of application time.
- Use care when moving patient
- Continuously reassess for hemostasis.
- Ensure tourniquet is not hidden from view.
- Removal of tourniquet must be done with an order from **Medical Control**.
- More than one tourniquet may be required for complete hemostasis.

Hemostatic Agent

Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X

Indications:

- Active bleeding from open wounds that cannot be controlled with tourniquet. Most often involving wounds to the scalp, face, neck, axilla, groin, or buttocks.

Contraindications:

- Not to be used to treat internal bleeding such as intra-abdominal, intra-thoracic, or vaginal bleeding.
- Not to be used for minor bleeding that can be controlled by other means.

Procedure:

- Render care according to **Routine Trauma Care 7105**.
- Deploy the hemostatic agent via packing directly onto the wound and then apply direct consistent pressure for at least 3 minutes over the bleeding source. Do not lift or remove the dressing once it has been applied.
- Wrap the hemostatic dressing with another suitable dressing such as kling, ace wrap, ect. In order to maintain direct pressure.
- Place the empty hemostatic agent packaging into the outer dressing to notify the receiving facility of its presence.

Pelvic Sling

Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X

Indications:

- Unstable pelvic injury.

Procedure:

- Render care according to **Routine Trauma Care 7105**.
- Remove objects from patient's pockets and pelvic area.
- Place sling with white side closest to patient beneath the hips (trochanters). Do not apply over pelvic crest.
- Place black strap through buckle and pull completely though until snug.
- Hold orange strap ad pull black strap in opposite directions until you hear and feel one buckle click. A second click after the device is secure is not uncommon.
- Utilizing sling with pediatrics and adolescents requires **Medical Control** order.

Needle Decompression

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Indication:

- Tension pneumothorax.

Procedure:

- Locate the side of the pneumothorax. Approved sites are 2nd intercostal space mid-clavicular line and 5th intercostal space mid-axillary line.
- Cleanse the site with povidone-iodine preps. Attempt to maintain sterile field as much as possible.
- Attach a 10-20mL syringe to a 2 inch 14ga IV catheter.
- Puncture the skin perpendicularly, just above the rib in the intercostal space. A “pop” should be felt as well as a “rush of air” along with the plunger of the syringe moving outward.
- Advance the catheter while removing the needle and syringe.
- Attach extension tubing, gate valve, and one way valve device from pneumothorax kit.
- Secure the catheter in the chest wall with dressing tape.
- Monitor patient closely and continue to reassess.

Medication Assisted Intubation

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Indication:

- Actual or potential airway impairment or aspiration risk,
- Actual/impending ventilatory failure (HF, Pulmonary edema, COPD, asthma, anaphylaxis, shallow or labored effort),
- Increased work in breathing resulting in severe fatigue,
- GCS 8 or less,
- Inability to ventilate/oxygenate adequately after inserting OPA/NPA and/or via BVM
- Need for increased inspiratory or positive end expiratory pressures to maintain gas exchange,
- Need for sedation to control respirations

Procedure

- Make sure all equipment is prepared and medication is ready.
- Preoxygenate with 100% O₂ with a BVM or non-rebreather mask. Preoxygenation is more successful if the head is elevated at least 20°.
- Administer **Ketamine**
 - **0.5-2 mg/kg IV/IO.** Repeat **0.5-1 mg/kg IV/IO** every 5-10 minutes to keep sedation.
- Administer **Fentanyl.**
 - **100 mcg IV/IO.**
- Consider **Zofran** for nausea.
- Intubate the patient, making sure you visualize the tube passing the vocal cords.
- Assess for correct placement; bilateral breath sounds, ETCO₂ reading of at least 35 mmHg and chest rise and fall.
- Secure ETT.
- Continue to reassess and monitor patient.

Surgical Cricothyrotomy

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Indication:

- A life-threatening condition exists AND advanced airway management is indicated AND you are unable to establish an airway or ventilate the patient by any other means.

Contraindication

- Age < 12 years: for children a percutaneous needle Cricothyrotomy with large angiocath is preferred surgical airway for anatomic reasons.

Procedure

1. Position the patient supine, with in - line spinal immobilization if indicated. If cervical spine injury not suspected, neck extension will improve anatomic view.
2. Using an aseptic technique (betadine/alcohol wipes), cleanse the area.
3. Standing on the left side of the patient, stabilize the larynx with the thumb and middle finger of your left hand, and identify the cricothyroid membrane, typically 4 fingerbreadths below mandible
4. Using a scalpel, make a 3cm centimeter vertical incision 0.5cm deep through the skin and fascia, over the cricothyroid membrane. With finger, dissect the tissue and locate the cricothyroid membrane.
5. Make a horizontal incision through the cricothyroid membrane with the scalpel blade oriented caudal and away from the cords.
6. Insert the bougie curved - tip first through the incision and angled towards the patient's feet
 - If no bougie available, use tracheal hook instrument to lift caudal edge of incision to facilitate visualization and introduction of ETT directly into trachea and skip to # 9.
7. Advance the bougie into the trachea feeling for "clicks" of tracheal rings and until "hang-up" when it cannot be advanced any further. This confirms tracheal position.
8. Advance a 6.0 endotracheal tube over the bougie and into the trachea. It is very easy to place tube in right mainstem bronchus, so carefully assess for symmetry of breath sounds. Remove bougie while stabilizing ETT ensuring it does not become dislodged

Surgical Cricothyrotomy

9. Ventilate with BVM and 100% oxygen
10. Confirm and document tracheal tube placement as with all advanced airways: ETCO₂ as well as clinical indicators e.g.: symmetry of breath sounds, rising pulse oximetry, etc.
11. Secure tube.
12. Some subcutaneous air is normal, if you have an excess amount, check the tube placement.
13. Continually reassess ventilation, oxygenation and tube placement.

Precautions:

- Success of procedure is dependent on correct identification of cricothyroid membrane
- Bleeding will occur, even with correct technique. Straying from the midline is dangerous and likely to cause hemorrhage from the carotid or jugular vessels, or their branches.

High Quality CPR

Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X

The successful resuscitation of patients in cardiac arrest is dependent on a systematic approach of initiating life-saving CPR and early defibrillation and transferring care to advanced life support providers in a safe, timely and effective manner. The majority of adults who survive non-traumatic cardiac arrest are resuscitated from ventricular fibrillation with defibrillation but require high quality CPR, specifically chest compressions, for neurologically intact survival. The primary factor for successful defibrillation and resuscitation is decreasing the time interval from the onset of cardiac arrest to effective defibrillation and advanced life support. Uninterrupted CPR without pauses is the goal of Pit Crew CPR.

Procedure

1. Determine unresponsiveness. Confirm that a transporting unit (and ALS intercept) has been initiated.
2. Immediately initiate CPR with BLS Triangle.
 - a. First rescuer at patient's right side.
 - i. Compressions at a rate of 120/minute. Consider use of a portable metronome to keep high quality pace of compressions.
 - ii. Counting out every 20th compression.
 - iii. First and second rescuer change roles NOT locations every two minutes/240 compressions while rhythm/pulse check occurs.
 - b. Second rescuer patients left side.
 - i. Place patient on AED or manual defibrillator.
 - ii. Defibrillating, if indicated, after every two minute cycle.
 - c. Third rescuer at patients head.
 - i. Ensures seal of face mask of BVM with two hand seal.
 - ii. Reminds rescuer to provide the ventilations after every 20th compression.
 - iii. Secure airway.
3. Other Rescuers
 - a. ALS
 - i. May be ILS until ALS arrives.
 - ii. Perform IO/IV access
 - iii. Administer fluids and medications
 - b. Code Commander
 - i. Directs resuscitative efforts

High Quality CPR

- ii. Completes interventions not already complete
- iii. Tracks timing of interventions.
- c. Other Providers
 - i. Assist as needed



Source: Wichita Sedgwick County EMS Protocols

Position 1 and 2

- Should be ventilating patient when not performing compressions. Ventilations are delivered on the 20th compression.
- Providers may switch out when not performing compressions.

At the 180th compression, a provider should check for a pulse; preferably femoral. Once the 240th compression complete, a pulse check can be performed without increasing time off the chest.

At the 220th compression the monitor should be charged. Once the 240th compression is complete, the monitor can be evaluated and defibrillation can be performed if indicated, again reducing the time off of the chest. If no indication to defibrillate, dump the charge.

Approved Administration Routes

	Oral Dissolving Tablet	Oral	Sublingual	Inhalation	Intramuscular	Intranasal	Intravenous	Intraosseous
EMR								
Albuterol				X				
Aspirin		X						
Epinephrine Auto Injector					X			
Naloxone						X		
Oral Glucose		X						
BLS								
Albuterol				X				
Aspirin		X						
Diphenhydramine		X						
Epinephrine 1mg/ml					X			
Glucagon					X	X		
Ipratropium				X				
Naloxone				X	X	X		
Nitroglycerin			X					
Ondansetron	X							
Oral Glucose		X						
ILS								
Adenosine							X	X
Albuterol				X				
Amiodarone							X	X
Aspirin		X						
Atropine							X	X
Dextrose 10%							X	X
Diphenhydramine							X	X
Epinephrine 1mg/ml					X			
Epinephrine 0.1mg/ml							X	X
Fentanyl					X	X	X	X
Furosemide							X	X
Glucagon					X	X	X	X
Ipratropium				X				
Ketorolac					X		X	X
Lidocaine							X	X

Approved Administration Routes

	Oral Dissolving Tablet	Oral	Sublingual	Inhalation	Intramuscular	Intranasal	Intravenous	Intraosseous
ILS Cont.								
Midazolam					X	X	X	X
Nitroglycerin			X					
Naloxone				X	X	X	X	X
Ondansetron	X				X		X	X
ALS								
Adenosine							X	X
Albuterol				X				
Amiodarone							X	X
Aspirin		X						
Atropine							X	X
Dextrose 10%							X	X
Diphenhydramine		X			X		X	X
Epinephrine 1mg/ml					X			
Epinephrine 0.1mg/ml							X	X
Fentanyl					X	X	X	X
Furosemide							X	X
Glucagon					X	X	X	X
Ipratropium				X				
Ketamine								
Ketorolac					X		X	X
Lidocaine							X	X
Methylprednisolone					X		X	X
Midazolam					X	X	X	X
Morphine					X		X	X
Naloxone				X	X	X	X	X
Nitroglycerin			X					
Ondansetron	X				X		X	X
Sodium Bicarbonate							X	X
Ticagrelor		X						
Tranexamic Acid							X	X

Adenosine

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Alternate Names:

- Adenocard
- Adenoscan

Class:

- Antiarrhythmic Agent, Miscellaneous

Indication:

- Narrow complex tachycardia at a rate greater than 150, PSVT and WPW.

Contraindication:

- Hypersensitivity to adenosine
- Second or third degree AV block
- Sick Sinus Syndrome
- Bradycardia
- Asthma

Side Effects:

- Cardiac arrhythmia
- Chest pain
- Dyspnea
- Bronchospasm (rare)

Supplied:

- 6 mg vial

Dose:

- Adult – 6 mg rapid IVP, may repeat 12 mg rapid IVP – **MC Order Required**
- Pediatric – 0.1 mg/kg rapid IVP, may repeat 0.2 mg/kg rapid IVP – **MC Order Required**

Albuterol

Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X

Alternate Names:

- Proventil
- Ventolin

Class:

- Beta₂ Agonist

Indication:

- Bronchospasm

Contraindication:

- Hypersensitivity
- Use Caution in:
 - o Pregnancy
 - o Cardiovascular Disease
 - o CHF
 - o Tachycardia

Side Effects:

- Tremors or nervousness
- Dizziness
- Nausea and vomiting
- Elevated pulse and blood pressure
- Tachydysrhythmias

Supplied:

- 2.5mg/3mL

Dose:

- Adult - 2.5mg/3mL nebulized, may repeat as needed every 20 minutes.
- Pediatric - 2.5 mg/3mL nebulized, may repeat as needed every 20 minutes.

Amiodarone

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Alternate Names:

- Cardarone
- Nexterone
- Pacerone

Class:

- Antiarrhythmic Agent, Class III

Indication:

- Ventricular tachycardia or ventricular fibrillation

Contraindication:

- Hypersensitivity
- Bradycardia
- Second or third degree AV blocks
- Cardiogenic Shock

Side Effects:

- Hypotension
- Nausea & vomiting
- Bradycardia
- Headache
- Dizziness
- Pulmonary Fibrosis

Supplied:

- 150mg/3mL

Dose:

- Adult - Perfusing Rhythm - 150mg/100mL D5W over 10 minutes, filter required
- Adult - Non-perfusing Rhythm - 300mg IVP, may repeat 150 mg IVP
- Pediatric - Perfusing Rhythm - 5mg/kg in 100mL D5W over 20 to 60 minutes, filter required, repeat to daily max 15mg/kg
- Pediatric - Non-perfusing Rhythm - 5mg/kg IVP, repeat to daily max 15mg/kg

Aspirin

Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X

Alternate Names:

- ASA

Class:

- Antiplatelet Agent

Indication:

- Chest pain with suspected cardiac nature

Contraindication:

- Hypersensitivity
- Asthma
- Platelet and bleeding disorders
- Ulcer
- GI Bleeding
- Third trimester pregnancy
- Patient has already taken ASA in the last 4 hours.

Side Effects:

- Bleeding

Supplied:

- 81mg Tablets

Dose:

- Adult - 324mg PO

Atropine

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Alternate Names:

- Atropine Sulfate

Class:

- Anticholinergic Agent

Indication:

- Symptomatic Bradycardia
- Organophosphate Poisoning

Contraindication:

- Hypersensitivity

Side Effects:

- Arrhythmia
- Dehydration
- Sensorium changes
- Headache
- Blurred Vision

Supplied:

- 1mg Prefilled Syringe

Dose:

- Adult - Bradycardia - 0.5 mg
- Pedi - Bradycardia - 0.02 mg/kg
- Adult - Organophosphate - 2 mg

Brilinta

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Alternate Names:

- Ticagrelor

Class:

- P2Y12 platelet inhibitor

Indication:

- EMS diagnosed STEMI with Medical Control confirmation of diagnosis.

Contraindication:

- Active bleeding
- History of intracranial bleeding
- Reduced liver function

Side Effects:

- Bleeding
- Dyspnea
- Dizziness
- Nausea
- Diarrhea
- Ventricular pauses

Supplied:

- 90mg Tablets

Dose:

- Adult - 180mg PO

Dextrose 10%

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Alternate Names:

- D₁₀W

Class:

- Nutrient

Indication:

- Hypoglycemia

Contraindication:

- Hyperglycemia
- Hemorrhagic CVA

Side Effects:

- Diuresis

Supplied:

- 25 g/250 mL

Dose:

- Adult - Administer until patient is capable of eating a meal.
- Pediatric - 5-10 mL/kg

Diphenhydramine

Level of Care	EMR	EMT	ILS	ALS
Approved		X	X	X

Alternate Names:

- Benadryl

Class:

- Antihistamine

Indication:

- Allergic Reaction
- Anaphylaxis
- Extra-Pyramidal Symptoms

Contraindication:

- Hypersensitivity

Side Effects:

- Drowsiness
- Increased heart rate and blood pressure
- Headache
- Palpitations
- Thickness of bronchial secretions
- Dry mouth
- Paradoxical excitation in children

Dose:

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

Dopamine

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Alternate Names:

- Intropin

Class:

- Inotrope

Indication:

- Symptomatic bradycardia not responsive to atropine
- Cardiogenic shock
- Neurogenic Shock
- Septic Shock

Contraindication:

- Hypersensitivity
- Hypotension due to tachydysrhythmias
- Pheochromocytoma

Side Effects:

- Nausea and vomiting
- Diarrhea
- Headache
- Hypertension
- Dyspnea
- Tachycardia
- PVCs
- SVT
- VT
- Focal necrosis with infiltration

Supplied:

- 400mg/250mL D₅W

Dose:

- 2-20 mcg/kg/min

Epinephrine 1mg/mL

Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X

Alternate Names:

- Adrenalin

Class:

- Alpha/Beta Agonist

Indication:

- Asthma
- Allergic Reaction

Use Caution With:

- Tachydysrhythmias
- Coronary Artery Disease

Side Effects:

- Palpitations
- Anxiety
- Tremors
- Tachydysrhythmias
- VT
- VF
- Angina
- Hypertension

Supplied:

- 1mg/1mL

Dose:

- Adult - 0.3 mg IM
- Pediatric - 0.01 mg/kg IM

Epinephrine 0.1 mg/mL

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Alternate Names:

- Adrenalin

Class:

- Alpha/Beta Agonist

Indication:

- Cardiac Arrest

Contraindication:

- None in cardiac arrest

Supplied:

- 1mg/10mL

Dose:

- Adult - 1 mg
- Pediatric - 0.01mg/kg

Glucagon

Level of Care	EMR	EMT	ILS	ALS
Approved		X	X	X

Alternate Names:

- GlucaGen

Class:

- Antidote, Hypoglycemia

Indication:

- Hypoglycemia

Contraindication:

- Hypersensitivity
- Pheochromocytoma
- Insulinoma
- Glucagonoma

Side Effects

- Nausea and vomiting
- Hypertension
- Tachycardia
- Shortness of breath

Supplied:

- 1mg and Diluent

Dose:

- ≥ 20 kg - 1 mg
- < 20 kg - 0.5 mg

Ipratropium Bromide

Level of Care	EMR	EMT	ILS	ALS
Approved		X	X	X

Alternate Names:

- Atrovent

Class:

- Anticholinergic Agent

Indication:

- COPD
- Asthma

Contraindication:

- Hypersensitivity
- Hypersensitivity to atropine

Side Effects

- Bronchitis
- Exacerbation of COPD
- Sinusitis
- Headache
- Dizziness
- Nausea
- UTI
- Back Pain
- Dyspnea
- Flu-like symptoms

Supplied:

- 0.5mg / 3mL

Dose:

- Adult - 0.5 mg mixed with 2.5 mg of Albuterol Q20 minutes
- Pediatric - 0.25mg - 0.5mg with 2.5 mg of Albuterol Q20 minutes

Lidocaine

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Alternate Names:

- Xylocaine

Class:

- Antiarrhythmic Agent, Class Ib
- Local Anesthetic

Indication:

- Cardiac Arrest
- Tachyarrhythmia
- Pain Control in IO

Contraindication:

- Hypersensitivity
- 2nd and 3rd degree heart block
- Hypotension (not applicable in cardiac arrest)
- Adam-Stokes Syndrome
- Wolff-Parkinson-White Syndrome

Side Effects

- Headache,
- Bradycardia
- Cardiac Arrhythmia
- Circulatory Shock
- Vasospasm
- Flushing
- Agitation
- Anxiety
- Coma
- Confusion
- Dizziness

Supplied:

- 100mg/5mL

Dose:

- Adult - 1.5mg/kg IV may repeat to total dose of 3mg/kg
- Pediatric - 1mg/kg to total of 3 mg/kg
- IO Pain - Adult - 40 mg over 120 sec, wait 1 min, flush with 5 mL saline, 20 mg over 1 min and repeat 20 mg PRN
- IO Pain - Pediatric - 0.5mg/kg over 120 sec, wait 1 min, flush with 2 mL saline, half dose over 1 min and repeat PRN

Naloxone

Level of Care	EMR	EMT	ILS	ALS
Approved	X	X	X	X

Alternate Names:

- Narcan

Class:

- Opioid Antagonist

Indication:

- Opioid Overdose
- Altered LOC with unknown origin

Contraindication

- Hypersensitivity

Side Effects

- Flushing
- Hypertension
- Hypotension
- Tachycardia
- VF
- VT
- Agitation
- Pain
- Confusion
- Disorientation
- Dizziness
- Hallucination
- Headache
- Abdominal Cramps
- Nausea/Vomiting

Supplied:

- 2mg/2mL

Dose:

- Adults - 2mg
- Pediatric - 0.1 mg/kg

Nitroglycerin

Level of Care	EMR	EMT	ILS	ALS
Approved		X	X	X

Alternate Names:

- Nitrostat

Class:

- Vasodilator

Indication:

- ACS
- Angina
- Hypertension
- CHF

Contraindication

- Recent use of phosphodiesterase-5 inhibitors (-fil)
- Hypotension
- Aortic Stenosis
- RVI
- Severe bradycardia or tachycardia

Side Effects

- Headache
- Hypotension
- Syncope
- Tachycardia
- Flushing

Supplied:

- 0.4mg tablets

Dose:

- Adults - 1 tablet every 5 minutes max 3 tablets

Ondansetron

Level of Care	EMR	EMT	ILS	ALS
Approved		ODT Only	X	X

Alternate Names:

- Zofran

Class:

- Antiemetic

Indication:

- Nausea/Vomiting

Contraindication

- Hypersensitivity

Side Effects

- Headache
- Dizziness
- Abdominal Pain
- Seizures
- Sedation
- Anxiety
- Tachycardia
- Chest Pain

Supplied:

- 4 mg ODT
- 4 mg IV

Dose:

- Adults - 1 tablet Q20 min, or 4 mg IV/IM

Sodium Bicarbonate

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Alternate Names:

- NaHCO₃

Class:

- Alkalinizing Agent

Indication:

- Cardiac arrest with hyperkalemia or metabolic acidosis
- Overdose of Tricyclic Antidepressants and Aspirin
- Acidosis from shock or burn
- Chlorine gas inhalation

Contraindication:

- Alkalosis
- Hypernatremia
- Severe pulmonary edema
- Hypocalcemia

Side Effects:

- Edema
- Hemorrhage
- Metabolic Alkalosis
- Hypokalemia
- Hypocalcemia

Supplied:

- 50 mEq/50mL

Dose:

- 1 mEq/kg

Fentanyl

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Alternate Names:

- Sublimaze

Class:

- Analgesic

Indication:

- Moderate to severe acute pain

Contraindication:

- Hypersensitivity

Side Effects:

- CNS Depression
- Hypotension
- Respiratory Depressions
- Serotonin Syndrome

Supplied:

- 100mcg/2mL

Dose:

- Adult - 50 mcg over 2 min, may repeat in 5 min, max dose 100 mcg
- Pediatric - 1 mcg/kg IV, 2mcg/kg IN
- Reduce dose 50% in renal patients

Morphine

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Class:

- Analgesic

Indication:

- Moderate to severe acute pain

Contraindication:

- Hypersensitivity
- Respiratory Depression
- Asthma
- MAOI use in last 14 days
- GI Obstruction

Side Effects:

- CNS Depression
- Hypotension
- Respiratory Depressions
- Nausea/Vomiting
- Constipation
- Urinary Retention

Supplied:

- 4mg/1mL

Dose:

- Adult - 2-5mg
- Pediatric - 0.1 mg/kg, max single dose 2mg

Versed

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Alternate Name:

- Midazolam

Class:

- Benzodiazepine

Indication:

- Seizure
- Premedication for pacing and cardioversion
- Treatment of anxiety and agitation
- Alcohol withdrawal
- Cocaine related chest pain

Contraindication:

- Hypersensitivity
- Respiratory Depression
- Hypotension

Side Effects:

- Bradypnea
- Decreased tidal volume
- Hypotension
- Drowsiness

Supplied:

- 20mg/2mL

Dose:

- Adult - 10 mg IM for Status Epilepticus
- Adult - 2 mg IV slow for anxiety and CPAP
- Pediatric - 0.2 mg/kg IM for Status Epilepticus

Tranexamic Acid

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Alternate Name:

- TXA

Class:

- Hemostatic Agent

Indication:

- Blunt or penetrating trauma with signs and symptoms of hemorrhagic shock.
- Systolic blood pressure of less than 90 mmHg at scene of injury, during ground medical transport, or on arrival to designated trauma centers.
- Estimated blood loss of 500 mL in the field accompanied by a heart rate greater than 120 bpm.
- Bleeding not controlled by direct pressure or tourniquet (non-compressible).
- Less than three hours from the time of injury.

Contraindication:

- Under 18 years of age
- Active thromboembolic event (within the last 24 hours) i.e. stroke, MI, or PE
- Hypersensitivity
- More than three hours post injury.
- Traumatic Arrest with greater than five minutes of CPR without return of spontaneous circulation.
- Penetrating cranial injury.
- Traumatic brain injury with brain matter exposed.
- Isolated drowning or hanging victim.
- Documented cervical cord injury with motor deficit.

Supplied:

- 1 g /10 mL

Dose:

- 1 g in 100 mL of Normal Saline via IV/IO over 10 minutes

Trauma Center Contact is Mandatory

Ketamine

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Alternate Name:

- Ketalar

Class:

- General Anesthetic

Indication:

- Acute pain uncontrolled by narcotics
- Sedation for procedure or restraints
- Asthma exacerbation with decline in condition
- Medication assisted intubation

Contraindication:

- Hypersensitivity
- Known or suspected schizophrenia
- Infants < 3 months of age

Supplied:

- 500 mg/10 mL

Dose:

- Sedation
 - o IM 4-5 mg/kg
 - o IV 1-2 mg/kg
- Pain
 - o IM 2-4 mg/kg
 - o IV 0.25-0.75 mg/kg
- Medication Assisted Intubation
 - o IM 4-10 mg/kg
 - o IV 0.5-2 mg/kg

Methylprednisolone

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Alternate Name:

- Solu-medrol

Class:

- Corticosteroid

Indication:

- Asthma
- COPD
- Anaphylaxis

Contraindication:

- Hypersensitivity

Supplied:

- 125 mg Act-O-Vial

Dose:

- Adult: 125 mg
- Pediatric 1-2 mg/kg

Ketorolac

Level of Care	EMR	EMT	ILS	ALS
Approved			X	X

Alternate Name:

- Toradol

Class:

- NSAID

Indication:

- Acute pain management

Contraindication:

- Hypersensitivity
- Active or history of peptic ulcer disease
- Recent or history of GI bleeding or perforation
- History of asthma

Supplied:

- 30 mg vial

Dose:

- ≤ 65 years old and/or ≥ 50 kg - 30 mg IV/IM.
- ≥ 66 years old and/or ≤ 49 kg - 15 mg IV or 30 mg IM.

Calcium Chloride

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Class:

- Electrolyte Supplement

Indication:

- Cardiac arrest or cardiotoxicity in the presence of hyperkalemia, hypocalcemia, or hypermagnesemia.
- Calcium channel blocker overdose.
- Beta Blocker overdose with shock refractory to other measures.

Contraindication:

- Known or suspected digoxin toxicity
- Not recommended as routine treatment in cardiac arrest.

Supplied:

- 1g/10mL

Dose:

- Adult
 - o Cardiac Arrest
 - 0.5 - 1g over 2 to 5 minutes, may repeat as necessary
 - o Beta Blocker Overdose
 - 20mg/kg over 5 - 10 minutes followed by an IV infusion
 - o Calcium Channel Blocker Overdose
 - 1 - 2g over 5 minutes, may repeat every 10 - 20 minutes

Furosemide

Level of Care	EMR	EMT	ILS	ALS
Approved				X

Alternate Name:

- Lasix

Class:

- Loop Diuretic

Indication:

- Pulmonary Edema

Contraindication:

- Sensitivity
- Anuria

Supplied:

- 40 mg vial

Dose:

- Adult - 40 mg or double daily dose.