REGION 11

CHICAGO EMS SYSTEM

EMS PROCEDURES – BLS/ALS

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These Region 11 Chicago EMS System Protocols, Policies, and Procedures for EMTs and Paramedics are prehospital medical guidelines for patient assessment, treatment, and transportation within the system. They provide a framework for all patient encounters and Online Medical Control should be consulted in situations where there is not clear direction from the written documents.

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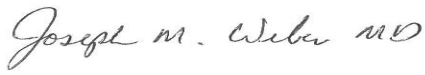

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REGION 11 - CHICAGO EMS SYSTEM
EMS PROCEDURES – BLS/ALS

PATIENT ASSESSMENT / MANAGEMENT
Neurologic Status Assessment
Stroke Patient Assessment

AIRWAY / VENTILATORY MANAGEMENT
Bag-Valve Mask Ventilation
Capnography
Continuous Positive Airway Pressure (CPAP)
Endotracheal Intubation
i-gel Supraglottic Airway Insertion
Oxygen Delivery Methods
Viral Filter

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REGION 11
CHICAGO EMS SYSTEM
PROCEDURES

PATIENT ASSESSMENT / MANAGEMEMT

Neurologic Status Assessment
Stroke Patient Assessment

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Neurologic Status Assessment
	Section: Patient Assessment / Management
	Approved: EMS Medical Directors Consortium
	EMS Level: BLS/ALS

NEUROLOGIC STATUS ASSESSMENT

Neurological status assessment involves establishing a baseline and then trending any change in patient neurological status. Glasgow Coma Scale (GCS) or AVPU may be used for this.

Glasgow Coma Score

	Points	Pediatric	Adult
Eyes	1	No eye opening	
	2	Eye opening to pain	
	3	Eye opening to verbal	
	4	Eyes open spontaneously	
Verbal	1	No vocalization	No verbal response
	2	Inconsolable, agitated	Incomprehensible sounds
	3	Inconsistently consolable, moaning	Inappropriate words
	4	Cries but consolable, inappropriate interactions	Confused
	5	Smiles, oriented to sounds, follows objects, interacts	Oriented
Motor	1	No motor response	
	2	Extension to pain	
	3	Flexion to pain	
	4	Withdraws from pain	
	5	Localizes pain	
	6	Obeys commands	

AVPU

A: The patients is alert

V: The patient responds to verbal stimulus

P: The patient responds to painful stimulus

U: The patient is completely unresponsive

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Stroke Patient Assessment
	Section: Patient Assessment / Management
	Approved: EMS Medical Directors Consortium
	EMS Level: BLS/ALS

STROKE PATIENT ASSESSMENT

Determine **last known well (LKW):** The time at which the patient was last known to be without the signs and symptoms of the current stroke or at his/her baseline state of health.

Perform **Cincinnati Stroke Scale (CSS):** One or more of the following are abnormal:

Facial Droop: Have patient show teeth or smile *Abnormal = One side does not move as the other*	Arm Drift: Have patient close eyes and hold arms out for 10 seconds with palms up *Abnormal = One arm does not move or drifts down*	Abnormal Speech: Have patient say, "You can't teach an old dog new tricks" *Abnormal = Patient slurs word, uses wrong words or is unable to speak*

Perform **Finger to Nose Test (FTN):** Have the patient touch their nose and then the provider's finger repeatedly with each hand. A normal exam is when the patient can smoothly touch their nose and the provider's finger.

Abnormal = Patient demonstrates dysmetria (unable to touch finger following a straight path) on either side or both

If abnormal or unobtainable CSS or FTN: Assess stroke severity with **3 Item Stroke Scale (3I-SS):**

Level of Consciousness (AVPU)	Gaze Preference	Motor Function
0 = Alert 1 = Arousable to voice only 2 = Arousable to noxious stimuli only or unresponsive	0 = Normal eye movements 1 = Prefers to look to one side, but can move eyes to both sides 2 = Eyes are fixed in one direction	0 = Normal strength in arms and legs 1 = Can lift arm or leg, but cannot hold arm/leg up for 10 seconds 2 = None or minimal movement of arm or leg
Stroke scale ≥ 4 and last known well ≤ 6 hours transport to Comprehensive Stroke Center	Stroke scale ≥ 4 and last known well > 6 hours but < 24 hours, transport to closest Stroke Center	Stroke scale ≤ 3 and last known well ≤ 24 hours transport to closest Stroke Center

REGION 11
CHICAGO EMS SYSTEM
PROCEDURES

AIRWAY / VENTILATORY MANAGEMEMT

Bag-Valve Mask Ventilation
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REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Bag-Valve-Mask (BVM) Ventilation – BLS/ALS
	Section: Airway/Ventilatory Management
	Approved: EMS Medical Directors Consortium
	Effective Date: December 15, 2021

BAG-VALVE MASK (BVM) VENTILATION – BLS/ALS

INDICATIONS

- Respiratory failure with inadequate ventilation and/or oxygenation

CONTRAINDICATIONS

- None

EQUIPMENT

- Bag-valve mask with correct size for adult, pediatric, infant, neonatal patient
- Airway adjuncts (OPA) – sizes 00, 0, 1, 2, 3, 4, 5
- Airway adjuncts (NPA) – sizes 12F-34F
- Rigid suction catheter
- Suction tubing, canister, device or portable unit
- Oxygen tank with regulator and adapter
- Pulse oximeter

PROCEDURE

1. Apply personal protective equipment: gloves, facemask, eye protection.
2. Attach pulse oximeter and evaluate reading.
3. Manually open airway with head tilt-chin lift or jaw thrust if concern for spinal injury.
4. Prepare rigid suction catheter and connect to tubing, canister and suction device.
5. Turn on power to suction device or retrieve manual suction device.
6. Insert rigid suction catheter without applying suction.
7. Suction the mouth and oropharynx.
8. Select airway adjunct – either OPA or NPA.
9. Insert oropharyngeal airway (OPA).
    a. Check for contraindications including gag reflex.
    b. Measure size from the corner of the mouth to the tip of the earlobe.
    c. Open mouth and insert airway along curvature of tongue to posterior oropharynx.
    d. Advance gently until flange is against lips.
10. Insert nasopharyngeal airway (NPA)

a. Check for contraindications including midface trauma.
b. Measure size from the tip of the nose to the earlobe.
c. Lubricate airway with water based jelly.
d. Gently insert tube into largest unobstructed nostril with bevel to the septum.
e. Advance gently until flange is against nostril.
f. If resistance is met, withdraw airway and attempt on the other side.

11. Apply an appropriately sized bag-valve mask that completely covers the nose and mouth and maintain an effective seal around the cheeks and chin.

12. Attach supplemental oxygen to the bag-valve mask device.

13. Provide ventilation using a two-hand technique when possible using the two-thumbs down position and lifting the chin to the mask.

14. Ventilate patient with sufficient volume to make the chest rise

a. Adults with spontaneous circulation: 1 breath every 6 seconds or 10 breaths per minute.
b. Adults during CPR: 1 breath every 6 seconds or 10 breaths per minute.
c. Infants and children with spontaneous circulation: 1 breath every 2-3 sec or 20-30 breaths per minute.
d. Infants and children with CPR: Compression to ventilation ratio of 15:2

15. If ventilation is unsuccessful or inadequate, reposition the head and jaw and check mask seal.

16. Continually reassess patient condition.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Capnography - ALS
	Section: Airway/Ventilatory Management
	Approved: EMS Medical Directors Consortium
	Effective Date: May 17, 2021

CAPNOGRAPHY - ALS

DEFINITIONS

Capnography: Analysis and recording of carbon dioxide (CO_2) concentrations in respiratory gases via continuous waveform.

End-Tidal CO_2 ($ETCO_2$): The amount of carbon dioxide measured at the end of exhalation.

INDICATIONS

- All patients receiving positive pressure ventilations (BVM or advanced airway)
- Confirmation of advanced airway proper placement (i-gel or endotracheal tube)
- Monitor correct position of the advanced airway over time
- Ventilation management
- Early detection of return of spontaneous circulation (ROSC) in patients in cardiac arrest

CONTRAINDICATIONS

None

EQUIPMENT

- Cardiac monitor
- Capnography (ETCO2) filter line set
- Bag-valve-mask or advanced airway

PROCEDURE

1. Apply personal protective equipment: gloves.

2. Attach capnography filter line set to the cardiac monitor.

3. Verify that the capnography display appears prior to applying the device to the patient. This zeros the device to ensure an accurate reading.

4. Apply the capnography device immediately upon initiating any positive pressure ventilations, or as soon as possible.

5. During bag-mask-ventilation, maintain a continuous seal in order to obtain accurate capnography readings.

6. When an advanced airway is placed, the capnography device shall be applied/re-applied immediately to confirm airway placement, along with assessing bilateral breath sounds and absence of gastric sounds.

7. Visualization of a normal or elevated value with a corresponding normal waveform confirms placement. Extremely low values (<10 mmHg) without the typical waveform implies esophageal placement and the

endotracheal tube should be removed. For patients in shock or cardiac arrest, the value (and height of the waveform) will likely be reduced but the shape of the waveform should be normal.

8. Continuously monitor the waveform, report the capnography reading to Online Medical Control and document capnography reading on the patient care record as follows:

   a. Immediately after placement of an advanced airway
   b. With any change in patient condition
   c. After any patient movement
   d. Every five minutes during transport
   e. Upon transfer of care

9. For patients in cardiac arrest, continuously monitor capnography during resuscitation. A sudden rise in ETCO2, along with an organized rhythm, is a reliable sign of ROSC and should prompt a pulse check at the end of the compression cycle. Do not hyperventilate regardless of the ETCO2 value; elevated values will normalize with proper ventilation. A drop in ETCO2 below normal can signify progressive hypotension or re-arrest.

10. A "shark-fin" waveform on ETCO2 monitoring indicates bronchospasm; treatment with albuterol is indicated.

11. During positive-pressure ventilation, if a "shark-fin" pattern and/or an elevating ETCO2 waveform ("breath stacking") is visualized, decrease ventilation rate to avoid increases in intrathoracic pressure, which can lead to decrease in venous blood return to the heart and cardiopulmonary arrest.

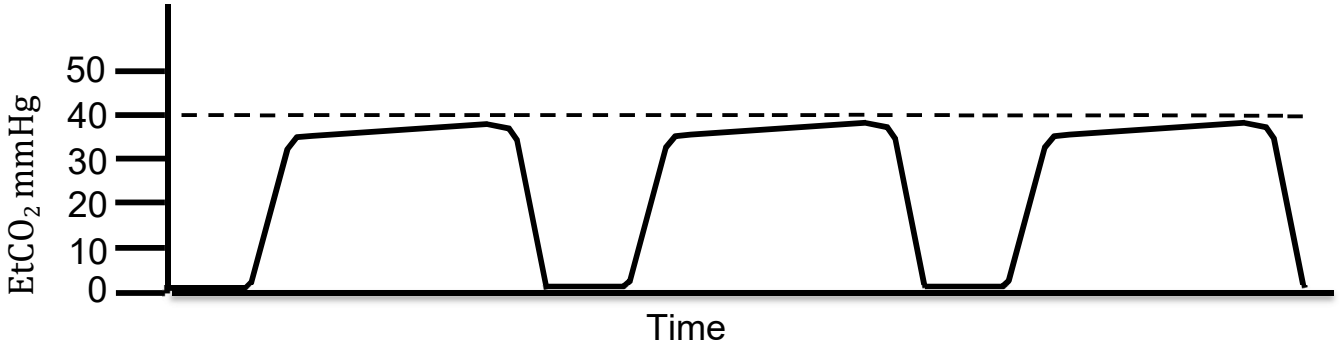
12. If the ETCO2 filter line becomes kinked or clogged with fluid, disconnect and reconnect the filter line set or exchange it.

13. Capnography should be used immediately and continuously any time an advanced airway is placed.

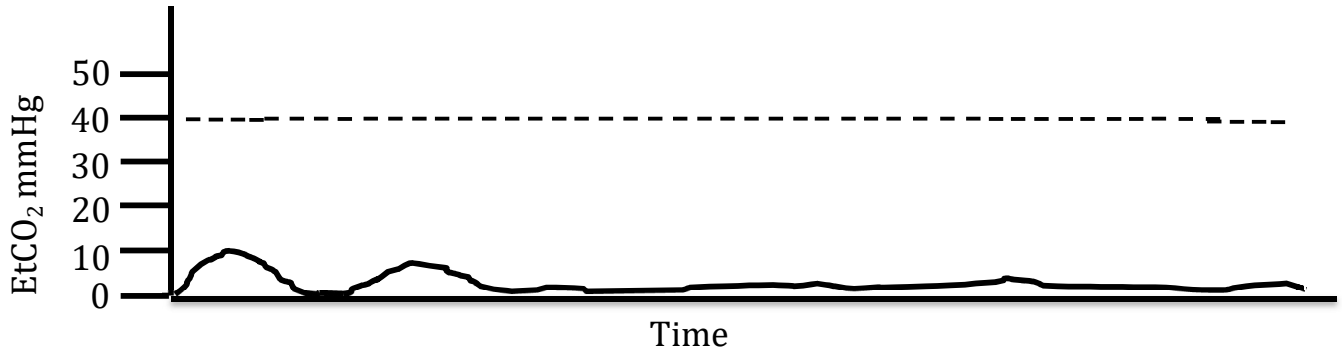
14. Capnography monitoring data should be uploaded to the electronic patient care report.

CAPNOGRAPHY WAVEFORMS

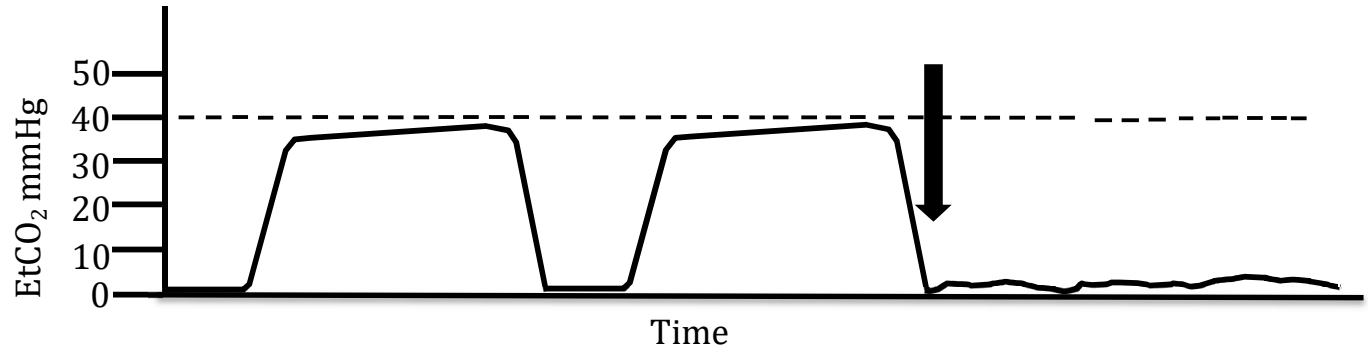
Normal shape of the capnograph (Normal waveform is depicted below)



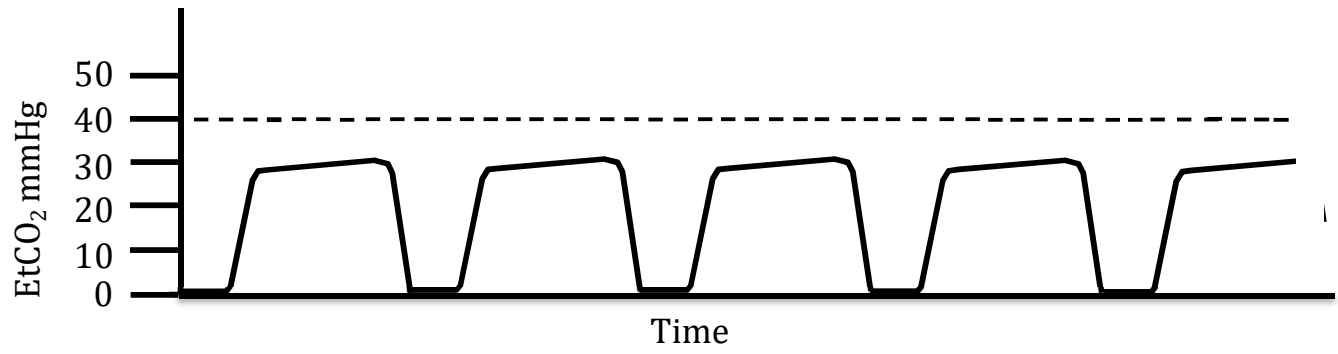
Esophageal Intubation (Low values <10 and irregular waveform or flat line)



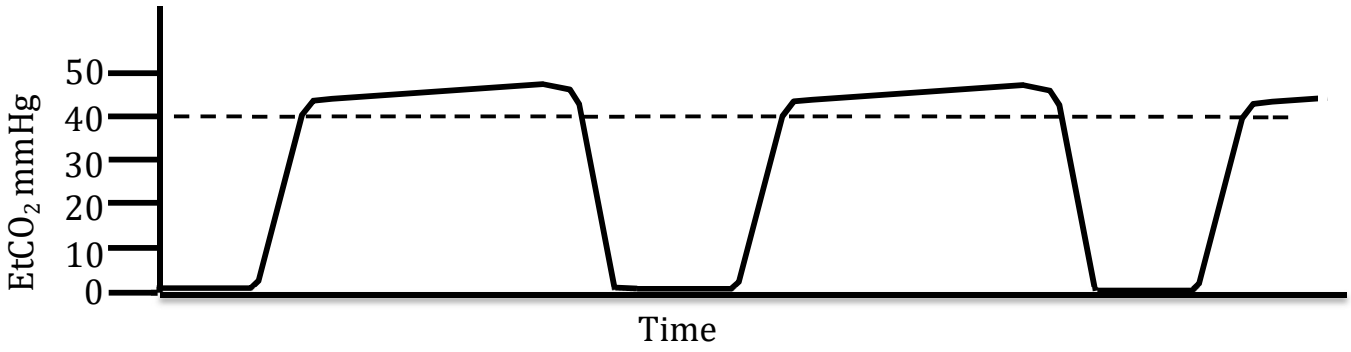
Obstructed or Dislodged Endotracheal Tube (Sudden loss of normal waveform followed by low irregular waveform or flat line)



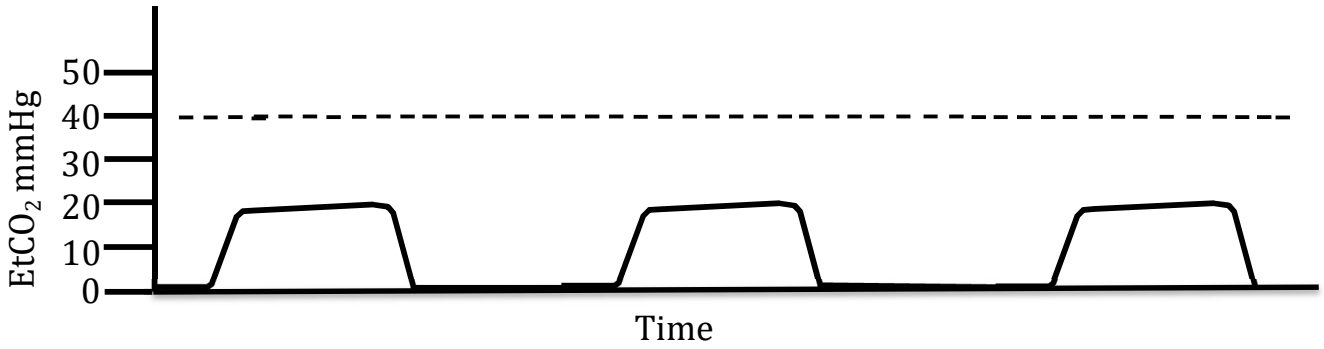
Hyperventilation (Normal waveform with reduced height, <35mmHg, and high ventilation rate)



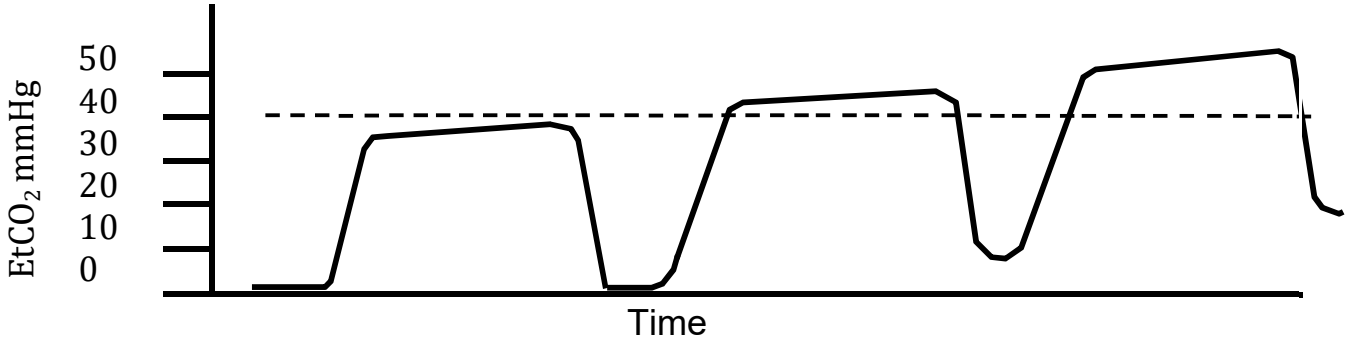
Hypoventilation / Bradypnea (Normal waveform with increased height, >45mmHg)



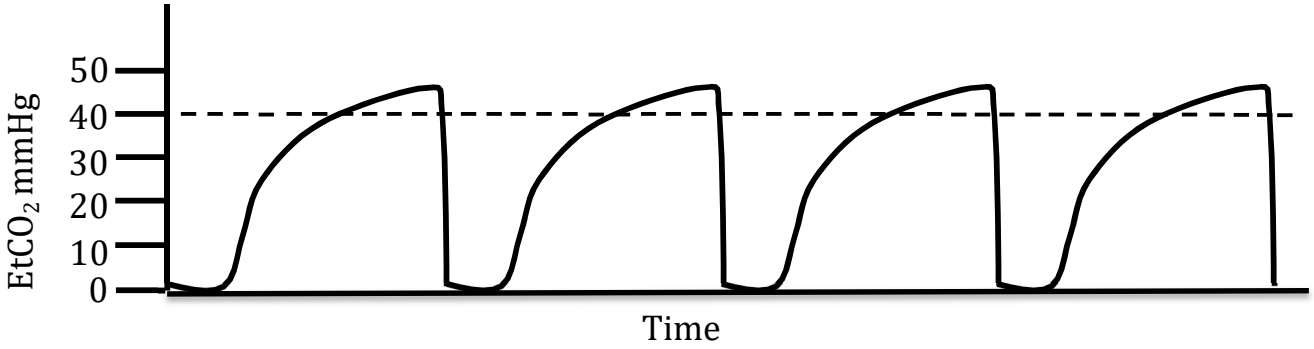
Hypoventilation / Low tidal volumes (Normal waveform with reduced height, <35mmHg, and slow ventilation rate; A similar reduced height waveform can also be seen with shock – see progressive hypotension below).



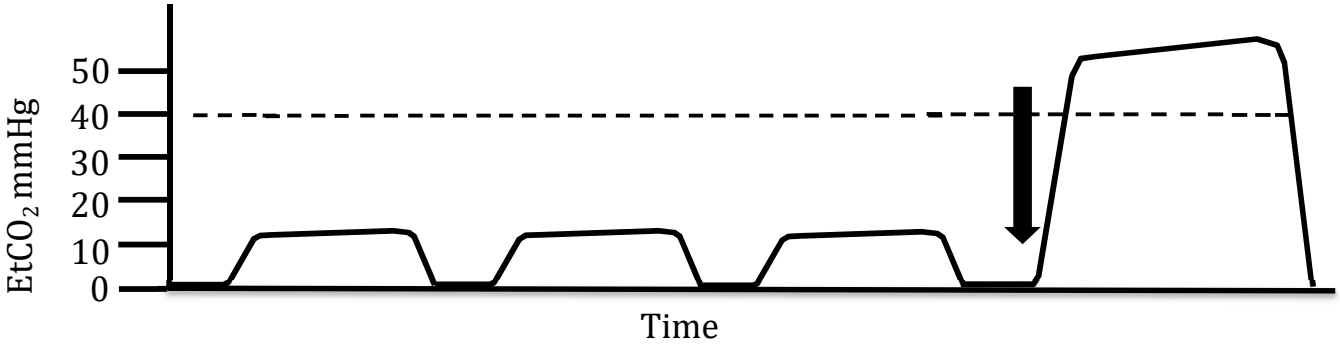
Air Trapping / Breath Stacking (Box wave forms that show increasing values with each successive breath)



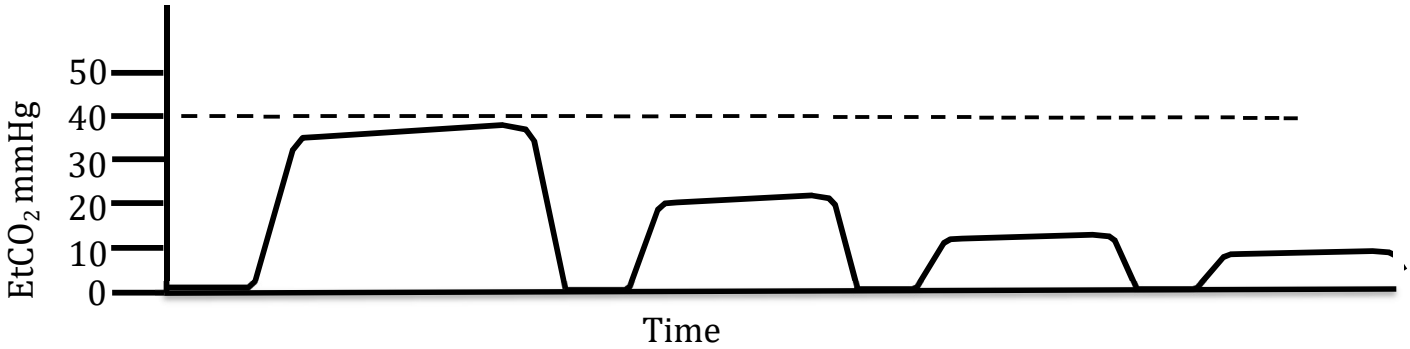
Bronchospasm ("Shark Fin Pattern")



Return of Spontaneous Circulation (Sudden increase in values in a patient in cardiac arrest)



Progressive Hypotension or Re-arrest (Progressive decrease in values with each successive breath)



REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Continuous Positive Airway Pressure (CPAP) – ALS
	Section: Airway/Ventilatory Management
	Approved: EMS Medical Directors Consortium
	Effective: June 1, 2015

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) - ALS

Continuous Positive Airway Pressure (CPAP) may be used as an adjunctive therapy for the treatment of patients with suspected Acute Pulmonary Edema, Chronic Obstructive Pulmonary Disease (COPD) or Asthma who present in **MODERATE to SEVERE** respiratory distress:

INDICATIONS

- Pulse Ox less than 92%
- Respiratory rate greater than 25
- Accessory muscle use

Suspect Acute Pulmonary Edema, COPD or Asthma as the cause of respiratory distress in patients with:

- History of CHF/MI, COPD or Asthma
- Orthopnea
- On medications for CHF (furosemide, digoxin, ace inhibitor)
- Pulmonary rales, crackles
- Wheezing
- Lower extremity edema
- Jugular Venous Distension
- STEMI confirmed by 12 lead ECG

CONTRAINDICATIONS

- Age less than < 10 years
- Inability to protect airway, significantly altered mental status.
- Hemodynamic instability:
    a. Systolic blood pressure less than 100 mmHg
    b. Significant arrhythmia (i.e. ventricular tachycardia, 3rd degree heart block)
- Inability to cooperate with fitting and wearing of mask
- Rapid deterioration once mask is placed
- Known or suspected pneumothorax
- Recent gastric, laryngeal, esophageal surgery
- Significant nausea and vomiting.

EQUIPMENT

- Boussignac CPAP system or the Flow Safe II EZ CPAP system (private providers may use ventilator based system)
- Appropriate sized mask:
    a. Boussignac – Size 5 medium (adult)
    b. Flow Safe II EZ – Size large
- Oxygen tank with flow regulator able to generate 25 liters/min flow rate.
- D-tank must have a minimum of 2,000 psi.

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BOUSSIGNAC CPAP SYSTEM

PROCEDURE

1. Initiate RMC.

2. Explain procedure to patient (i.e. *"I am going to put this mask on your face to help you breath. Try to relax and breathe normally"*).

3. Prepare CPAP system equipment:
   - Insert white end of CPAP system into face mask
   - Connect funnel end of green O2 tubing to oxygen source
   - Turn on O2 and dial flow meter to desired setting (begin with 15 liters per minute (LPM) equaling CPAP of 5.0)

4. Prepare patient:
   - Place in fowler's or semi-fowler's position
   - One crew member gently place mask on patient's face obtaining a proper seal without leaks.
   - Second crew member secure mask to patients face with head strap.

5. Titrate CPAP:
   - Increase flow meter to 25 LPM equaling CPAP of 10 (see tables 1 and 2)
   - Reassess patient for mask seal and ability to cooperate/tolerate mask
   - If patient is unable to tolerate, decrease flow rate to 20 LPM and reassess
   - Continue close monitoring of patient with goal of:
     i. Decreased heart rate
     ii. Decreased respiratory rate/effort
     iii. Improved oxygen saturation

6. Indications for discontinuation of CPAP (Place on 100% oxygen NRB mask):
   - Rapid deterioration (proceed to Airway Management protocol as indicated)
   - Inability to cooperate with wearing and fitting of mask
   - Hypotension (SBP less than 100 mmHg)
   - Worsening hypoxia (decrease in O2 saturations %)
   - Vomiting or inability to handle secretions
   - Suspected pneumothorax
   - Base station discretion

TABLE 1: Liters of 02 Flow = CPAP cm H20

Flow (LPM)	CPAP (cm H20)
10	2.5-3.0
15	4.5-5.0
20	7.0-8.0
25	8.5-10
>25	>10

TABLE 2: Minutes of CPAP use based on Oxygen Tank Size

Flow (LPM)	D Tank (minutes)	K Tank (minutes)
5	70	703
6	58	598
8	44	498
10	35	374
12	29	299
15	23	199
20	16	175
25	14	140

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Continuous Positive Airway Pressure (CPAP) – ALS
	Section: Airway/Ventilatory Management
	Approved: EMS Medical Directors Consortium
	Effective: June 1, 2015

FLOW-SAFE II EZ CPAP System

PROCEDURE

1. Initiate RMC.

2. Explain procedure to patient (*e.g. "I am going to put this mask on your face to help you breath. Try to relax and breathe normally"*).

3. Prepare CPAP system equipment:
   - Connect oxygen tubing to flow meter or regulator.
   - Turn on O2 and dial flow meter to desired setting: begin with 8-9 liters per minute (LPM) equaling CPAP of 5.0
   - Adjust oxygen flow as indicated on yellow sticker attached to oxygen tubing. ***Manometer will not register until placed on patient***

4. Prepare patient:
   - Place in fowler's or semi-fowler's position
   - One crew member gently place mask on patient's face obtaining a proper seal without leaks. Place mask on patient's face and adjust with Velcro strap on each of 4 points.
   - Quick release clips allow fast access to remove mask.
   - Spring action forehead pads allow for adjustment of mask on bridge of nose.
   - Second crew member secure mask to patients face with head strap.

5. Titrate CPAP:
   - Increase flow meter to 13-14 LPM equaling CPAP of 10.0 (see table 3 below)
   - Reassess patient for mask seal and ability to cooperate/tolerate mask
   - If patient is unable to tolerate, decrease flow rate to 10-12 LPM and reassess
   - Continue close monitoring of patient with goal of:
     i. Decreased heart rate
     ii. Decreased respiratory rate/effort
     iii. Improved oxygen saturation

TABLE 3: CONNECT TO FLOW SOURCE ONLY

CPAP Pressure (cm H2O)	Flow (LPM) Nebulizer Off	Flow (LPM) Nebulizer On
5.0	8 - 9	15 – 16
7.5	10 - 12	19 – 20
10.0	13 - 14	24 – 25
13.0 (Max)	FLUSH	28 - 30

CAUTION: *CPAP pressure will decrease when nebulizer is activated and increase when nebulizer is deactivated. Verify CPAP pressure with manometer and adjust flow meter as needed.*

FLOW-SAFE II EZ CPAP WITH NEBULIZER

Only one oxygen source is necessary since the nebulizer portion is built into Flow-Safe II EZ CPAP System

6. Place medication in medication bowl.

7. Turn nebulizer switch to green (on). (see picture)

8. Adjust oxygen flow to maintain desired pressure:
   - Turning the switch to green will reduce pressure requiring an increase in oxygen flow to maintain original pressure.
   - For CPAP Pressure of 5.0, increase flow to 15-16 LPM
   - For CPAP Pressure of 10.0, increase flow to 24-25 LPM

9. Indications for discontinuation of CPAP (Place on 100% oxygen NRB mask):
   - Rapid deterioration (proceed to Airway Management protocol as indicated)
   - Inability to cooperate with wearing and fitting of mask
   - Hypotension (SBP less than 100 mmHg)
   - Worsening hypoxia (decrease in O2 saturations %)
   - Vomiting or inability to handle secretions
   - Suspected pneumothorax
   - Base station discretion

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Endotracheal Intubation - ALS
	Section: Airway/Ventilatory Management
	Approved: EMS Medical Directors Consortium
	Effective Date: December 15, 2021

ENDOTRACHEAL INTUBATION - ALS

INDICATIONS

- Patients with respiratory failure where less invasive methods (bag-valve mask or supraglottic airway) are ineffective or where endotracheal intubation may be preferred such as severe inhalation burns or airway obstruction.

CONTRAINDICATIONS

- None

EQUIPMENT

- Bag-valve mask device with correct size for adult or pediatric patient
- Airway adjuncts (OPA) – sizes 00, 0, 1, 2, 3, 4, 5
- Airway adjuncts (NPA) – sizes 12F-34F
- Rigid suction catheter
- Suction tubing, canister, device or portable unit
- Magill forceps (adult or pediatric)
- Laryngoscope handle
- Laryngoscope blades: Miller (straight blade size 1, 2, 3) or Mac (curved blade size 2, 3, 4)
- Endotracheal tube cuffed (sizes 3.0 - 8.0 mm)
- Stylet (adult or pediatric)
- 10 ml syringe
- Stethoscope
- End-Tidal CO2 line adapter
- Oxygen tank with regulator and adapter
- Cardiac monitor with leads
- Pulse oximeter
- Airway tube holder
- Region 11 EMS Pediatric Resuscitation Card and Broselow tape (as indicated)

PROCEDURE

1. Apply personal protective equipment: gloves, facemask, eye protection.

2. Attach cardiac monitor and pulse oximeter and evaluate reading.

3. Manually open airway with head tilt-chin lift or jaw thrust if concern for spinal injury.

4. Prepare rigid suction catheter and connect to tubing, canister and suction device.

5. Turn on power to suction device or retrieve manual suction device.

6. Insert rigid suction catheter without applying suction.

7. Suction the mouth and oropharynx.

8. Select airway adjunct – either OPA or NPA.

9. Insert oropharyngeal airway (OPA).

    a. Check for contraindications including gag reflex.
    b. Measure size from the corner of the mouth to the tip of the earlobe.
    c. Open mouth and insert airway along curvature of tongue to posterior oropharynx.
    d. Advance gently until flange is against lips.

10. Insert nasopharyngeal airway (NPA).

    a. Check for contraindications including midface trauma.
    b. Measure size from the tip of the nose to the earlobe.
    c. Lubricate airway with water based jelly.
    d. Gently insert tube into largest unobstructed nostril with bevel to the septum.
    e. Advance gently until flange is against nostril.
    f. If resistance is met, withdraw airway and attempt on the other side.

11. Apply an appropriately sized bag-valve mask that completely covers the nose and mouth and maintain an effective seal around the cheeks and chin.

12. Attach supplemental oxygen to the bag-valve mask device.

13. Provide ventilation using a two-hand technique when possible using the two-thumbs down position and lifting the chin to the mask.

14. Ventilate patient with sufficient volume to make the chest rise.

    a. Adults with spontaneous circulation: 1 breath every 6 seconds or 10 breaths per minute.
    b. Adults during CPR: 1 breath every 6 seconds or 10 breaths per minute.
    c. Infants and children with spontaneous circulation: 1 breath every 2-3 sec or 20-30 breaths per minute.
    d. Infants and children with CPR: Compression to ventilation ratio of 15:2

15. Preoxygenate patient.

16. Assemble all appropriately sized equipment and test for function including laryngoscope blade light source and endotracheal tube cuff with syringe.

17. Insert stylet into tube and ensure the end of the stylet is not advanced past the tip of the endotracheal tube.

18. Position head properly and maintain spinal motion restriction for trauma patients.

19. Insert laryngoscope blade and displace tongue. The Mac blade is designed to lift the epiglottis indirectly and provide a view of the larynx by placing the tip of the blade in the vallecula. The Miller blade is designed to lift the epiglottis directly to view the larynx.

20. Elevate mandible with laryngoscope.

21. Visualize vocal cords.

22. Remove any visualized foreign body with Magill forceps.

23. Insert endotracheal tube and advance until cuff passes through the cords with the approximate depth of insertion = (3) x (endotracheal tube size).

24. Remove stylet.

25. Inflate cuff with minimum air to seal airway and remove syringe.

26. Connect End-Tidal CO2 line adapter to endotracheal tube and cardiac monitor.

27. Ventilate patient and confirm proper tube placement using auscultation bilaterally over the lungs and over epigastrium.

28. Verify proper tube placement with waveform capnography.

29. Assess for hypoxia during intubation attempt.

30. If a paramedic is unsuccessful after two attempts at intubation, basic airway maneuvers should be re-attempted and if available a second paramedic may attempt intubation.

31. If the capnography indicates improper endotracheal tube placement with a flat line or no waveform, immediately remove the endotracheal tube and ventilate with bag-valve mask.

32. If the capnography indicates proper endotracheal tube placement with a continuous waveform, secure the endotracheal tube with airway tube holder.

33. If lung sounds are auscultated with decreased sounds on one side, the endotracheal tube may be positioned too deep and can be pulled back 1-2 cm with the cuff deflated. Cuff should be re-inflated after repositioning.

34. Ventilate patient at proper rate and volume while observing capnography and pulse oximeter, adjust rate for a goal ETCO2 of 35-45 mmHg.

35. Continually reassess patient condition, pulse oximeter, and waveform capnography.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: I-gel Supraglottic Airway Insertion – BLS/ALS
	Section: Airway/Ventilatory Management
	Approved: EMS Medical Directors Consortium
	Effective: June 1, 2023

I-GEL SUPRAGLOTTIC AIRWAY INSERTION – BLS/ALS

INDICATIONS

- Need for advanced airway in an apneic patient without a gag reflex

CONTRAINDICATIONS

- Gag reflex
- Limited mouth opening
- Airway (larynx/pharynx) mass, abscess, trauma

EQUIPMENT

- Suction catheter and suction device
- I-gel airway device
- Water-based lubricant
- Support strap or tape
- ETCO2

PROCEDURE

1. **Prepare for procedure**. Apply personal protective equipment (gloves, facemask, eye protection).

2. **Prepare patient** in sniffing position; maintain in-line stabilization for trauma.

3. **Preoxygenate patient.** Insert nasopharyngeal or oropharyngeal airway. Ventilate patient at 10-12 breaths per minute.

4. **Prepare equipment.** Prepare suction device, suction catheter, I-gel, ETCO2. Select correct size of device based on chart below. Inspect packaging, expiration date and device.

5. **Device preparation.** Remove device from protective cradle or cage package. Place small amount of water based lubricant on cradle or cage surface. Grasp I-gel at integral bite block and lubricate back, sides, front of cuff. Ensure no bolus of lubricant in cuff bowl or elsewhere on device.

6. **Device insertion**. Position device so the I-gel cuff outlet is facing the chin of the patient. Gently press down on chin to open mouth. Introduce soft tip into mouth of patient toward the hard palate.

7. **Device positioning**. Insert adult device (size 3, 4, 5) to horizontal line on integral bite block and insert pediatric devices (size 1, 1.5, 2, 2.5) until definitive resistance felt. Do not apply excessive force. If early resistance during insertion, perform jaw thrust or rotate device.

8. **Confirm tube placement**. Ventilate patient and auscultate bilateral breath sounds. Monitor ETCO2 with waveform capnography.

9. **Secure device**. Attach support strap to integral ring hook or tape maxilla to maxilla.

10. **Suction gastric channel**. Determine proper size of suction catheter based on chart. Apply water-based lubricant to catheter and gastric channel. Advance tube with suction to optimize cuff seal and reduce aspiration. Contraindications to placing a suction catheter include an upper gastrointestinal (GI) bleed or esophageal trauma.

11. **Reassess the patient**. Repeat vital signs.

12. **Troubleshooting for air leak**. This may be due to over ventilation. Ensure slow and gentle squeezing of bag valve mask (BVM) and limit tidal volume to 5 ml/kg. This may also be due to malposition. Advance the tube, pull back and reseat, or remove and insert a larger size.

13. **Complications from the procedure**. These may include laryngospasm, trauma to the airway structures (larynx/pharynx), and gastric regurgitation or aspiration.

I-gel Size Chart

	i-gel color	i-gel size	Patient size	Patient weight (kg)	Patient weight (lbs)	Suction catheter
	Pink	1	Neonate	2-5 kg	4.5-11 lbs	none
	Blue	1.5	Infant	5-12 kg	11-25 lbs	10 F
	Gray	2	Small pediatric	10-25 kg	22-55 lbs	12 F
	White	2.5	Large pediatric	25-35 kg	55-77 lbs	12 F
	Yellow	3	Small adult	30-60 kg	65-130 lbs	12 F
	Green	4	Medium adult	50-90 kg	110-200 lbs	12 F
	Orange	5	Large adult	90+ kg	200 + lbs	14 F

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Oxygen Delivery Methods – BLS/ALS
	Section: Airway/Ventilatory Management
	Approved: EMS Medical Directors Consortium
	Effective Date: December 15, 2021

OXYGEN DELIVERY METHODS – BLS/ALS

Delivery Method	Flow Rate
Nasal cannula	1 - 6 liters per minute
Simple face mask	6 - 10 liters per minute
Non-rebreather mask	15 liters per minute
Bag valve mask (BVM)	15 liters per minute
I-gel supraglottic airway with bag device	15 liters per minute
Endotracheal tube with bag device	15 liters per minute
Nebulizer	6 liters per minute
Continuous Positive Airway Pressure (CPAP)	8 - 14 liters per minute
Continuous Positive Airway Pressure (CPAP) with nebulizer	15 - 25 liters per minute

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Viral/Bacterial Filter – BLS/ALS
	Section: Airway/Ventilatory Management
	Approved: EMS Medical Directors Consortium
	Effective: September 11, 2020

VIRAL/BACTERIAL FILTER – BLS/ALS

I. Definition: Device with filter media placed inline to prevent movement of viral or bacterial pathogens from expired air on ventilation during airway management.

II. Specifications:

1. End connector size: 22 mm ID x 15 mm ID/22 mm OD
2. Bacterial efficiency 99.999+%; viral efficiency 99.99+%

III. Indication: Use to prevent pathogen transmission during airway management procedures

IV. Contraindication: None

V. Use of the Viral Filter

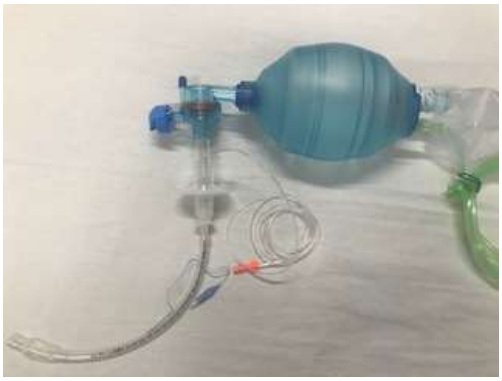
1. Bag Valve Mask

a. Face mask > viral filter > bag device

2. Advanced Airway

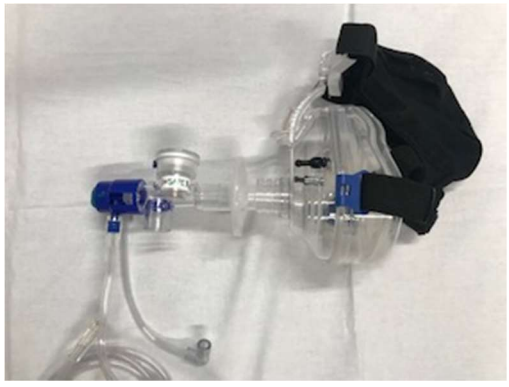
   a. I-gel or King Airway SGA>viral filter>ETCO2 connector> bag device

   b. Endotracheal tube > viral filter > ETCO2 connector > bag device



3. CPAP

   a. Face mask > viral filter > CPAP valve



VI. Considerations

1. Minimize aerosol-generating procedures (BVM ventilation, oropharyngeal suctioning, nebulizer treatments, CPAP) for suspected COVID-19 patients.

2. For airway management procedures, wear personal protective equipment (PPE) at minimum to include N-95 mask, gloves, and eye protection.

3. For the CPAP mask, when the filter is placed then the nebulizer cannot be used, the filter will filter out the medication.

REGION 11
CHICAGO EMS SYSTEM
PROCEDURES

CARDIAC MANAGEMEMT

12-Lead Electrocardiogram (ECG)
Death Notification
LIFEPAK 1000 Defibrillator (LP 1000)
Manual Defibrillation
Synchronized Cardioversion
Transcutaneous Pacing

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: 12 Lead Electrocardiogram (ECG) - ALS
	Section: Cardiac Management
	Approved: EMS Medical Directors Consortium
	Effective: May 17, 2021

12-LEAD ELECTROCARDIOGRAM (ECG) - ALS

INDICATIONS

- All patients with suspected **Acute Coronary Syndrome (ACS)** should have an ECG performed in the prehospital setting

- At a minimum, patients with any of the following signs or symptoms should have a 12-lead ECG performed:

  - Chest pain
  - Symptomatic heart failure
  - Pulmonary edema
  - Shortness of breath
  - Syncope or presyncope
  - Return of spontaneous circulation (ROSC) after cardiac arrest
  - Tachycardia (> 120 bpm) or bradycardia (< 50 bpm)
  - Any of the following atypical symptoms of ACS in patients over age 40 (atypical symptoms of ACS are especially common in women, diabetics and the elderly):
    - Generalized weakness
    - Epigastric pain or nausea/vomiting
    - Diaphoresis
    - Shoulder/arm/jaw pain
    - Atraumatic hypotension

EQUIPMENT

- Cardiac electrodes
- Limb lead and precordial lead attachment to main cable
- Cardiac monitor/defibrillator with 12-lead ECG capability

PROCEDURE

1. Apply personal protective equipment.

2. Perform patient assessment and identify patients requiring an ECG based on above criteria.

3. Insert limb lead and precordial lead attachment into main cable.

4. Insert cable connector into cardiac monitor.

5. If necessary, clean and dry skin or remove excess chest hair with razor.

6. Apply electrodes to limbs and precordial lead sites.

7. Encourage patient to remain still during 12-lead ECG acquisition.

8. Press “12-LEAD” button and enter identifying information (ambulance number and patient initials).

9. Review 12-lead ECG and interpretation.

10. Transmit ECG to receiving hospital.

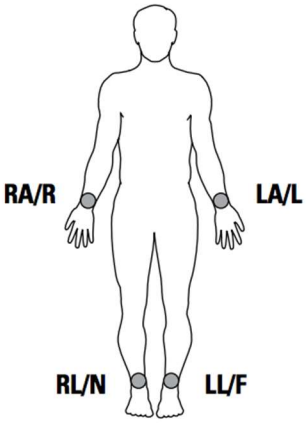
11. Repeat and transmit ECG after:
    - Any change in patient status;
    - Any change in cardiac rhythm; or
    - Administration of any electrical or medical therapies.

12. For patients with very high suspicion for Acute Coronary Syndrome and an initial ECG that does not show STEMI, leave ECG cables in place for continuous ST segment monitoring/repeat ECG.

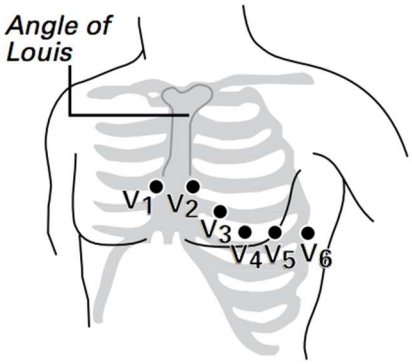
13. Attach ECG to the electronic patient care report (ePCR).

CARDIAC LEAD PLACEMENT:

Limb Lead Electrode Sites



Precordial Lead Electrode Sites



AHA Labels		IEC Labels	
RA	Right Arm	**R**	Right
LA	Left Arm	**L**	Left
RL	Right Leg	**N**	Negative
LL	Left Leg	**F**	Foot

V1	C1	Fourth intercostal space to the right of the sternum
V2	C2	Fourth intercostal space to the left of the sternum
V3	C3	Directly between leads V2/C2 and V4/C4
V4	C4	Fifth intercostal space at midclavicular line
V5	C5	Level with V4/C4 at left anterior auxiliary line
V6	C6	Level with V5/C5 at left midaxiliary line

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Death Notification – BLS/ALS
	Section: Cardiac Management
	Approved: EMS Medical Directors Consortium
	Effective: December 1, 2022

DEATH NOTIFICATION – BLS/ALS

The GRIEV_ING Method for Death Notification by EMS

G - Gather	Gather the family, ensure that all members are present.
R - Resources	Call for support resources available to assist the family members with their grief which may include spiritual leaders, family, or friends.
I – Identify	Identify yourself, identify the deceased patient by name, and identify/ask the family their understanding of the events that have occurred.
E - Educate	Briefly educate the family about the events that have occurred in the resuscitation, educate them about the current state of their loved one.
V - Verify	Verify that their family member has died. Be clear! Use the words “dead” or “died”.
_ - Space	Give the family personal space and time for an emotional moment; allow the family time to absorb the information.
I – Inquire	Ask if there are any questions and answer them all.
N - Nuts and Bolts	Inform family about next steps including law enforcement (Chicago Police Department) reporting and notification to the Medical Examiner. Cases requiring Medical Examiner investigation will be transported to that location (by a contracted agency) and all other cases will remain on location for transportation to the funeral home selected by the family. Offer the family opportunity to view the body. Resuscitation equipment should remain in place (do not remove airway, IV or IO).
G - Give	Give them information on City of Chicago resources and refer to the Chicago Police Department officer on scene for additional information.

The GRIEV_ING Death Notification method has been adapted for prehospital use with the permission of C. Hobgood, MD.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: LIFEPAK 1000 Defibrillator – BLS/ALS
	Section: Cardiac Management
	Approved: EMS Medical Directors Consortium
	Effective: June 10, 2021

LIFEPAK 1000 DEFIBRILLATOR (LP1000) – BLS/ALS

INDICATIONS

- Unresponsive, not breathing normally, no pulse – AED Mode (BLS)
- Unresponsive, not breathing normally, no pulse – Manual Mode (ALS)
- Conscious and unconscious patients of all ages for the purpose of ECG rhythm recognition and heart rate monitoring – ECG Mode (ALS)

CONTRAINDICATIONS

None

EQUIPMENT

- LIFEPAK 1000 Defibrillator
- QUIK-COMBO Defibrillation pads for adults or children over 8 years old or 25 kg (55 lbs.)
- Infant/Child Reduced Energy Defibrillation pads for children less than 8 years old or 25 kg (55 lbs.)
- 3 wire monitoring cable with electrodes (for ALS)
- Razor

PROCEDURE FOR BLS RESPONDERS – AED MODE

1. Apply personal protective equipment.

2. Verify patient is in cardiac arrest (unconscious, not breathing normally, no pulse).

3. Begin CPR and ICCA.

4. Turn device on and listen to voice prompts.

5. Prepare the patient for defibrillation pad placement. If necessary, clean and dry skin or remove excess chest hair with razor.

6. Select proper defibrillator pad (adult or pediatric) based on patient age and weight. Open the package and remove the protective liner from the electrodes.

7. Apply pads in the anterior-lateral placement or anterior-posterior placement and press down firmly. Pads should not be placed directly over implanted devices (cardiac defibrillators or pacemakers).

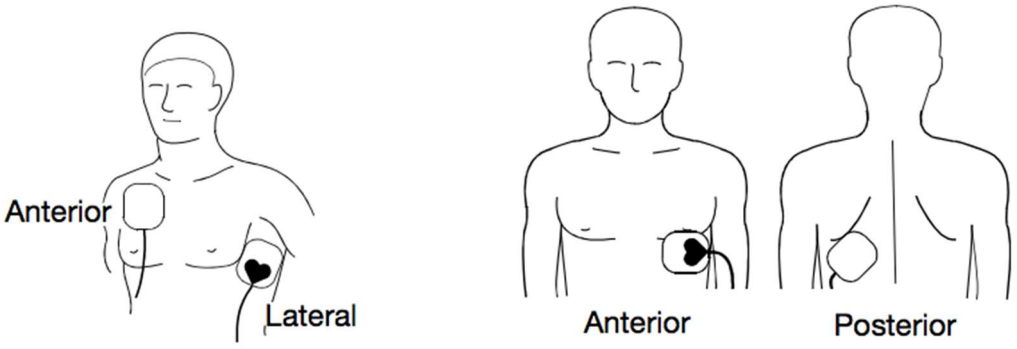


Figure 3-1 Anterior-Posterior Placement

8. Connect the pads to the defibrillator.

9. Follow the screen messages and voice prompts provided by the defibrillator.

10. When the patient is connected to the defibrillator, the voice prompt will advise to stand clear of the patient during ECG analysis, which takes 6-9 seconds.

11. If the defibrillator detects a shockable rhythm, it will prepare to shock and charge to the joule setting for the shock number.

12. The voice prompt will state when charging is complete and the shock button will flash.

13. Verbalize “all clear” and visually ensure that all individuals are clear of the patient, stretcher and any equipment connected to the patient.

14. Press the shock button to discharge the defibrillator. If the shock button is not pressed within 15 seconds, the defibrillator disarms the shock button.

15. Immediately resume CPR.

16. If the defibrillator detects a nonshockable rhythm, the voice prompt will advise that no shock is advised and CPR should be resumed.

17. Continue CPR and analyze rhythm every two minutes.

PROCEDURE FOR ALS RESPONDERS – MANUAL MODE

1. Convert to manual mode by pressing the menu button and select “YES” to enter manual mode. The ECG tracing and Heart Rate Indicator will appear on the screen.

2. If the displayed ECG rhythm appears shockable, press “CHARGE” to initiate charging of the defibrillator. The screen will indicate that the defibrillator is charging and a charge tone will sound.

3. Verbalize “all clear” and visually ensure that all individuals are clear of the patient, stretcher and any equipment connected to the patient.

4. When the charge is complete, press the flashing shock button to delivery energy to the patient.

5. After delivering a shock, the energy for each subsequent shock is automatically selected based on the energy level configurations (200J, 300J, 360J).

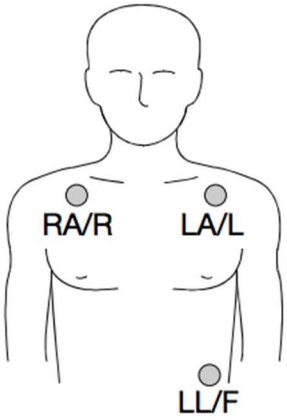
6. To remove an unwanted shock at any time, select “DISARM”.

7. To initiate an automatic rhythm analysis while in manual mode, select “ANALYZE”.

PROCEDURE FOR ALS RESPONDERS – ECG MODE

1. Connect the ECG cable.

2. Apply ECG electrodes to the patient’s chest.



AHA Labels		IEC Labels	
RA	Right Arm	**R**	Right
LA	Left Arm	**L**	Left
LL	Left Leg	**F**	Foot

Figure 3-2 Connecting the ECG Electrodes for use with ECG cable

3. After the ECG electrodes are connected, the defibrillator displays the patient’s heart rhythm and heart rate in a lead II configuration.

4. While in ECG mode, the defibrillator’s shock capability is disabled; however, the defibrillator continues to evaluate the patient’s ECG for a potentially shockable rhythm. The patient’s status should be reassessed including presence of a pulse.

5. If a shockable rhythm is detected, the defibrillator will prompt to connect the defibrillation pads.

6. Remove the ECG cable and connect the defibrillation pads to the defibrillator.

7. Apply the defibrillation pads to the patient's chest keeping them at least 2.5 cm (1 inch) away from the ECG electrodes. If necessary, remove the ECG electrodes.

8. Defibrillate as indicated and begin ICCA.

MANAGING DEFIBRILLATOR DATA

1. LIFEPAK 1000 data can be uploaded to CODE-STAT.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Manual Defibrillation - ALS
	Section: Cardiac Management
	Approved: EMS Medical Directors Consortium
	Effective: May 17, 2021

MANUAL DEFIBRILLATION - ALS

INDICATIONS

- Ventricular fibrillation
- Pulseless ventricular tachycardia

CONTRAINDICATIONS

None

EQUIPMENT

- Cardiac monitor/defibrillator
- Therapy electrode pads
- Therapy cable

PROCEDURE

1. Apply personal protective equipment: gloves.

2. Verify patient is in cardiac arrest (unconscious, pulseless, not breathing normally).

3. If pulseless, begin CPR and Incident Command for Cardiac Arrest (ICCA).

4. Turn device on.

5. Attach therapy pads to therapy cable and connect to the cardiac monitor/defibrillator.

6. If necessary, clean and dry skin or remove excess chest hair with razor.

7. Apply pads in the anterior-lateral placement or anterior-posterior placement (per manufacturer specific guidelines) and press down firmly. Pads should not be placed directly over implanted devices (cardiac defibrillators or pacemakers).

8. Assure safe environment – evaluate risk of sparks, combustibles, oxygen-enriched environment.

9. Select desired energy:

    a. Adult: Per manufacturer's guidelines
    b. Pediatric: 2 J/kg (see Pediatric Resuscitation Card)

10. Charge the monitor/defibrillator while continuing chest compressions.

11. Verbalize "all clear" and visually ensure that all individuals are clear of the patient, stretcher and any equipment connected to the patient.

12. Confirm ECG rhythm requires defibrillation. Confirm available energy.

13. Press the shock button to deliver shock to the patient.

14. Immediately resume compressions.

15. Pre-charge defibrillator prior to 2-minute rhythm check.

16. Reassess rhythm every two minutes.

17. For persistent ventricular fibrillation or pulseless ventricular tachycardia, administer second and subsequent shocks:

    a. Adult: Second and subsequent doses should be equivalent or higher
    b. Pediatric: 4 J/kg (See Pediatric Resuscitation Card)

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Synchronized Cardioversion - ALS
	Section: Cardiac Management
	Approved: EMS Medical Directors Consortium
	Effective: May 17, 2021

SYNCHRONIZED CARDIOVERSION - ALS

INDICATIONS

- Narrow or wide complex tachyarrhythmia (heart rate typically ≥ 150/min) causing the patient to be unstable with signs of shock including:
  - Hypotension (SBP < 100 mmHg)
  - Acutely altered mental status
  - Ischemic chest discomfort
  - Respiratory distress (acute heart failure)

CONTRAINDICATIONS

None

EQUIPMENT

- Cardiac monitor/defibrillator
- Cardiac leads
- Therapy electrode pads
- Therapy cable

PROCEDURE

1. Apply personal protective equipment: gloves.

2. Apply cardiac monitor leads to identify tachyarrhythmia that requires synchronized cardioversion (12-lead ECG if available).

3. Identify and treat underlying causes.

4. Assess adequate oxygenation.

5. Assess pulse and blood pressure.

6. Establish IV access.

7. Consider analgesia prior to procedure per Pain Management protocol.

8. Attach therapy pads to therapy cable and connect to the cardiac monitor/defibrillator.

9. If necessary, clean and dry skin or remove excess chest hair with razor.

10. Apply pads in the anterior-lateral placement or anterior-posterior placement (per manufacturer specific guidelines) and press down firmly. Pads should not be placed directly over implanted devices (cardiac defibrillators or pacemakers). Pediatric pads should be used based on manufacturer weight guidelines.

11. Assure safe environment – evaluate risk of sparks, combustibles, oxygen-enriched environment.

12. Activate synchronized mode to “SYNC”.

13. Confirm synchronized marker on QRS complexes.

14. Charge monitor to appropriate energy setting:

    a. Adult patients: 100 J
    b. Pediatric patients: 0.5-1 J/kg (See Pediatric Resuscitation Card)

15. Verbalize “all clear” and visually ensure that all individuals are clear of the patient, stretcher and any equipment connected to the patient.

16. Press the shock button to deliver synchronized shock to the patient.

17. Reassess rhythm, patient pulse and blood pressure.

18. For persistent tachyarrhythmia with signs of shock, administer a second synchronized shock:

    a. Adult patients: 200 J
    b. Pediatric patients: 2 J/kg (See Pediatric Resuscitation Card)

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Transcutaneous Pacing - ALS
	Section: Cardiac Management
	Approved: EMS Medical Directors Consortium
	Effective: May 17, 2021

TRANSCUTANEOUS PACING - ALS

INDICATIONS

- Bradycardia (HR < 50/min) with a pulse causing the patient to be unstable with signs of shock including hypotension (SBP < 100 mmHg) that continues after atropine administration.

CONTRAINDICATIONS

- Pulseless or asymptomatic bradycardia

EQUIPMENT

- Cardiac monitor/defibrillaton
- Cardiac leads
- Therapy electrode pads
- Therapy cable

PROCEDURE

1. Apply personal protective equipment: gloves.
2. Apply cardiac monitor leads and identify bradycardia that requires transcutaneous pacing (12-lead ECG if available).
3. Identify and treat underlying causes.
4. Assess adequate oxygenation.
5. Assess pulse and blood pressure.
6. Establish IV access.
7. Consider analgesia prior to procedure per Pain Management protocol.
8. Attach therapy pads to therapy cable and connect to the cardiac monitor/defibrillator.
9. If necessary, clean and dry skin or remove excess chest hair with razor.
10. Apply pads in the anterior-lateral placement or anterior-posterior placement (per manufacturer specific guidelines) and press down firmly. Pads should not be placed directly over implanted devices (cardiac defibrillators or pacemakers).
11. Assure safe environment – evaluate risk of sparks, combustibles, oxygen-enriched environment.

12. Activate pacer mode to “PACER”.

13. Note marker on ECG rhythm near the middle of each QRS complex.

14. Select rate and increase to 80 beats per minute

15. Select current and increase to 50 mA.

16. Gradually increase delivered current until electrical capture is achieved (observed pacer spikes followed by wide QRS complexes and tall “T waves”). The average current needed for capture is between 50-100 mA.

17. Palpate the patient’s pulse and check blood pressure to assess for mechanical capture.

18. Reassess patient condition.

19. If pulseless, discontinue pacing and initiate Incident Command for Cardiac Arrest (ICCA) procedure.

REGION 11
CHICAGO EMS SYSTEM
PROCEDURES

TRAUMA MANAGEMEMT

Chest Seal (HyFin Vent) Application
Hemorrhage Control
Joint Splinting
Long Bone Splinting
Pleural (Needle) Decompression
Spinal Motion Restriction (SMR)
START/JumpSTART Triage
Tourniquet Application
Traction Splinting

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Chest Seal (HyFin Vent) Application – BLS/ALS
	Section: Trauma Management
	Approved: EMS Medical Directors Consortium
	Effective: July 1, 2021

CHEST SEAL (HYFIN VENT) APPLICATION – BLS/ALS

INDICATIONS

- Penetrating chest trauma
- Open pneumothorax ("sucking chest wound")
- Frothing or bubbling at opening of wound

CONTRAINDICATIONS

- None

EQUIPMENT

- HyFin Vented Chest Seal
- 4 x 4 gauze pad (included in package)

PROCEDURE

1. Apply personal protective equipment: gloves.
2. Remove clothing.
3. Open package using external red tabs.
4. Wipe any dirt or fluid from skin with gauze.
5. Grip red tab and peel the transparent backing from the chest seal.
6. Center vent over the wound.
7. Firmly press onto the skin to ensure a good seal.
8. Smooth out all edges flat against the skin.
9. Assess front and back of patient carefully for additional wounds and apply second seal as indicated.
10. Monitor patient for development of tension pneumothorax if blood accumulates in all three vented channels of the chest seal.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Hemorrhage Control – BLS/ALS
	Section: Trauma Management
	Approved: EMS Medical Directors Consortium
	Effective: July 1, 2021

HEMORRHAGE CONTROL – BLS/ALS

INDICATIONS

- External hemorrhage

CONTRAINDICATIONS

- None

EQUIPMENT

- Pressure Dressing: Emergency Trauma Dressing (ETD) or Emergency (Israeli) Bandage
- CAT (Combat Application Tourniquet)
- Hemostatic gauze

PROCEDURE

1. Apply personal protective equipment: gloves.

2. Apply direct pressure with gloved hand to bleeding site.

3. **For extremity trauma, apply pressure dressing** (ETD or Israeli Bandage).

4. Place sterile non-adherent pad over wound and wrap bandage around limb.

5. For **ETD**: Pull the pressure dressing tight and wrap to cover the pad area by beginning on the edge farthest from the torso. For additional pressure, twist bandage so the twisted portion of the bandage is over the pad, wrap around the limb, twist back, and finish the wrap. Secure the bandage with Velcro fastener.

6. For **Israeli Bandage**: When the bandage reaches the pressure bar, insert the fabric into the pressure bar and reverse the direction of the wrap. Wrap the bandage to cover the edges of the pressure bar. Secure the bandage by hooking the ends of the closure bar into the fabric.

7. Reassess patient for hemorrhage control.

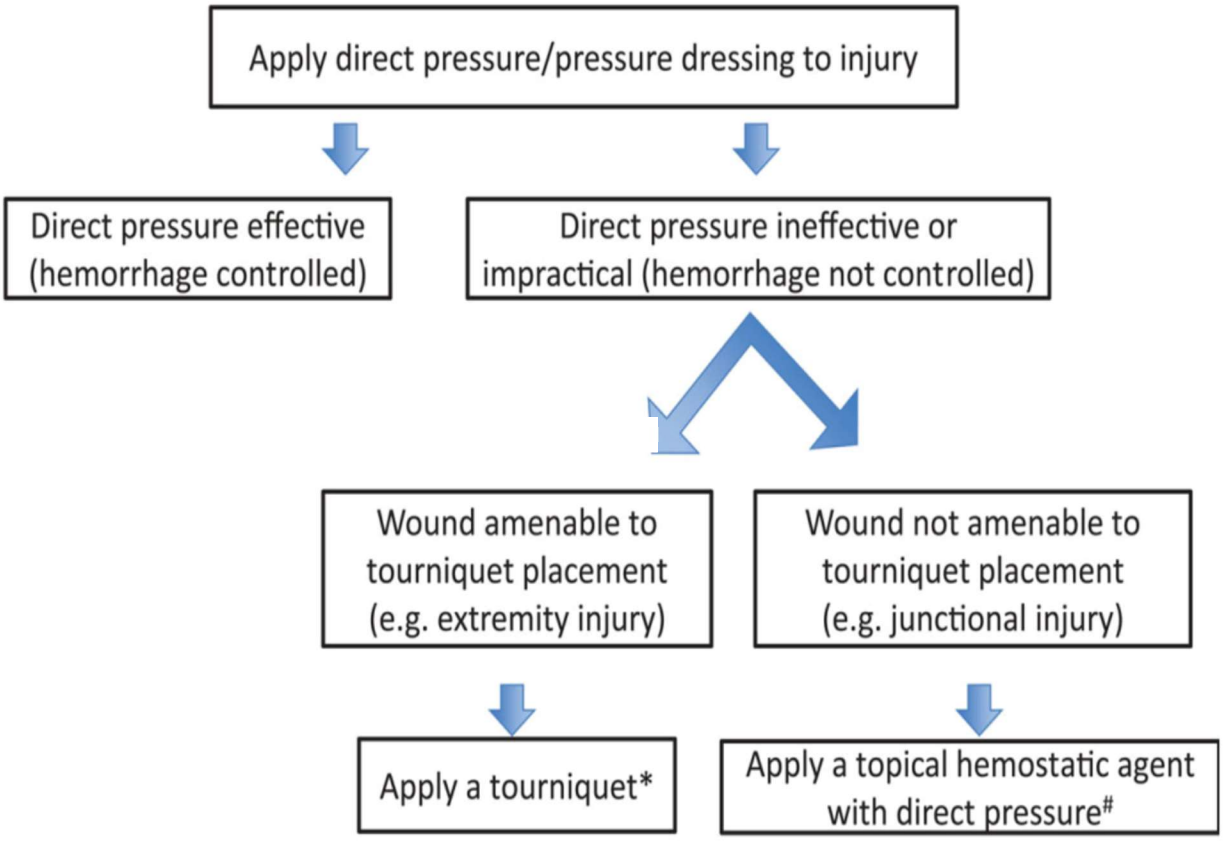
8. **For extremity injury amendable to tourniquet placement**, if direct pressure or pressure dressing is ineffective or impractical, apply tourniquet.

9. Route the band around the limb, pass the tip through the slit of the buckle.

10. Place the tourniquet 2-3 inches proximal to wound (not over the joint) directly to the skin.

11. Pull band tightly and fasten it back on itself all the way around the limb but not over the rod clips.
12. Tighten band so the tips of three fingers cannot be slide between the band and limb, otherwise re-tighten and re-secure.
13. Twist the rod until the bleeding has stopped.
14. Secure the rod inside a clip and lock it into place.
15. Check for bleeding and distal pulse.
16. If bleeding not controlled or distal pulse is present, tighten the tourniquet.
17. If bleeding still not controlled, place a second CAT above and side by side to the first.
18. Route the band between the clips and over the rod.
19. Secure the rod and band with time stamp.
20. Record time of application.
21. **For junctional (groin or axillary) injury not amendable to tourniquet placement**, if direct pressure/pressure dressing is ineffective or impractical, apply hemostatic gauze.
22. Pack wound tightly with hemostatic gauze (or plain gauze if not available), and apply direct pressure.
23. Reassess the patient and evaluate frequently for bleeding.
24. Pain assessment and management as indicated.
25. Inform subsequent providers regarding interventions performed.

Prehospital External Hemorrhage Control Protocol



REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Joint Splinting – BLS/ALS
	Section: Trauma Management
	Approved: EMS Medical Directors Consortium
	Effective: July 1, 2021

JOINT SPLINTING – BLS/ALS

INDICATIONS

- Stabilize and reduce pain in joint injury with deformity

CONTRAINDICATIONS

- None

EQUIPMENT

- Rolled gauze (Kerlix)
- Splinting material
- Padding material
- Triangle bandage or arm sling (as needed)

PROCEDURE

1. Apply personal protective equipment: gloves.
2. Completely expose the injured area (extremity).
3. Directs application of manual stabilization of the injury.
4. Assess motor, sensory, and circulatory functions in the injured extremity.
5. Assess pain scale and consider pain management.
6. If distal vascular function is compromised, gently attempt to restore normal anatomic position.
7. Select and measure appropriate splint based on injury.
8. Apply the splint and pads as necessary.
9. Immobilize the bone above and below the injury site.
10. Secure the entire injured extremity.
11. Reassess motor, sensory, and circulatory functions in the injured extremity.
12. Elevate extremity fractures to limit swelling, when possible.
13. Apply ice/cool packs to limit swelling in suspected fracture or soft tissue injury.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Long Bone Splinting – BLS/ALS
	Section: Trauma Management
	Approved: EMS Medical Directors Consortium
	Effective: July 1, 2021

LONG BONE SPLINTING – BLS/ALS

INDICATIONS

- Stabilize and reduce pain in long bone injury with deformity

CONTRAINDICATIONS

- None

EQUIPMENT

- Rolled gauze (Kerlix)
- Splinting material
- Padding material
- Triangle bandage or arm sling (as needed)

PROCEDURE

1. Apply personal protective equipment: gloves.
2. Completely expose the injured area (extremity).
3. Directs application of manual stabilization of the injury.
4. Assess motor, sensory, and circulatory functions in the injured extremity.
5. Assess pain scale and consider pain management.
6. If distal vascular function is compromised, gently attempt to restore normal anatomic position.
7. Select and measure appropriate splint based on injury.
8. Apply the splint and pads as necessary.
9. Immobilize the joint above and below the injury site.
10. Secure the entire injured extremity.
11. Immobilize the hand/foot in position of function.
12. Reassess motor, sensory, and circulatory functions in the injured extremity.
13. Elevate extremity fractures to limit swelling, when possible.
14. Apply ice/cool packs to limit swelling in suspected fracture or soft tissue injury.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Pleural (Needle) Decompression – ALS
	Section: Trauma Management
	Approved: EMS Medical Directors Consortium
	Effective: July 1, 2021

PLEURAL (NEEDLE) DECOMPRESSION - ALS

INDICATIONS

This procedure is to be used for patients with:

- Evidence of thoracic trauma AND:
  1. Traumatic arrest OR
  2. Signs of tension pneumothorax (all of the following):
     a. Hypotension (systolic blood pressure < 90 mmHg) AND
     b. Respiratory distress or respiratory failure AND
     c. Absent or diminished breath sounds on the affected side

- Suspected tension pneumothorax in non-traumatic cardiac arrest (e.g. PEA arrest with subcutaneous emphysema)

CONTRAINDICATIONS

- Isolated, decreased breath sounds without hypotension and respiratory distress

EQUIPMENT

- Adult: 14 gauge x 3.25 inch over the needle catheter or Air Release System (ARS)
- Pediatric: 16-18 gauge x 1.5-2 inch over the needle catheter
- Alcohol prep pad

PROCEDURE

1. Apply personal protective equipment (gloves).

2. Palpate the chest locating the second intercostal space on the midclavicular line (between the 2nd and 3rd ribs) on the same side as the injury.

3. Properly cleanse the insertion site with alcohol prep pad.

4. Insert the needle at a 90-degree angle to the chest wall, just over the top of the 3rd rib in the midclavicular line.

5. Listen for rush of air.

6. Remove needle leaving only the catheter in place.

7. Dispose of the needle in the proper container.

8. Reassess for improvement in patient condition.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Spinal Motion Restriction (SMR) – BLS/ALS
	Section: Trauma Management
	Approved: EMS Medical Directors Consortium
	Effective: July 1, 2021

SPINAL MOTION RESTRICTION (SMR) – BLS/ALS

INDICATIONS

Traumatic injury with:

- Acutely altered level of consciousness (GCS < 15, evidence of intoxication)
- Midline neck or back pain and/or tenderness
- Focal neurological signs or symptoms (i.e. numbness or motor weakness)
- Severe or painful distracting injury (unreliable examination or assessment)
- For pediatric patients: torticollis (neck muscle spasm causing the head to tilt to one side)

CONTRAINDICATIONS

- Penetrating traumatic injury to the neck

EQUIPMENT

- Cervical collar
- Scoop stretcher or padded long backboard
- Ambulance cot

PROCEDURE

1. Apply personal protective equipment: gloves.

2. Limit motion of the spine by keeping head, neck, and torso in alignment.

3. Determine appropriately sized cervical collar.

4. Use fingers to measure the patient's lateral neck from the base of the shoulder to the bottom of the chin.

5. Adjust cervical collar based on measured neck size.

6. Apply cervical collar and secure it in place.

7. Assess cervical collar after application as it should not occlude mouth opening, obstruct airway, breathing, or be loose as to allow the chin to sink below the collar chin piece.

8. If extrication is not required: Children in a booster seat and adults can be allowed to self-extricate. Place patient on ambulance cot. For infants and toddlers already strapped in a car seat with a built-in harness, extricate the child while strapped to the car seat.

9. If extrication is required: For infants and toddlers already strapped in a car seat with a built-in harness, extricate the child while strapped to the car seat. For other situations, use a padded long backboard or a scoop stretcher.

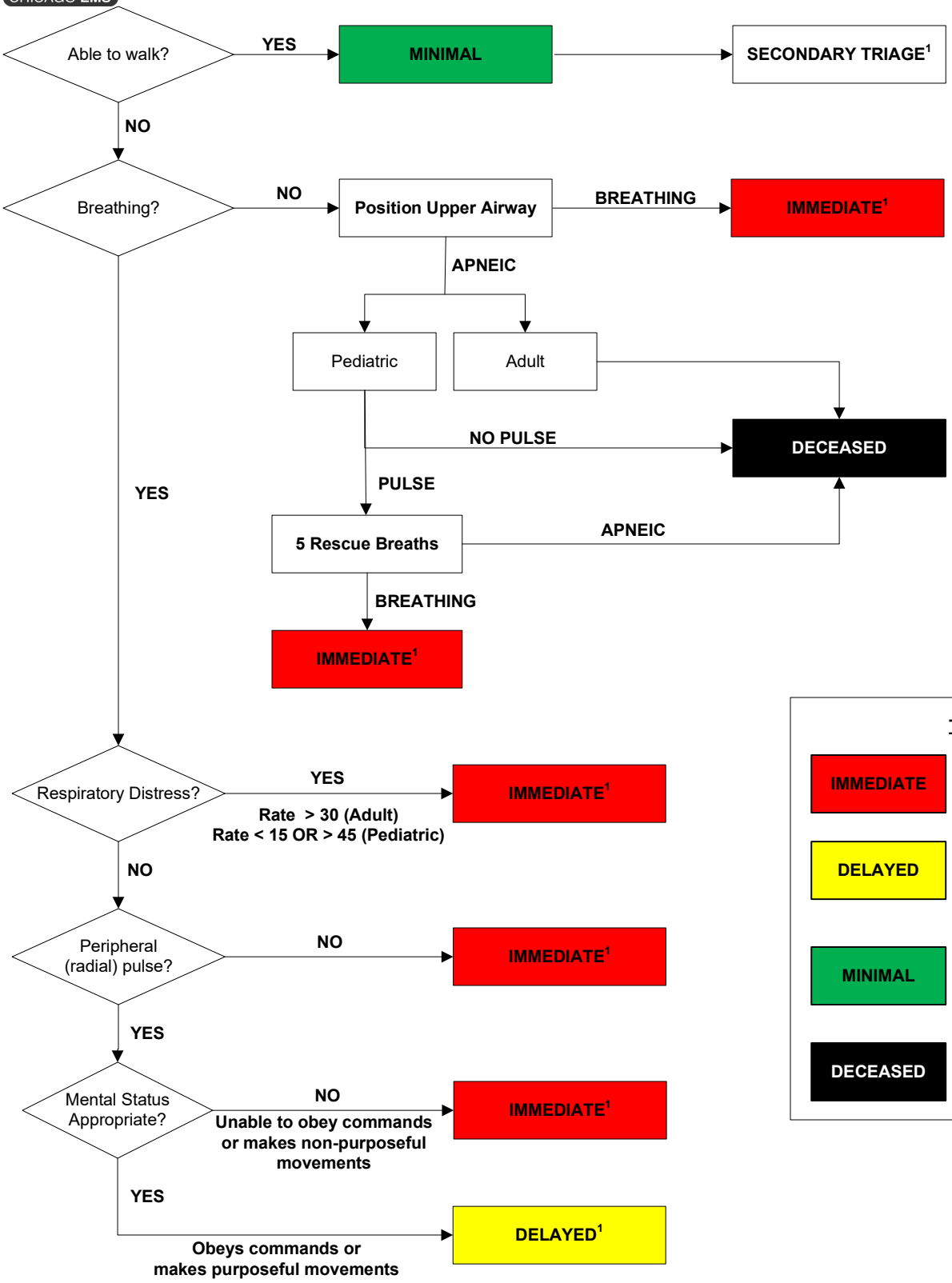
10. Reassess the patient. If head elevation is required, elevate 30 degrees and maintain neck/torso alignment.

11. Minimize flexion, extension, and rotation of the spine during patient transfers.

12. Padding can be used for pediatric patients or severe kyphosis to maintain SMR.

13. Secure patient to ambulance cot appropriately.

REGION 11 MODIFIED START/JumpSTART TRIAGE ALGORITHM



Triage Categories

IMMEDIATE	Obvious threat to life or limb and requires immediate medical attention
DELAYED	Condition in need of definitive medical care, but is not likely to decompensate rapidly if care is delayed
MINIMAL	Minor injuries and can tolerate extended delays in treatment without increasing the risk of mortality
DECEASED	No respirations following basic airway maneuvers

1- **Life-Saving (Focused) Interventions** that may be performed during the triage process include: control of major hemorrhage, basic airway opening maneuvers, and chest decompression if within the responder's scope of practice and only if the necessary equipment is immediately available.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Tourniquet Application – BLS/ALS
	Section: Trauma Management
	Approved: EMS Medical Directors Consortium
	Effective: July 1, 2021

TOURNIQUET APPLICATION – BLS/ALS

INDICATIONS

- Life threatening extremity hemorrhage not controlled by pressure dressing.

CONTRAINDICATIONS

- None

EQUIPMENT

- Combat Application Tourniquet (CAT)

PROCEDURE

1. Apply personal protective equipment: gloves.
2. For extremity injury amendable to tourniquet placement, if direct pressure/pressure dressing is ineffective or impractical, apply a tourniquet.
3. Route the band around the limb, pass the tip through the slit of the buckle.
4. Place the tourniquet 2-3 inches proximal to the wound (not over the joint) directly to skin.
5. Tighten band so that three fingers cannot be slid between the band and limb, otherwise re-tighten and re-secure.
6. Twist the rod until the bleeding has stopped.
7. Secure the rod inside the clip and lock it into place.
8. Check for bleeding and distal pulse. If bleeding not controlled or distal pulse is present, tighten tourniquet. If bleeding not controlled, place second CAT above and side by side to first.
9. Route the band between the clips and over the rod. Secure rod and band with TIME strap.
10. Record time of tourniquet application on TIME strap.
11. Reassess frequently for bleeding.
12. Pain assessment and management as indicated
13. Inform subsequent medical providers of tourniquet placement location and time of application.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Traction Splinting – BLS/ALS
	Section: Trauma Management
	Approved: EMS Medical Directors Consortium
	Effective: July 1, 2021

TRACTION SPLINTING – BLS/ALS

INDICATIONS

- Stabilization of a closed mid-shaft femur fracture to reduce pain, prevent further injury, in a hemodynamically stable patient

CONTRAINDICATIONS

- Open fracture or partial amputation
- Hip or pelvis injury
- Knee or lower leg injury

EQUIPMENT

- Traction splint with all associated equipment (ankle hitch, straps, splint) –Adult or Pediatric size

PROCEDURE

1. Apply personal protective equipment: gloves.
2. Completely expose the injured area (extremity) – remove shoe and sock.
3. Directs application of manual stabilization of the injured leg [not necessary when using a unipolar device (Sager or similar) that is immediately available].
4. Directs application of manual traction (not necessary when using a unipolar device, but must be applied before elevating leg, if the leg is elevated at all).
5. Assess motor, sensory, and distal circulation in the injured extremity.
6. Assess pain scale and consider pain management.
7. Prepare and adjust splint to proper length.
8. Position the splint at the injured leg.
9. Apply proximal securing device (ischial strap).
10. Apply distal securing device (ankle hitch).
11. Apply appropriate mechanical traction.
12. Position and secure support straps.
13. Re-evaluate proximal/distal securing devices.

14. Reassess motor, sensory, and circulatory functions in the injured extremity.

15. Secure splint and patient to long board or stretcher for transport.

REGION 11
CHICAGO EMS SYSTEM
PROCEDURES

MEDICATION ADMINISTRATION / ACCESS

Accessing Indwelling Catheters
Buretrol Medication Administration
Intramuscular Auto-Injector Administration
Intramuscular Medication Administration
Intranasal Medication Administration
Intraosseous (IO) Insertion EZIO
Intravenous (IV) Insertion / IV Medication Administration
Medication Administration Cross Check (MACC)
Nebulized (Aerosolized) Medication Administration
Vaccine Administration

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Accessing Indwelling Catheters
	Section: Medication Administration/Access
	Approved: EMS Medical Directors Consortium
	Effective: August 1, 2022

ACCESSING INDWELLING CATHETERS - ALS

INDICATIONS

- Vascular access in a critical patient including shock, peri-arrest, or cardiac arrest after two unsuccessful peripheral intravenous attempts or intraosseous attempts.

CONTRAINDICATIONS

- No blood return on access
- Known infection in line

EQUIPMENT

- Saline flush – 0.9 Sodium Chloride Injection, 10 mL, pre-filled syringe
- Alcohol wipes

PROCEDURE

1. Apply personal protective equipment: gloves.

2. For administration of IV medication or fluid, check the five rights of medication administration.

    a. Right patient
    b. Right medication
    c. Right dosage/concentration
    d. Right time
    e. Right route

3. Determine appropriate catheter type and site based on reference below.

4. Prepare supplies for medication administration or IV fluids.

5. Remove any cap on the end of the catheter.

6. Wipe catheter site with alcohol swab.

7. Attach saline flush and attempt aspiration of blood from catheter.

8. If no blood is aspirated, gently flush with 5 ml of normal saline. If any resistance is met, stop procedure.

9. If the catheter flushes easily, remove the syringe from the line.

10. Reaffirm medication with Medication Administration Cross Check (MACC).

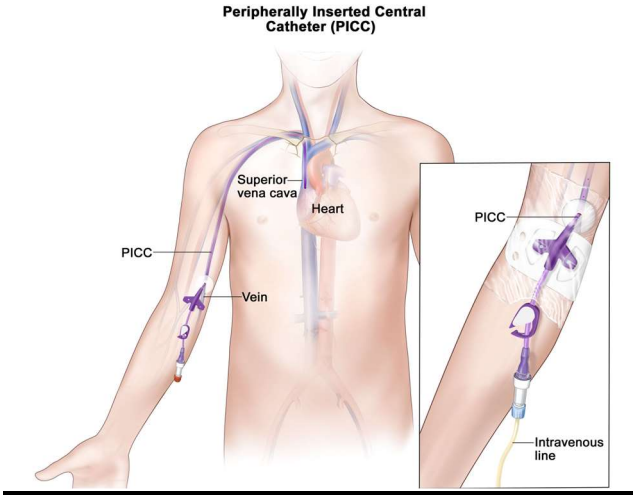
11. Administer medication or IV fluids as indicated.

12. Assess patient for desired effect and side effect.

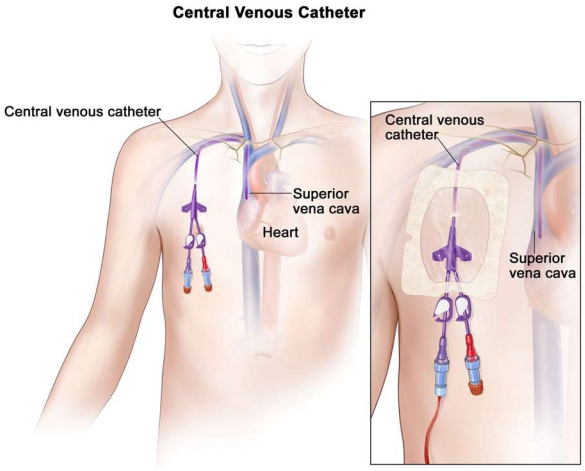
13. Document the medication dose and clinical response.

INDWELLING CATHETER TYPES

1. **PICC (Peripherally Inserted Central Catheter)[1]:** Long catheter into a vein in the arm with the tip of the catheter positioned in central circulation, may have 1 or 2 ports.

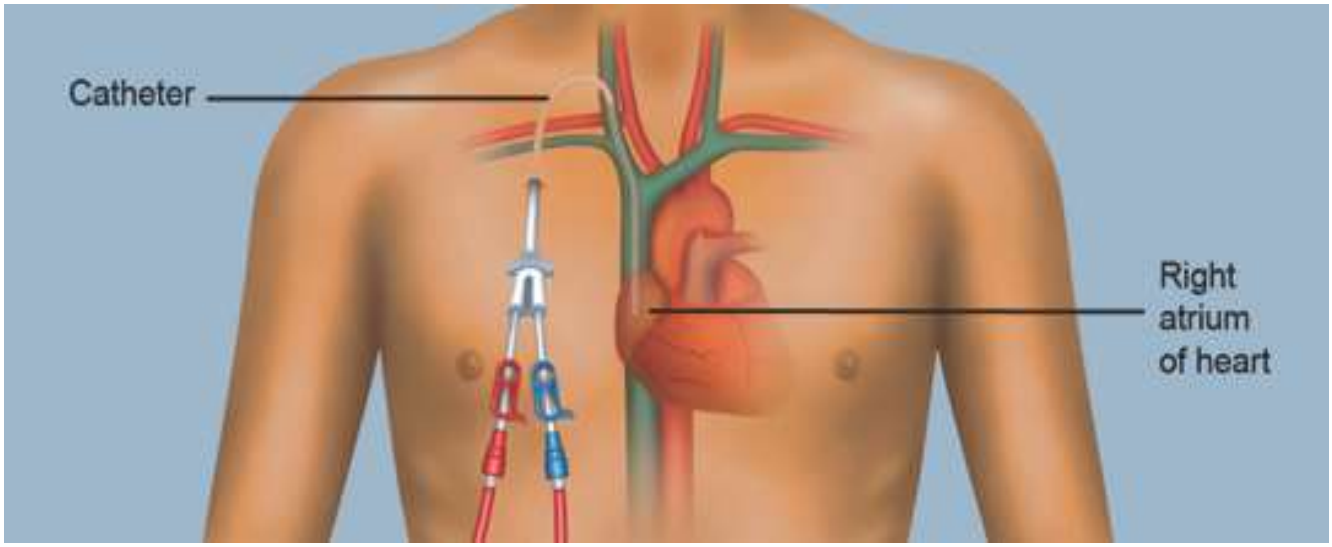


2. **Central Venous Catheter[1]**: Catheter placed in large vein of the neck, under the clavicle or in the groin, may have multiple ports.



[1] Image courtesy of National Cancer Institute

3. **Dialysis Catheter[2]:** Surgically implanted device used to access the vasculature for hemodialysis. The catheter has a red port which indicates use for dialysis. This catheter should only be used for vascular access during cardiac arrest.



[2] Image courtesy of Fresenius Kidney Care

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Buretrol Medication Administration - ALS
	Section: Medication Administration / Access
	Approved: EMS Medical Directors Consortium
	Effective: August 1, 2022

BURETROL MEDICATION ADMINISTRATION - ALS

INDICATIONS

- Normal saline fluid bolus (ALS)
- Dextrose 10% (ALS)
- Patients less than 12 years of age

CONTRAINDICATIONS

None

EQUIPMENT

- Medication (normal saline or dextrose)
- Buretrol device

PROCEDURE

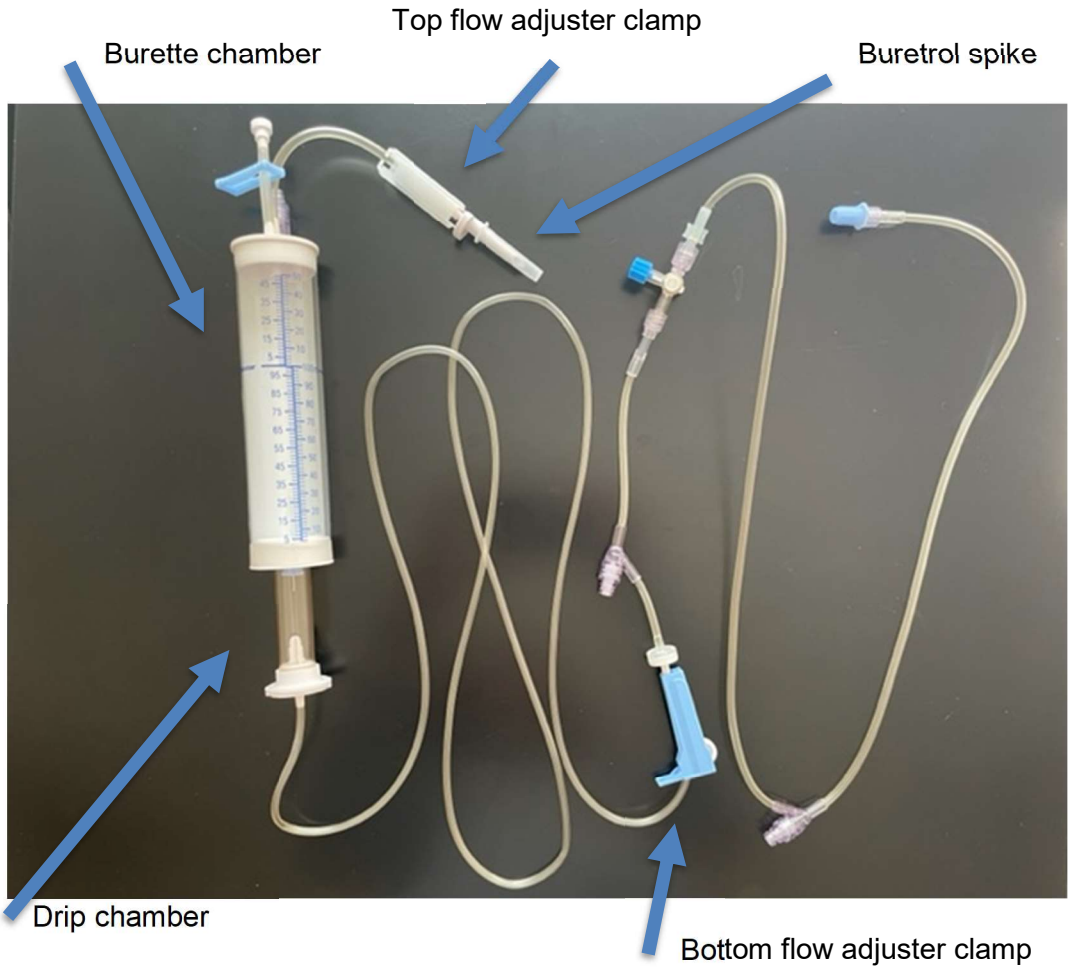
1. Apply personal protective equipment: gloves.
2. Check the five rights of medication administration:
    a. Right patient
    b. Right medication
    c. Right dosage/concentration
    d. Right time
    e. Right route
3. Remove buretrol from packaging and close bottom flow adjuster clamp.
4. Reaffirm medication with Medication Administration Cross Check (MACC).
5. Remove the tab from the normal saline or dextrose bag.
6. Insert the buretrol spike into the IV bag.
7. Open the top flow adjuster clamp to fill burette chamber with fluid (about 30 ml).
8. Allow the fluid to fill into burette chamber by gravity.
9. Squeeze the drip chamber to fill.
10. Open the bottom flow adjuster clamp to prime the line with fluid, then close the clamp.
11. Fill the burette chamber for the appropriate dose of medication fluid.
12. Close top clamp.

13. Connect the buretrol tubing to the IV or IO access.

14. Open bottom flow adjuster clamp and administer medication fluid.

15. Document the medication dose and clinical response.

BURETROL DEVICE



REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Intramuscular Auto-Injector Administration – BLS/ALS
	Section: Medication Administration / Access
	Approved: EMS Medical Directors Consortium
	Effective: August 1, 2022

INTRAMUSCULAR AUTO-INJECTOR ADMINISTRATION - BLS/ALS

INDICATIONS

- Epinephrine (assist patient with prescribed medication): BLS/ALS

CONTRAINDICATIONS

None

EQUIPMENT

- Auto-Injector (various types and medication dosages)
- Alcohol swab
- Sharps container

PROCEDURE

1. Apply personal protective equipment: gloves.
2. Check the five rights of medication administration.
    a. Right patient
    b. Right medication
    c. Right dosage/concentration
    d. Right time
    e. Right route
3. Reaffirm medication with Medication Administration Cross Check (MACC).
4. Remove safety cap from auto-injector.
5. Cleanse thigh with alcohol wipe.
6. Place tip of the auto-injector against lateral part of the thigh, midway between the waist and the knee.
7. Push injector firmly against the thigh until the injector activates.
8. Hold the injector in place until the medication is injected, about 3 seconds.
9. Remove the injector from the thigh and dispose of it in the sharps container.
10. Assess patient for desired effect and side effect.
11. Document the medication dose and clinical response.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Intramuscular Medication Administration – BLS/ALS
	Section: Medication Administration / Access
	Approved: EMS Medical Directors Consortium
	Effective: August 1, 2022

INTRAMUSCULAR MEDICATION ADMINISTRATION – BLS/ALS

INDICATIONS

- Naloxone (ALS)
- Glucagon (ALS)
- Midazolam (ALS)
- Epinephrine (BLS/ALS)
- Diphenhydramine (ALS)

CONTRAINDICATIONS

None

EQUIPMENT

- Medication from vial or prefilled syringe (glucagon kit requires reconstitution)
- Syringe (1 ml for Epinephrine and pediatric dosing, 3 ml or 10 ml for other)
- Needle (1 - 1.5 inch length and 23 gauge)
- Alcohol swab
- Sterile gauze
- Band-aid
- Sharps container

PROCEDURE

1. Apply personal protective equipment: gloves.

2. Check the five rights of medication administration.

    a. Right patient
    b. Right medication
    c. Right dosage/concentration
    d. Right time
    e. Right route

3. Clean vial with alcohol swab or prepare prefilled syringe.

4. Select appropriate needle size while maintaining sterility.

5. Draw appropriate amount of medication into syringe or reconstitute glucagon (see below).

6. Expel air from syringe.

7. Reaffirm medication with Medication Administration Cross Check (MACC).

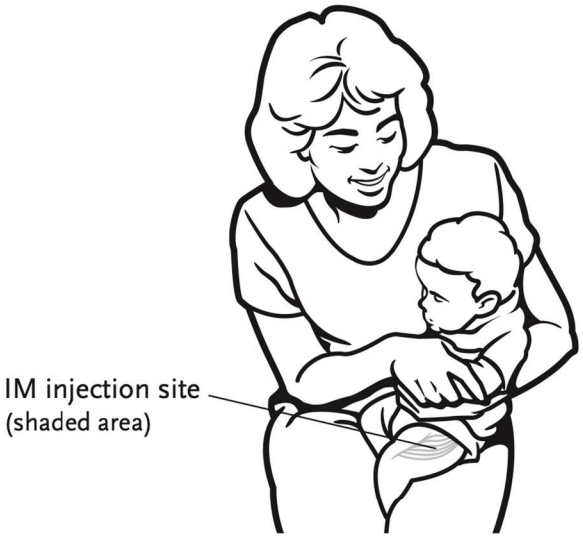
8. Identify proper injection site (anterolateral thigh or deltoid muscle) and cleanse with alcohol pad.

9. Stretch the skin flat between the thumb and forefinger.
10. Insert the needle at 90 degrees to the skin and deliver medication in a quick, steady manner.
11. Dispose of the needle properly in a sharps container.
12. Assess patient for desired effect and side effect.
13. Document the medication dose and clinical response.

ADMINISTRATION[1]

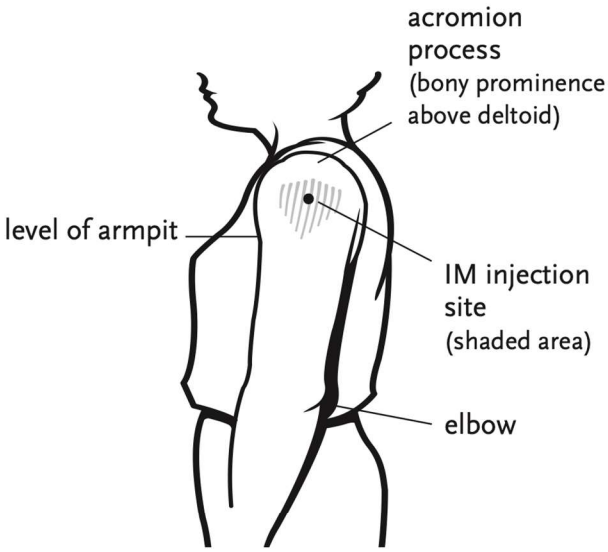
1. Intramuscular Injection Site

Intramuscular (IM) injection site for infants and toddlers



Insert needle at a 90° angle into the anterolateral thigh muscle.

Intramuscular (IM) injection site for children and adults



Give in the central and thickest portion of the deltoid muscle – above the level of the armpit and approximately 2–3 fingerbreadths (~2") below the acromion process. See the diagram. To avoid causing an injury, do not inject too high (near the acromion process) or too low.

[1] Referenced from Immunization Action Coalition (IAC) - https://www.immunize.org/catg.d/p2020.pdf

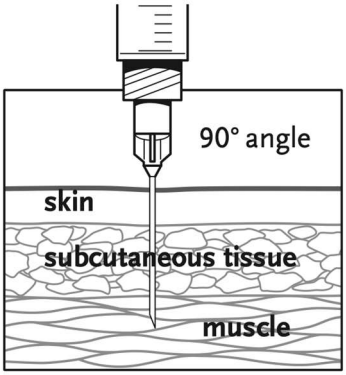
2. Needle Size

PATIENT AGE	INJECTION SITE	NEEDLE SIZE
Infant (1–12 mos)	Anterolateral thigh muscle	1" (22–25 gauge)
Toddler (1–2 years)	Anterolateral thigh muscle	1–1¼" (22–25 gauge)
	Alternate site: Deltoid muscle of arm if muscle mass is adequate	⅝*–1" (22–25 gauge)
Children (3–10 years)	Deltoid muscle (upper arm)	⅝*–1" (22–25 gauge)
	Alternate site: Anterolateral thigh muscle	1–1¼" (22–25 gauge)
Children and adults (11 years and older)	Deltoid muscle (upper arm)	⅝†–1" (22–25 gauge)
	Alternate site: Anterolateral thigh muscle	1–1½" (22–25 gauge)

Intramuscular (IM) injection – Use a 22–25 gauge needle. Choose the needle length and site as indicated below:

Gender/Weight	Needle Length	Injection Site
Female or male less than 130 lbs	⅝"‡–1"	Deltoid muscle of arm
Female or male 130–152 lbs	1"	
Female 153–200 lbs	1"–1½"	
Male 153–260 lbs		
Female 200+ lbs	1½"	
Male 260+ lbs		

3. Needle Insertion

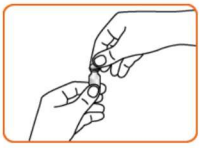


Needle insertion

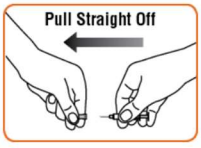
Use a needle long enough to reach deep into the muscle.

Insert needle at a 90° angle to the skin with a quick thrust.

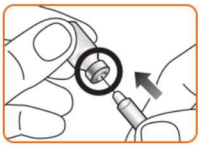
4. Glucagon reconstitution[2]



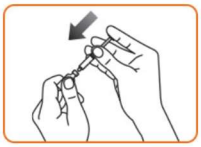
Step 1. Using your thumb, flip the orange plastic cap off the GlucaGen® vial.



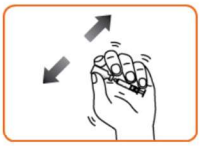
Step 2. Pick up the prefilled syringe containing sterile water. Hold the syringe with 1 hand and with your other hand, pull the needle cover off the syringe. **Do not** remove the plastic backstop from the syringe.



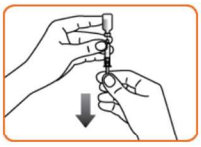
Step 3. Pick up the GlucaGen® vial. Hold the vial of dry powder with 1 hand and with your other hand, push the needle of the prefilled syringe through the center of the rubber stopper.



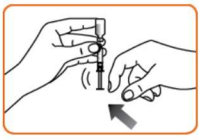
Step 4. Hold the vial and syringe together, with the needle still inserted into the vial. Carefully turn the vial and syringe together right side up. Slowly push the plunger down until the syringe is empty. **Do not take the syringe out of the vial.**



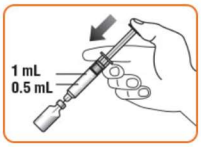
Step 5. Hold the entire unit (the vial and syringe) in one hand and gently shake the vial until the powder is completely dissolved. Do not use if a gel has formed, or if you see particles in the solution. **Do not take the syringe out of the vial.**



Step 6. Firmly hold the vial and syringe together, with the needle still inserted into the vial. Carefully turn the vial and syringe together upside down. Gently pull down on the plunger and slowly withdraw all of the liquid into the syringe. Do not pull the plunger out of the syringe.



Step 7. Keep the needle inside the vial. Check the syringe for air bubbles. If you see bubbles, tap the syringe until the bubbles rise to the top of the syringe. Gently push on the plunger to move only the air bubbles back into the vial.



Step 8. Hold the vial and syringe as shown.

[2] Referenced from https://www.glucagenhypokit.com/instructions.html

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Intranasal Medication Administration – BLS/ALS
	Section: Medication Administration / Access
	Approved: EMS Medical Directors Consortium
	Effective: August 1, 2022

INTRANASAL MEDICATION ADMINISTRATION – BLS/ALS

INDICATIONS

- Naloxone (BLS/ALS)
- Glucagon (ALS)
- Midazolam (ALS)
- Fentanyl (ALS)

CONTRAINDICATIONS

- Nasal trauma

EQUIPMENT

- Medication from vial or prefilled syringe (glucagon kit requires reconstitution)
- Mucosal Atomizer Device (MAD)
- Syringe
- Needle
- Alcohol swab
- Sterile gauze

PROCEDURE

1. Apply personal protective equipment: gloves.

2. Check the five rights of medication administration.

    a. Right patient
    b. Right medication
    c. Right dosage/concentration
    d. Right time
    e. Right route

3. Clean vial with alcohol swab or prepare prefilled syringe.

4. Assemble needle and syringe while maintaining sterility.

5. Draw appropriate amount of medication into syringe or reconstitute glucagon (see below for glucagon reconstitution instructions).

6. Reaffirm medication with Medication Administration Cross Check (MACC).

7. Expel air from syringe

8. Remove needle and attach MAD to syringe

9. Dispose of needle into appropriate sharps container.

10. Inspect nostrils to determine the largest and least deviated or obstructed nostril.

11. Insert tip of MAD into nostril.

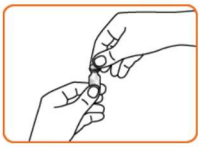
12. Briskly depress the syringe plunger (1 ml max per nostril; give ½ the volume in each nostril).

13. Dispose of syringe and MAD into proper container.

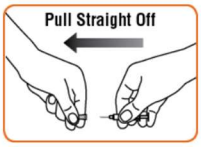
14. Assess patient for desired effect and side effect.

15. Document the medication dose and clinical response.

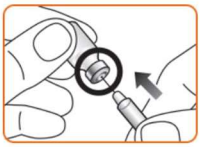
Glucagon reconstitution[1]



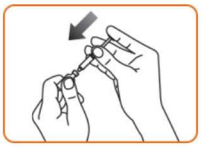
Step 1. Using your thumb, flip the orange plastic cap off the GlucaGen® vial.



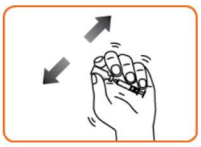
Step 2. Pick up the prefilled syringe containing sterile water. Hold the syringe with 1 hand and with your other hand, pull the needle cover off the syringe. **Do not** remove the plastic backstop from the syringe.



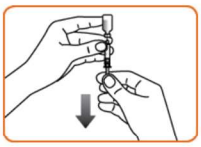
Step 3. Pick up the GlucaGen® vial. Hold the vial of dry powder with 1 hand and with your other hand, push the needle of the prefilled syringe through the center of the rubber stopper.



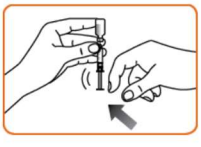
Step 4. Hold the vial and syringe together, with the needle still inserted into the vial. Carefully turn the vial and syringe together right side up. Slowly push the plunger down until the syringe is empty. **Do not take the syringe out of the vial.**



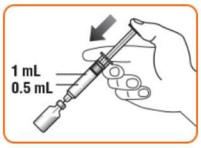
Step 5. Hold the entire unit (the vial and syringe) in one hand and gently shake the vial until the powder is completely dissolved. Do not use if a gel has formed, or if you see particles in the solution. **Do not take the syringe out of the vial.**



Step 6. Firmly hold the vial and syringe together, with the needle still inserted into the vial. Carefully turn the vial and syringe together upside down. Gently pull down on the plunger and slowly withdraw all of the liquid into the syringe. Do not pull the plunger out of the syringe.



Step 7. Keep the needle inside the vial. Check the syringe for air bubbles. If you see bubbles, tap the syringe until the bubbles rise to the top of the syringe. Gently push on the plunger to move only the air bubbles back into the vial.



Step 8. Hold the vial and syringe as shown.

[1] Referenced from https://www.glucagenhypokit.com/instructions.html

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Intraosseous (IO) Insertion – EZ-IO
	Section: Medication Administration/Access
	Approved: EMS Medical Directors Consortium
	Effective: August 1, 2022

INTRAOSSEOUS (IO) INSERTION EZ-IO - ALS

INDICATIONS:

- Vascular access in a critical patient including shock, peri-arrest, or cardiac arrest after two unsuccessful peripheral intravenous attempts.

CONTRAINDICATIONS

- Fracture of the bone selected for IO infusion
- Excessive tissue and/or absence of adequate anatomical landmarks
- Infection at the site selected for insertion
- Inability to identify landmarks
- IO access or attempted IO access in target bone within previous 48 hours
- Prosthesis or orthopedic procedures near insertion site

APPROVED IO INSERTION SITES:

- Proximal tibia
- Distal tibia
- Proximal humerus

EQUIPMENT:

- EZ-IO driver
- EZ-IO needle: Pink (15 mm, 15 gauge), Blue (25 mm, 15 gauge), or Yellow (45 mm, 15 gauge)
- Alcohol swab
- Saline flush
- EZ-Stabilizer kit (dressing and extension set)
- Sharps container

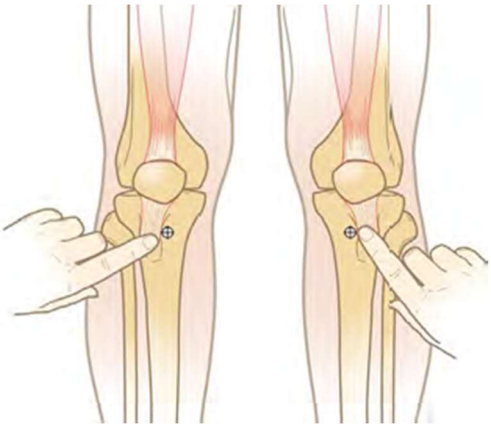
PROCEDURE:

1. Apply personal protective equipment: gloves.
2. For administration of IV medication or fluid, check the five rights of medication administration.
    a. Right patient
    b. Right medication
    c. Right dosage/concentration
    d. Right time
    e. Right route
3. Select appropriate insertion site.

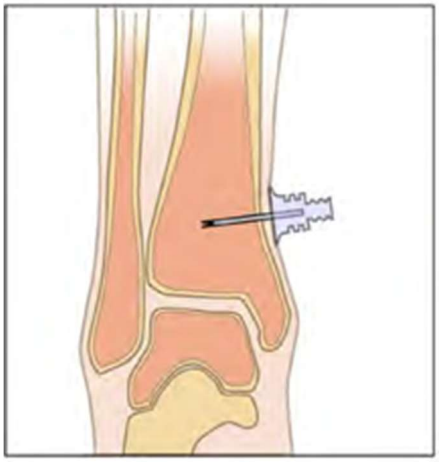
4. Clean insertion site with alcohol swab.
5. Select appropriate needle size and load onto EZ-IO driver
6. Stabilize extremity.
7. Aim the needle at a 90 degree angle to the flat surface of the bone for the tibia and a 45 degree angle above the horizontal plane for the humerus.
8. Gently press needle through the skin until the tip touches the bone. The 5 mm black mark on the needle set must be visible above the skin prior to insertion.
9. Squeeze the trigger and apply gentle steady pressure.
10. Drill until loss of resistance is felt and the needle enters the medullary space.
11. Stabilize hub and remove driver.
12. Remove stylet from catheter and place in sharps container. The needle should feel firmly seated in the bone (this is the first confirmation of placement).
13. Place the EZ-Stabilizer dressing over the catheter hub.
14. Attach extension set and firmly secure to catheter hub with the clamp open.
15. Remove adhesive from back of EZ-Stabilizer dressing and apply dressing to skin.
16. Attach saline flush and aspirate for blood and/or bone marrow (this is the second confirmation of placement). The inability to aspirate blood from the catheter hub does not mean the insertion was unsuccessful.
17. Flush the EZ-IO Catheter with a saline flush.
18. Assess for signs of infiltration including redness, swelling, or pain around site.
19. Reaffirm medication with Medication Administration Cross Check (MACC).
20. Administer the medications or fluids as indicated.
21. If placement is not confirmed by adequate flush of saline, remove the IO needle and attempt an alternate site. There should be a maximum of two attempts.
22. Document the procedure, medication dose, and clinical response.

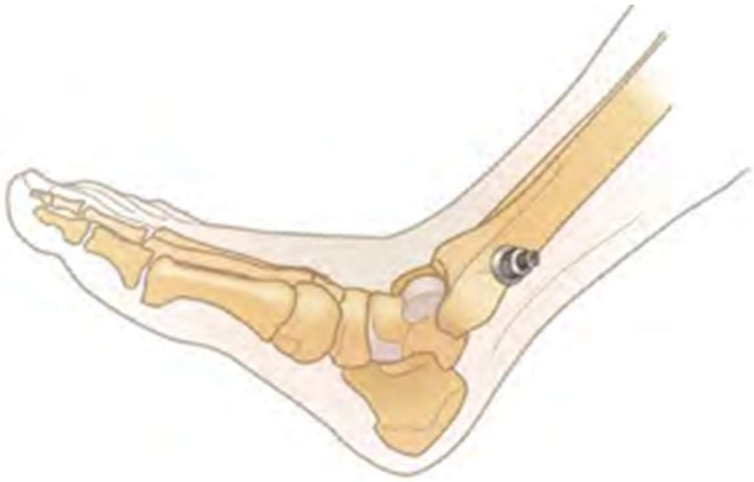
SITE SELECTION[1]

1. **Proximal Tibia**
   a. Extend the leg
   b. Palpate tibial tuberosity
   c. Insertion site is two centimeters or fingers medial to the tibial tuberosity on the flat aspect of the tibia



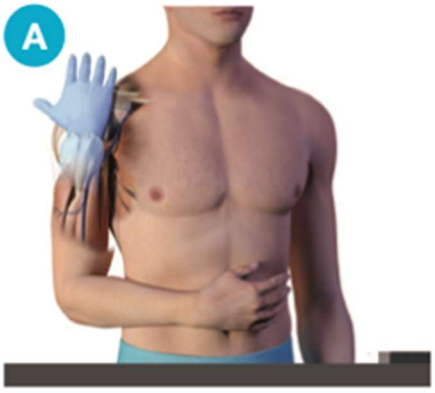
2. **Distal Tibia**
   a. Palpate medial malleolus
   b. Insertion site is two finger widths proximal to the most prominent aspect of the medial malleolus



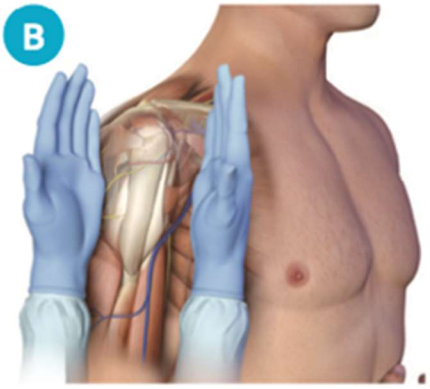


[1] Images courtesy of Teleflex Global Research and Scientific Services

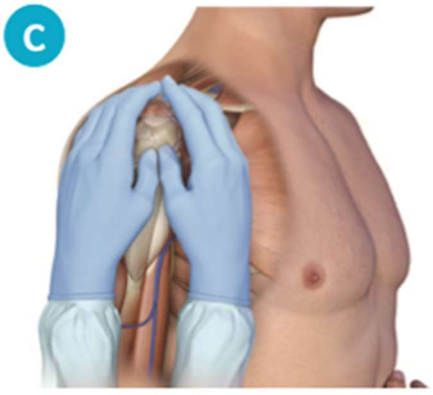
3. **Proximal Humerus**



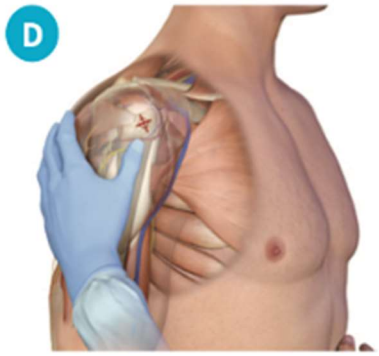
A: Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated). Place your palm on the patient's shoulder anteriorly. The area that feels like a "ball" under your palm is the general target area. You should be able to feel this ball, even on obese patients, by pushing deeply.



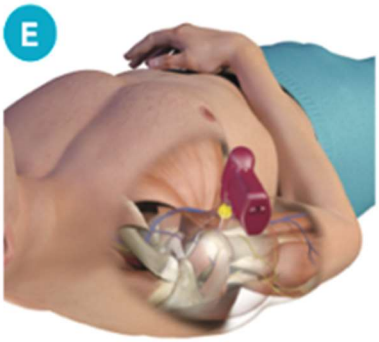
B: Place the ulnar aspect of your hand vertically over the axilla. Place the ulnar aspect of your other hand along the midline of the upper arm laterally.



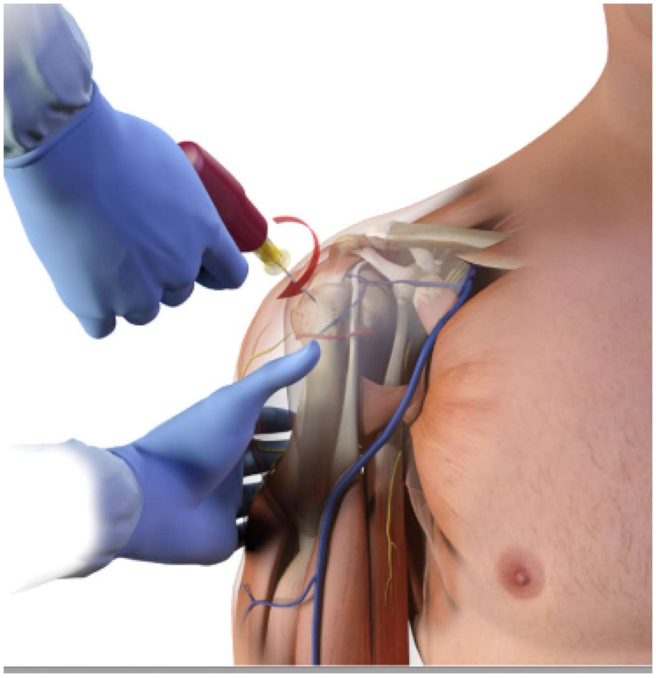
C: Place your thumbs together over the arm. This identifies the vertical line of insertion on the proximal humerus.

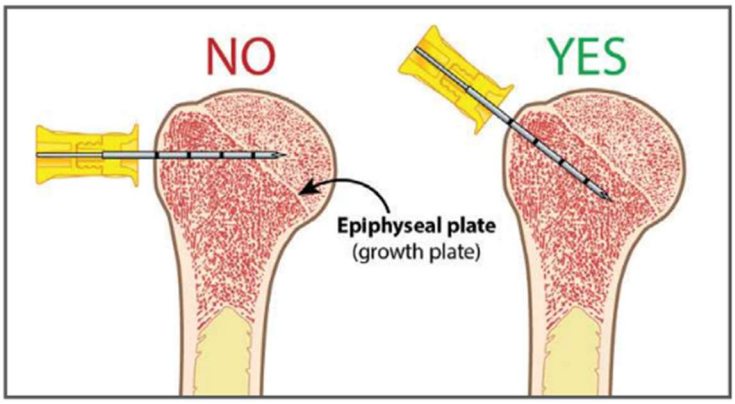


D: Palpate deeply up the humerus to the surgical neck. This may feel like a golf ball on a tee – the spot where the "ball" meets the "tee" is the surgical neck. The insertion site is 1 to 2 cm above the surgical neck, on the most prominent aspect of the greater tubercle.



E: Point the needle set tip at a 45-degree angle to the anterior plane and posteromedial.





NEEDLE SIZE SELECTION[2]

NEEDLE SELECTION

The needle sets do not have "adult" or "pediatric" sizes. Each needle set is US FDA-cleared with weight range guidelines. The single use sterile needle sets are 15 gauge, 304 stainless steel available in 3 lengths.

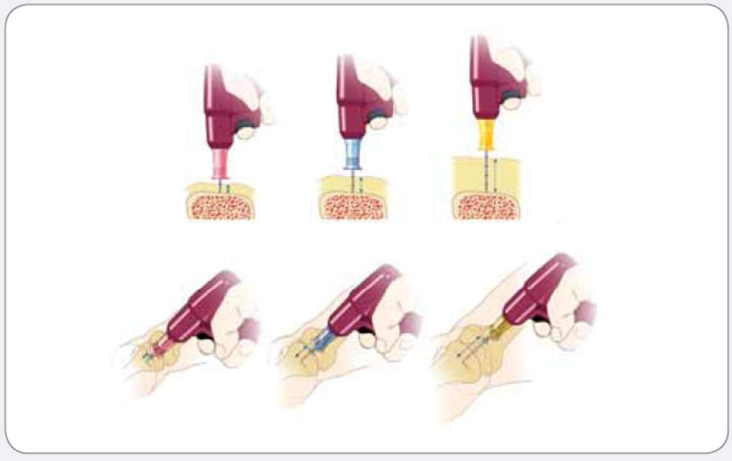
Clinical judgment should be used to determine appropriate needle set selection based on patient weight, anatomy and tissue depth overlying the insertion site.

With the needle set inserted through the soft tissue and touching bone, the 5 mm mark (at least one black line) must be visible outside the skin for confirmation of adequate needle set length prior to drilling.

15 mm 15 gauge
3–39 kg

25 mm 15 gauge
3 kg or over

45 mm 15 gauge
40 kg or over and/or excessive tissue depth



Clinical experience with the device will ultimately present a more rapid approach to needle set selection, but the 5 mm mark assists the clinician with establishing which needle set is appropriate for the patient.

[2] Image courtesy of Teleflex Global Research and Scientific Services

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Intravenous (IV) Insertion / IV Medication Administration - ALS
	Section: Medication Administration/Access
	Approved: EMS Medical Directors Consortium
	Effective: August 1, 2022

INTRAVENOUS (IV) INSERTION / IV MEDICATION ADMINISTRATION – ALS

INDICATIONS

- Administration of IV medication or fluid per Protocol
- Critical patient with the anticipated need for IV medication or fluid

CONTRAINDICATIONS

None

EQUIPMENT

- Medication or 0.9% Sodium Chloride IV solution bag 1000ml
- IV catheter (14, 16, 18, 20, 22, 24 gauge), catheter-over-needle device, 1 - 2 inches
- IV tubing, macrodrip, needleless connector and split septum port
- Saline lock
- Tourniquet
- Alcohol swab
- Saline flush
- Tape
- IV dressing (tegaderm or similar type)
- Sharps container

PROCEDURE

1. Apply personal protective equipment: gloves.

2. For administration of IV medication or fluid, check the five rights of medication administration:

    a. Right patient
    b. Right medication
    c. Right dosage/concentration
    d. Right time
    e. Right route

3. Select appropriate catheter and supplies for saline lock, medication administration or IV fluids.

4. For IV fluid administration, connect IV tubing to the IV fluid bag, fill drip chamber, and flush tubing.

5. Apply tourniquet.

6. Palpate suitable vein.

7. Cleanse site appropriately with alcohol swab.

8. Perform venipuncture.

    a. Insert IV catheter into vein
    b. Note flash of blood in chamber
    c. Advance the catheter into the vein and secure the needle
    d. Occlude vein proximal to catheter
    e. Remove needle
    f. Connect IV tubing or saline lock to catheter

9. Dispose of the needle properly in a sharps container.

10. Release tourniquet.

11. Flush with saline or initiate IV fluids to ensure patent line.

12. Cover with dressing.

13. Secure with tape as needed.

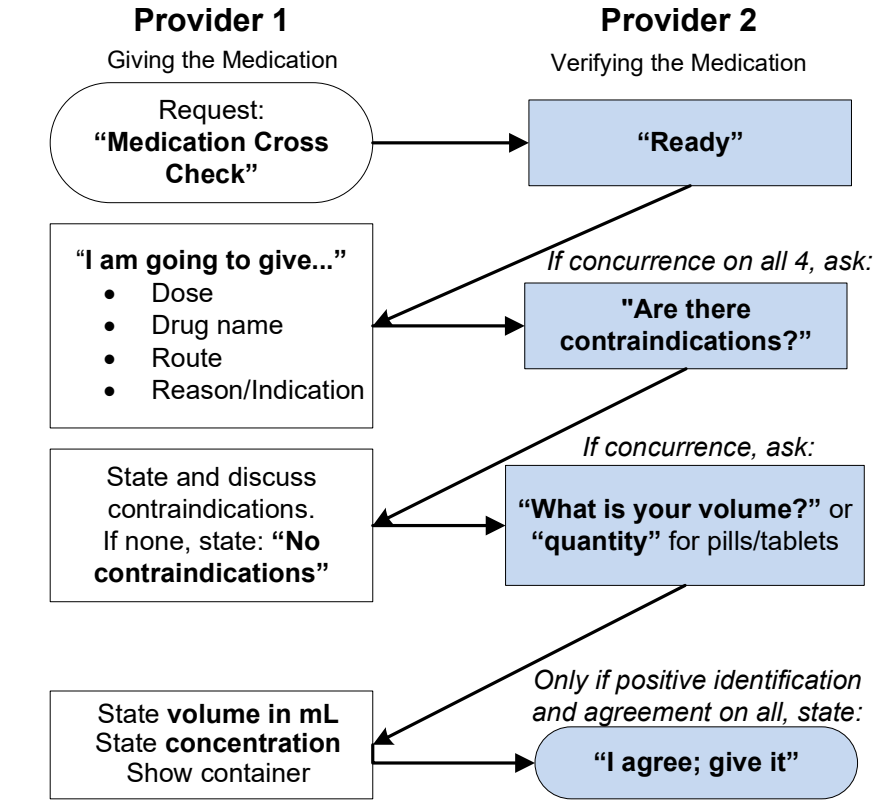
14. Reaffirm medication with Medication Administration Cross Check (MACC).

15. Administer medication or IV fluids as indicated.

16. Assess patient for desired effect and side effect.

17. Document the medication dose and clinical response.

Medication Administration Cross Check

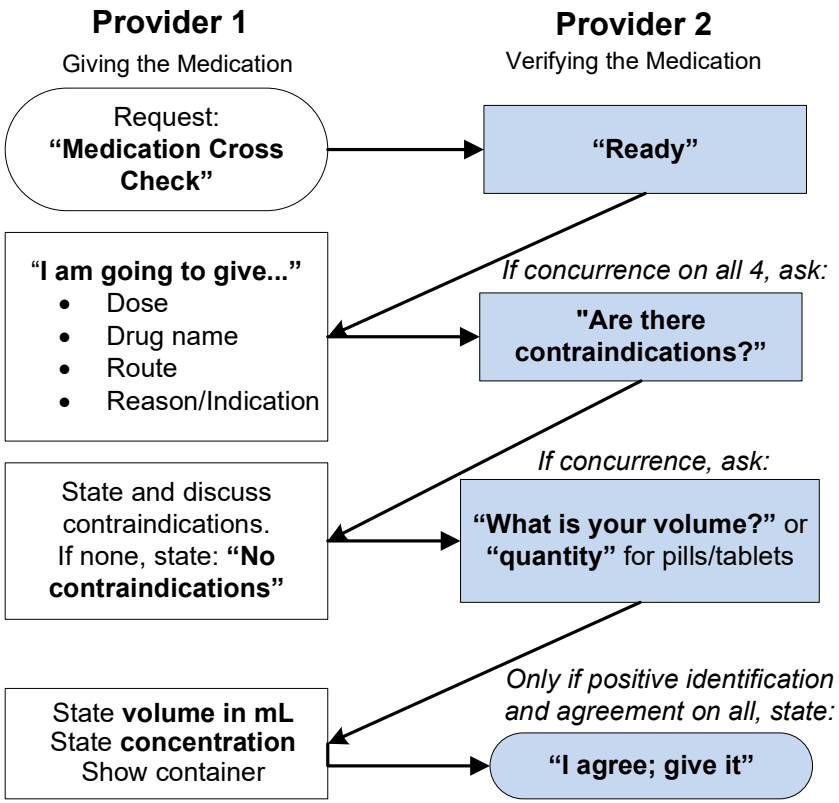


- "**Contraindications**" include: 1) verification of appropriate vital signs, 2) known patient allergies, and 3) expiration date.
- If a discrepancy, disagreement, or need for clarification is encountered at any step in the process, it must be resolved prior to continuing the cross check.
- Provider 2 can authorize the administration of the medication.
- The Medication Administration Cross Check must be completed prior to the administration of any medication when two EMS providers are available.
- If there is an interruption or change in patient condition of any kind, the process must be re-initiated by Provider 1.
- Avoid ambiguous statements or confirmations like "okay."

RED RULE of Medication Administration
(A Duty to Avoid Causing UNJUSTIFIABLE Harm)
NEVER give the contents of a syringe that is not labeled or without visualizing the vial from which it was immediately drawn.

Adapted with permission from Wichita-Sedgwick County EMS System
Approved: Region 11 EMS Medical Directors Consortium
Effective: August 1, 2022

Medication Administration Cross Check



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Adapted with permission from Wichita-Sedgwick County EMS System
Approved: Region 11 EMS Medical Directors Consortium
Effective: August 1, 2022

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Nebulized (Aerosolized) Medication Administration – BLS/ALS
	Section: Medication Administration / Access
	Approved: EMS Medical Directors Consortium
	Effective: August 1, 2022

NEBULIZED (AEROSOLIZED) MEDICATION ADMINISTRATION – BLS/ALS

INDICATIONS

- Albuterol/Atrovent (BLS/ALS)
- Albuterol (BLS/ALS)
- Naloxone (ALS)

CONTRAINDICATIONS

None

EQUIPMENT

- Medication
- Nebulizer unit (medication cup, mouthpiece/mask, oxygen tubing)
- Oxygen tank with regulator

PROCEDURE

1. Apply personal protective equipment: gloves.

2. Check the five rights of medication administration.

    a. Right patient
    b. Right medication
    c. Right dosage/concentration
    d. Right time
    e. Right route

3. Place medication into nebulizer unit.

4. Reaffirm medication with Medication Administration Cross Check (MACC).

5. Attach mouthpiece/mask and oxygen tubing to the nebulizer unit.

6. Turn on oxygen to 6 liters/minute.

7. Place mask on patient or give them the handle to hold.

8. Coach patient on how to breathe correctly to inhale all medication – keep lips firm around the mouthpiece and breathe through mouth until all medication is used.

9. Assess patient for desired effect and side effect.

10. Document the medication dose and clinical response.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Vaccine Administration
	Section: Medication Administration/Access
	Approved: EMS Medical Directors Consortium
	EMS Level: ALS

VACCINE ADMINISTRATION

INDICATIONS

- Adult or pediatric (age ≥ 6 years) recipient that has not previously received the vaccine or as an annual schedule

CONTRAINDICATIONS

- Age less than 6 years
- Severe allergic reaction (e.g. anaphylaxis) after a previous dose or to a vaccine component
- Additional vaccine specific contraindications

EQUIPMENT

- CDC Vaccine Information Statement (VIS)
- Vaccine Administration Record (VAR)
- Alcohol swab
- Needle (1 inch length, 22-25 gauge)
- Syringe
- Vaccine medication

PROCEDURE

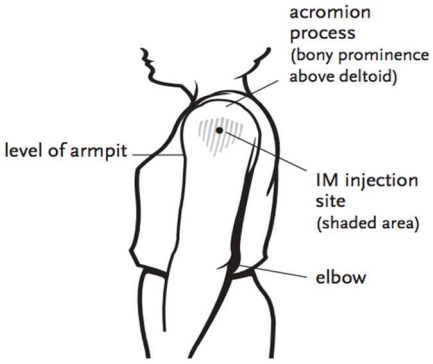
1. Provide recipient the appropriate CDC Vaccine Information Statement (VIS).
2. Complete the information for the Vaccine Administration Record (VAR).
3. Review completed VAR, this serves as written consent for vaccination.
4. Apply personal protective equipment.
5. Prepare and verify appropriate name, medication, dose, route, and expiration date.
6. The injection site (left or right deltoid) should be identified and cleansed with alcohol pad.
7. Select 1-inch needle (22-25 gauge) and draw up vaccine medication with syringe.
8. Stretch the skin flat between the thumb and forefinger.
9. Insert the needle at 90 degrees to the skin and deliver medication in a quick, steady manner.
10. If possible, monitor the patient for allergic reaction 15-20 minutes after administering vaccine.

REGION 11 CHICAGO EMS SYSTEM PROCEDURE	Title: Vaccine Administration
	Section: Medication Administration/Access
	Approved: EMS Medical Directors Consortium
	EMS Level: ALS

ADMINISTRATION[1]

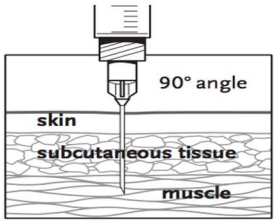
A. Intramuscular Injection Site

Intramuscular (IM) injection site for children and adults



Give in the central and thickest portion of the deltoid muscle – above the level of the armpit and approximately 2–3 fingerbreadths (~2") below the acromion process. See the diagram. To avoid causing an injury, do not inject too high (near the acromion process) or too low.

B. Needle Insertion



Needle insertion

Use a needle long enough to reach deep into the muscle.

Insert needle at a 90° angle to the skin with a quick thrust.

(Before administering an injection of vaccine, it is not necessary to aspirate, i.e., to pull back on the syringe plunger after needle insertion.¶)

Multiple injections given in the same extremity should be separated by a minimum of 1", if possible.

¶ CDC. "General Best Practices Guidelines for Immunization: Best Practices Guidance of the ACIP" at https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/general-recs.pdf

[1] Referenced from Immunization Action Coalition (IAC) - https://www.immunize.org/catg.d/p2020.pdf

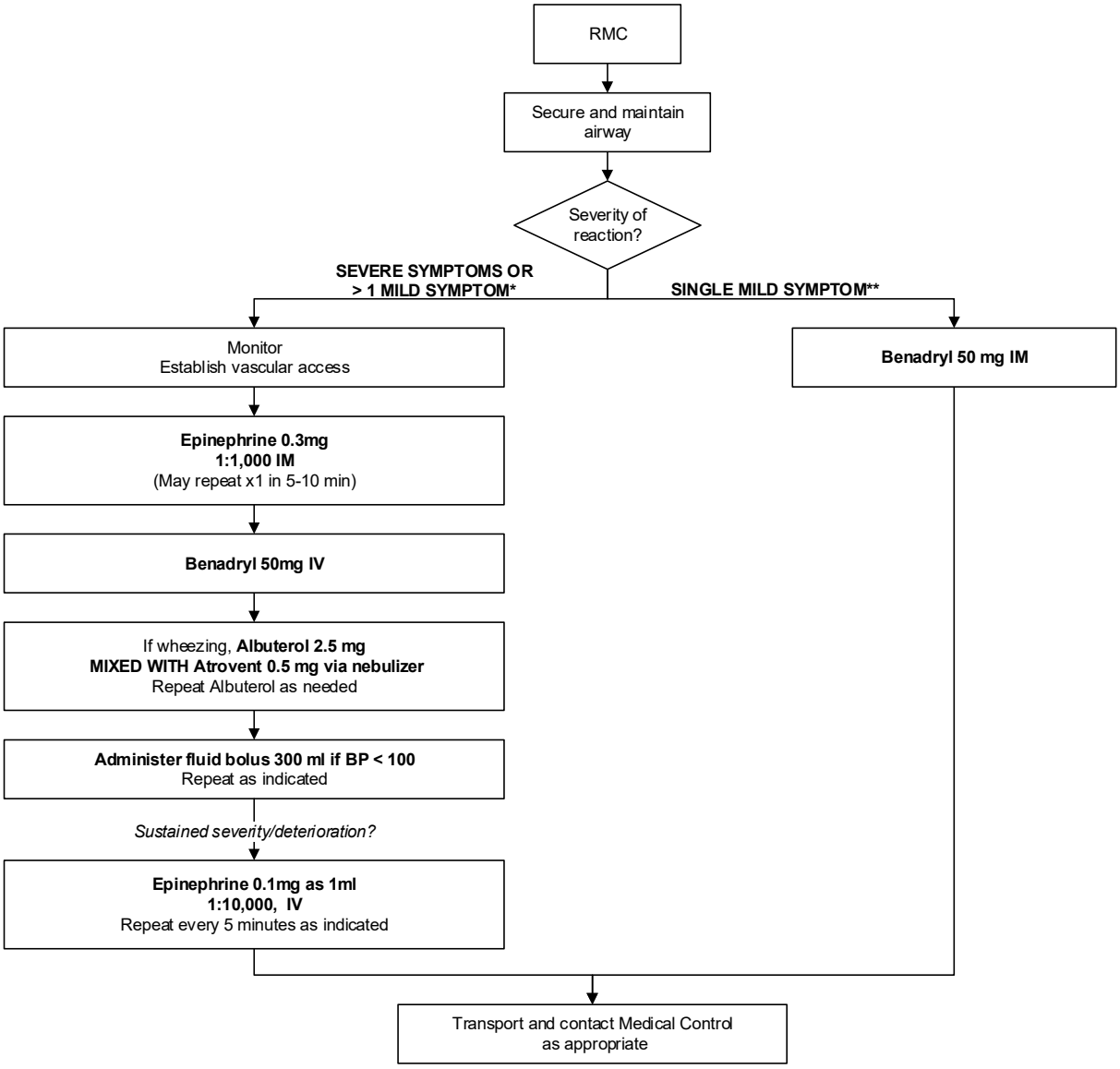
C. Emergency Treatment for Vaccine Reactions

Administering any medication, including vaccines, has the potential to cause an adverse reaction. To minimize the likelihood of an adverse event, screen patients for vaccine contraindications and precautions prior to vaccination. When adverse reactions do occur, they can vary from minor to the rare and serious. Be prepared for any type of reactions.

Reaction	Signs and Symptoms	Management
Localized	Soreness, redness, itching or swelling at the injection site	Apply a cold compress to the injection site. Consider giving an analgesic or antipruritic medication.
	Slight bleeding	Apply pressure and an adhesive compress over the injection site.
	Continuous bleeding	Place thick layer of gauze pads over site and maintain direct and firm pressure.
Psychological fright, pre-syncope and syncope	Fright before injection is given	Have patient sit or lie down for the vaccination.
	Patient feels "faint" (e.g. light-headed, dizzy, weak, nauseated or has visual disturbance)	Have patient lie flat. Loosen any tight clothing and maintain open airway. Apply cool, damp cloth to patient's face and neck. Keep them under close observation until fully recovered.
	Fall without loss of consciousness	Examine the patient to determine if injury is present before attempting to move the patient. Place patient flat on back with feet elevated.
	Loss of consciousness	Check to determine if injury is present before attempting to move the patient. Place patient flat on back with feet elevated.
Anaphylaxis	**Skin and mucosal symptoms** such as generalized hives, itching or flushing; swelling of lips, face, throat or eyes. **Respiratory symptoms** such as nasal congestion, change in voice, sensation of throat closing, stridor, shortness of breath, wheezing, or cough **Gastrointestinal symptoms** such as nausea, vomiting, diarrhea, cramping abdominal pain. **Cardiovascular symptoms** such as collapse, dizziness, tachycardia, hypotension	See the Allergic Reaction and/or Anaphylaxis Region 11 EMS Protocol – ALS.

REGION 11 CHICAGO EMS SYSTEM PROTOCOL	Title: Allergic Reaction / Anaphylaxis - ALS
	Section: Respiratory
	Approved: EMS Medical Directors Consortium
	Effective: April 1, 2017

ALLERGIC REACTION and/or ANAPHYLAXIS - ALS



***Severe symptoms of an allergic reaction may include any combination of the following:**

RESPIRATORY – Shortness of breath, wheezing, repetitive coughing
CARDIOVASCULAR – Pale, cyanotic, low blood pressure, dizzy
THROAT – Tightness, hoarse, trouble breathing/swallowing
MOUTH – Swelling of the tongue and/or lips
SKIN- Diffuse hives or redness
GI – Repetitive vomiting, severe diarrhea
NEURO – Anxiety, confusion, sense of doom

****Mild symptoms of an allergic reaction may include any combination of the following:**

NOSE – Itchy/runny nose, sneezing
MOUTH – Itching
SKIN- Few hives, mild itching
GI – Mild nausea/discomfort

VACCINE ADMINISTRATION RECORD (VAR)

Site Name/Location: _____ Date: _____

Name	VIS Reviewed Y	VIS Reviewed N	Date of Vaccine Administration	Vaccine Manufacturer	Vaccine Lot Number	Vaccine Expiration Date	Dose	Injection Site	Injection Route	Vaccine Administrator Initials

Vaccine Information Statement (VIS); **Injection Site**: RA = right arm, LA = left arm; **Injection Route**: IM = Intramuscular

Name of Vaccine Administrator	Signature of Vaccine Administrator	Initials

REGION 11
CHICAGO EMS SYSTEM
PROCEDURES

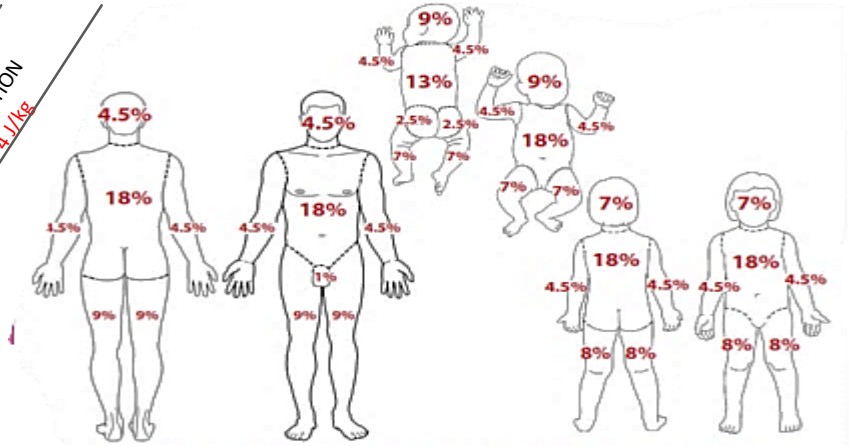
OBSTETRIC / PEDIATRIC MANAGEMENT

Region 11 EMS Pediatric Resuscitation Card

Region 11 EMS Pediatric Resuscitation Card

AGE	WEIGHT IN KG	HEART RATE PER MINUTE	SYSTOLIC BLOOD PRESSURE	RESPIRATORY RATE	NPA SIZE (French)	OPA SIZE (mm)	BVM SIZE	SUCTION CATHETER SIZE (French)	I-GEL SIZE	BLADE SIZE	ETT SIZE (cuffed)	IO SIZE	1st CARDIOVERSION 1 J/kg	2nd CARDIOVERSION 2 J/kg	1st DEFIBRILLATION 2 J/kg	2nd & Subsequent DEFIBRILLATION 4 J/kg
NB	3	100-160	> 60	30-60	14	50	Infant	6	1	1	3	Pink	3 J	6 J	6 J	12 J
2 mo	4	100-160	> 65	30-60	14	50	Infant	6	1	1	3	Pink	4 J	8 J	8 J	16 J
4 mo	5	100-160	> 65	30-60	14	50	Infant	6	1.5	1	3	Pink	5 J	10 J	10 J	20 J
6 mo	6	100-160	> 65	30-60	14	50	Infant	8	1.5	1	3.5	Pink	7 J	13 J	13 J	26 J
	7	100-160	> 65	30-60	14	50	Infant	8	1.5	1	3.5	Pink	7 J	13 J	13 J	26 J
9 mo	8	100-160	> 65	30-60	16	50	Infant	8	1.5	1	4	Pink	9 J	17 J	17 J	34 J
	9	100-160	> 65	30-60	16	50	Infant	8	1.5	1	4	Pink	9 J	17 J	17 J	34 J
1 yr	10	90-150	> 70	24-40	18	60	Pediatric	10	1.5	1	4	Blue	11 J	21 J	21 J	42 J
	11	90-150	>70	24-40	18	60	Pediatric	10	1.5	1	4	Blue	11 J	21 J	21 J	42 J
2 yr	12	90-150	> 70	24-40	20	60	Pediatric	10	2	2	4.5	Blue	13 J	26 J	26 J	52 J
	13	90-150	> 70	24-40	20	60	Pediatric	10	2	2	4.5	Blue	13 J	26 J	26 J	52 J
	14	80-140	> 75	22-34	20	60	Pediatric	10	2	2	4.5	Blue	13 J	26 J	26 J	52 J
4 yr	16	80-140	> 75	22-34	22	60	Pediatric	10	2	2	5	Blue	17 J	33 J	33 J	66 J
	18	80-140	> 75	22-34	22	60	Pediatric	10	2	2	5	Blue	17 J	33 J	33 J	66 J
6 yr	20	70-120	> 80	18-30	24	70	Pediatric	10	2	2	5.5	Blue	21 J	42 J	42 J	84 J
	22	70-120	> 80	18-30	24	70	Pediatric	10	2	2	5.5	Blue	21 J	42 J	42 J	84 J
8 yr	24	70-120	> 80	18-30	26	80	Pediatric	10	2.5	2	6	Blue	27 J	53 J	53 J	106 J
	26	70-120	> 80	18-30	26	80	Pediatric	10	2.5	3	6	Blue	27 J	53 J	53 J	106 J
	28	70-120	> 80	18-30	26	80	Pediatric	10	2.5	3	6	Blue	27 J	53 J	53 J	106 J
9 yr	30	70-120	> 80	18-30	28	80	Pediatric	12	3	3	6	Blue	33 J	66 J	66 J	132 J
	32	70-120	> 80	18-30	28	80	Pediatric	12	3	3	6.5	Blue	33 J	66 J	66 J	132 J
10 yr	34	70-120	> 80	18-30	28	80	Pediatric	12	3	3	6.5	Blue	33 J	66 J	66 J	132 J
	36	70-120	> 80	18-30	28	80	Pediatric	12	3	3	6.5	Blue	33 J	66 J	66 J	132 J
	38	70-120	> 80	18-30	28	80	Pediatric	12	3	3	6.5	Blue	38 J	40 J	76 J	152 J
12 yr	40	70-120	> 80	12-16	30	90	Adult	14	3	3	7	Blue	40 J	80 J	80 J	160 J
	42	70-120	> 80	12-16	30	90	Adult	14	3	3	7	Blue	42 J	82 J	82 J	164 J
	44	70-120	> 80	12-16	30	90	Adult	14	3	3	7	Blue	44 J	88 J	88 J	176 J
13 yr	46	60-100	> 90	12-16	30	90	Adult	14	3	3	7	Blue	46 J	92 J	92 J	184 J
	48	60-100	> 90	12-16	30	90	Adult	14	3	3	7	Blue	48 J	96 J	96 J	192 J
adol	50	60-100	> 90	12-16	30	90	Adult	14	4	3	7	Blue	50 J	100 J	100 J	200 J

% Body Surface Area



PALM OF HAND (INCLUDING FINGERS) OF INFANTS OR CHILD = 1% OF TOTAL BODY SURFACE

PEDIATRIC GLASCOW COMA SCALE (PGCS)

		> 1 Year		< 1 Year	SCORE
EYE OPENING		Spontaneously		Spontaneously	4
		To Verbal Command		To Shout	3
		To Pain		To Pain	2
		No Response		No Response	1
MOTOR RESPONSE		Obeys		Spontaneous	6
		Localizes Pain		Localizes Pain	5
		Flexion - Withdrawal		Flexion - Withdrawal	4
		Flexion - Abnormal (decorticate rigidity)		Flexion - Abnormal (decorticate rigidity)	3
		Extension (decerebrate rigidity)		Extension (decerebrate rigidity)	2
		No Response		No Response	1
VERBAL RESPONSE		> 5 Years	2-5 Years	0-23 Months	
		Oriented	Appropriate Words/Phrases	Smiles/Coos Approriately	5
		Disoriented/Confused	Inappropriate Words	Cries and is consolable	4
		Inappropriate Words	Persistent Cries & Screams	Persistent inappropriate crying and/or screaming	3
		Incomprehensible Sounds	Grunts	Grunts, agitated and restless	2
		No Response	No Response	No Response	1
TOTAL PEDIATRIC GLASCOW COMA SCORE:					(3-15)

APGAR SCORING

	0	1	2	1 MIN	5 MIN
A = Appearance (color)	Blue, Pale	Blue Hands	Entirely Pink		
P = Pulse (heart rate)	Absent	<100/min	≥100/min	____	____
G = Grimace (reflex irritability)	No Response	Grimace	Cough or Sneeze	____	____
A = Activity (muscle tone)	Limp	Some Flexion of Extremities	Active Motion	____	____
R = Respiratory Effort	Absent	Weak Cry, Hypoventilation	Good, Strong Cry	____	____
			TOTALS =	____	____

Use pediatric measuring tape to measure child and determine weight estimate (Broselow Tape or Dose by Growth)

Region 11 (Chicago) EMS Medical Directors Consortium
Effective: June 1, 2023

Region 11 EMS Pediatric Resuscitation Card

AGE	WEIGHT IN KG	FLUID BOLUS 0.9 NS 20mL/kg (NB 10mL/kg)	1st DOSE ADENOSINE 6mg/2mL 0.1mg/kg IV/IO	2nd DOSE ADENOSINE 6mg/2mL 0.2mg/kg IV/IO	AMIODARONE 150mg/3mL 5mg/kg IV/IO	ATROPINE 1mg/10mL 0.02mg/kg IV/IO	CALCIUM CHLORIDE 10% 1g/10mL 20 mg/kg IV/IO	DEXTROSE 10% 25g/250mL 5mL/kg (0.5g/kg) IV/IO	DIPHENHYDRAMINE HCL 50mg/mL 1mg/kg IV/IO	EPINEPHRINE 1mg/mL 0.01mg/kg IM	EPINEPHRINE 0.1mg/mL 0.01mg/kg IV/IO	FENTANYL 100mcg/2mL 1mcg/kg IV/IO/IM/IN	GLUCAGON 1mg/1mL ≤ 8 = 0.5 mg/> 8 = 1 mg IM	GLUCOSE GEL 37.5g tube 1/4 tube - 1 tube based on age, Oral	MIDAZOLAM 10mg/2mL 0.2mg/kg IN	MIDAZOLAM 10mg/2mL 0.1mg/kg IV/IO/IM	NALOXONE 2mg/2mL 0.1 mg/kg IV/IO/IM/IN	ONDANSETRON 4mg/2ml 0.15mg/kg IV	ONDANSETRON 4mg ODT 4mg, Oral	SODIUM BICARB 8.4% 50mEq/50ml 1mEq/kg IV/IO
NB	3	30 ml	0.1 ml	0.2 ml	0.3 ml	1 ml	0.6 ml	15 ml	X	X	0.3 ml	X	0.5 mg	X	0.1 ml	X	0.3 ml	x	X	3 ml
2 mo	4	80 ml	0.1 ml	0.3 ml	0.4 ml	1 ml	0.8 ml	20 ml	X	X	0.4 ml	X	0.5 mg	1/4 tube	0.2 ml	X	0.4 ml	x	X	4 ml
4 mo	5	100 ml	0.2 ml	0.3 ml	0.5 ml	1 ml	1 ml	25 ml	0.1 ml	0.05 ml	0.5 ml	0.1 ml	0.5 mg	1/4 tube	0.2 ml	x	0.5 ml	x	X	5 ml
6 mo	6	130 ml	0.2 ml	0.4 ml	0.7 ml	1.3 ml	1.3 ml	30 ml	0.15 ml	0.05 ml	0.7 ml	0.15 ml	0.5 mg	1/4 tube	0.3 ml	0.15 ml	0.7 ml	x	X	7 ml
	7	130 ml	0.2 ml	0.4 ml	0.7 ml	1.3 ml	1.3 ml	30 ml	0.15 ml	0.05 ml	0.7 ml	0.15 ml	0.5 mg	1/4 tube	0.3 ml	0.15 ml	0.7 ml	x	X	7 ml
9 mo	8	170 ml	0.3 ml	0.6 ml	0.9 ml	1.7 ml	1.7 ml	40 ml	0.15 ml	0.1 ml	0.9 ml	0.15 ml	0.5 mg	1/4 tube	0.3 ml	0.15 ml	0.9 ml	x	X	9 ml
	9	170 ml	0.3 ml	0.6 ml	0.9 ml	1.7 ml	1.7 ml	40 ml	0.15 ml	0.1 ml	0.9 ml	0.15 ml	0.5 mg	1/4 tube	0.3 ml	0.15 ml	0.9 ml	x	X	9 ml
1 yr	10	210 ml	0.4 ml	0.7 ml	1.1 ml	2.1 ml	2.1 ml	50 ml	0.2 ml	0.1 ml	1.1 ml	0.2ml	0.5 mg	1/4 tube	0.4 ml	0.2 ml	1.1 ml	0.8 ml	X	11 ml
	11	210 ml	0.4 ml	0.7 ml	1.1 ml	2.1 ml	2.1 ml	50 ml	0.2 ml	0.1 ml	1.1 ml	0.2 ml	0.5 mg	1/4 tube	0.4 ml	0.2 ml	1.1 ml	0.8 ml	x	11 ml
2 yr	12	260 ml	0.4 ml	0.9 ml	1.3 ml	2.6 ml	2.6 ml	65 ml	0.25 ml	0.15 ml	1.3 ml	0.25 ml	0.5 mg	1/4 tube	0.5 ml	0.25 ml	1.3 ml	1 ml	X	13 ml
	13	260 ml	0.4 ml	0.9 ml	1.3 ml	2.6 ml	2.6 ml	65 ml	0.25 ml	0.15 ml	1.3 ml	0.25 ml	0.5 mg	1/4 tube	0.5 ml	0.25 ml	1.3 ml	1 ml	x	13 ml
	14	260 ml	0.4 ml	0.9 ml	1.3 ml	2.6 ml	2.6 ml	65 ml	0.25 ml	0.15 ml	1.3 ml	0.25 ml	0.5 mg	1/4 tube	0.5 ml	0.25 ml	1.3 ml	1 ml	X	13 ml
4 yr	16	330 ml	0.6 ml	1.1 ml	1.7 ml	3.3 ml	3.3 ml	80 ml	0.35 ml	0.15 ml	1.7 ml	0.35 ml	0.5 mg	1/2 tube	0.7 ml	0.35 ml	1.7 ml	1.2 ml	X	17 ml
	18	330 ml	0.6 ml	1.1 ml	1.7 ml	3.3 ml	3.3 ml	80 ml	0.35 ml	0.15 ml	1.7 ml	0.35 ml	0.5 mg	1/2 tube	0.7 ml	0.45 ml	1.7 ml	1.2 ml	X	17 ml
6 yr	20	420 ml	0.7 ml	1.4 ml	2.1 ml	4.2 ml	4.2 ml	100 ml	0.4 ml	0.2 ml	2.1 ml	0.4 ml	0.5 mg	1/2 tube	0.8 ml	0.4 ml	2 ml	1.6 ml	X	21 ml
	22	420 ml	0.7 ml	1.4 ml	2.1 ml	4.2 ml	4.2 ml	100 ml	0.4 ml	0.2 ml	2.1 ml	0.4 ml	0.5 mg	1/2 tube	0.8 ml	0.4 ml	2 ml	1.6 ml	X	21 ml
8 yr	24	530 ml	0.9 ml	1.8 ml	2.7 ml	5 ml	5.3 ml	130 ml	0.55 ml	0.25 ml	2.7 ml	0.55 ml	0.5 mg	1/2 tube	1.1 ml	0.55 ml	2 ml	2 ml	X	27 ml
	26	530 ml	0.9 ml	1.8 ml	2.7. ml	5 ml	5.3 ml	130 ml	0.55 ml	0.25 ml	2.7 ml	0.55 ml	0.5 mg	1/2 tube	1.1 ml	0.55 ml	2 ml	2 ml	1 tablet	27 ml
	28	530 ml	0.9 ml	1.8 ml	2.7 ml	5 ml	5.3 ml	130 ml	0.55 ml	0.25 ml	2.7 ml	0.55 ml	0.5 mg	1/2 tube	1.1 ml	0.55 ml	2 ml	2 ml	1 tablet	27 ml
9 yr	30	660 ml	1.1 ml	2.1 ml	3.3 ml	5 ml	6.6 ml	170 ml	0.65 ml	0.3 ml	3.3 ml	0.65 ml	1 mg	1 tube	1.3 ml	0.65 ml	2 ml	2 ml	1 tablet	33 ml
	32	660 ml	1.1 ml	2.1 ml	3.3 ml	5 ml	6.6 ml	170 ml	0.65 ml	0.3 ml	3.3 ml	0.65 ml	1 mg	1 tube	1.3 ml	0.65 ml	2 ml	2 ml	1 tablet	33 ml
10 yr	34	660 ml	1.1 ml	2.1 ml	3.3 ml	5 ml	6.6 ml	170 ml	0.65 ml	0.3 ml	3.3 ml	0.65 ml	1 mg	1 tube	1.3 ml	0.65 ml	2 ml	2 ml	1 tablet	33 ml
	36	660 ml	1.1 ml	2.1 ml	3.3 ml	5 ml	6.6 ml	170 ml	0.65 ml	0.3 ml	3.3 ml	0.65 ml	1 mg	1 tube	1.3 ml	0.65 ml	2 ml	2 ml	1 tablet	33 ml
	38	760 ml	1.3 ml	2.5 ml	3.8 ml	5 ml	7.6 ml	190 ml	0.8 ml	0.3 ml	3.8 ml	0.7 ml	1 mg	1 tube	1.6 ml	0.8 ml	2 ml	2 ml	1 tablet	38 ml
12 yr	40	800 ml	1.3 ml	2.7 ml	4 ml	5 ml	8 ml	200 ml	0.8 ml	0.3 ml	4 ml	0.8 ml	1 mg	1 tube	1.6 ml	0.8 ml	2 ml	2 ml	1 tablet	40 ml
	42	840 ml	1.4 ml	2.8 ml	4.2 ml	5 ml	8.4 ml	210 ml	0.8 ml	0.3 ml	4.2 ml	0.8 ml	1 mg	1 tube	1.6 ml	0.8 ml	2 ml	2 ml	1 tablet	42 ml
	44	880 ml	1.5 ml	2.9 ml	4.4 ml	5 ml	8.8 ml	220 ml	0.9 ml	0.3 ml	4.4 ml	0.9 ml	1 mg	1 tube	1.8 ml	0.9 ml	2 ml	2 ml	1 tablet	44 ml
13 yr	46	920 ml	1.5 ml	3.1 ml	4.6 ml	5 ml	9.2 ml	230 ml	0.9 ml	0.3 ml	4.6 ml	0.9 ml	1 mg	1 tube	1.8 ml	0.9 ml	2 ml	2 ml	1 tablet	46 ml
	48	960 ml	1.6 ml	3.2 ml	4.8 ml	5 ml	9.6 ml	240 ml	1 ml	0.3 ml	4.8 ml	1 ml	1 mg	1 tube	2 ml	1 ml	2 ml	2 ml	1 tablet	48 ml
adol	50	1000 ml	1.7 ml	3.3 ml	5 ml	5 ml	10 ml	250 ml	1 ml	0.3 ml	5 ml	1 ml	1 mg	1 tube	2 ml	1 ml	2 ml	2 ml	1 tablet	50 ml

Use pediatric measuring tape to measure child and determine weight estimate (Broselow Tape or Dose by Growth)

Region 11 (Chicago) EMS Medical Directors Consortium
Effective: June 1, 2023