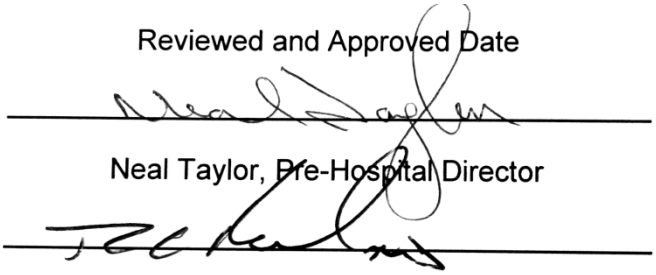
Citizens Memorial Hospital

Pre-Hospital Protocols

Part 0 - Cover Page

January 1st, 2014 (ver 3)

Reviewed and Approved Date



Neal Taylor, Pre-Hospital Director

Dr. Roger Merk, Medical Director

These protocols are designed to provide EMTs, RNs, and Paramedics with standing written orders to coordinate and standardize patient care and improved immediate definitive therapy while on the scene of an illness or injury and during transport.

These protocols are divided into five parts:

- **Part 0 (Cover Page)** - A single page that contains approval signatures.
- **Part 1 (Medical, Trauma, and General)** - Standing orders for pre-hospital staff approved by the medical director.
- **Part 2 (Medications)** - Details about possible medications that may be administered by pre-hospital staff following appropriate protocols or on-line medical direction.
- **Part 3 (Equipment)** - Details about possible equipment that may be used by pre-hospital staff following appropriate protocols or on-line medical direction.
- **Part 4 (Pocket Protocols)** - Condensed version of **Part 1** for quick reference in the field.

EMTs should complete the items listed for Basic Life Support as a matter of course for each patient. This will allow Paramedics to concentrate on the items listed for ALS. However, it is ultimately the responsibility of the Paramedic to ensure complete patient care, including BLS-level procedures.

Medications and equipment listed in these protocols may not reflect actual medications and equipment available on ambulances due to drug shortages and other considerations.

Unless specified *ADULT* or *PEDIATRIC*, protocols apply to both adult and pediatric patients.

Document style standards:

ADULT or *PEDIATRIC* orders.
MEDICATION or **INTERVENTION** orders.
MEDICAL CONTROL orders.
Revisions: Revisions that have yet to be approved by medical director.

Each protocol will be reviewed annually.

CMH EMS Protocols

Citizens Memorial Hospital
Pre-Hospital Protocols
Part 1 - Medical, Trauma, General

Table of Contents

1-10 General Medical Assessment and Treatment

Basic Life Support

- ✱ Scene safety.
- ✱ Coordinate with or establish incident command.
- ✱ BSI.
- ✱ Nature of illness.
- ✱ Number of patients.
- ✱ Need for additional resources?
- ✱ ABCs.
- ✱ LOC.
- ✱ SAMPLE history.
- ✱ Focused assessment.
- ✱ Baseline vitals.
  - ✱ Two sets of vitals should be obtained that include time, BP, pulse, respirations, SpO_2, and pain level.
  - ✱ When appropriate, additional vitals may include temp, orthostatic blood pressure, and glucose. Consider assisting ALS with $ETCO_2$.
- ✱ Responsive:
  - ✱ Treatment decision (BLS/ALS).
- ✱ Interfacility transfer of patients meeting BLS criteria with the only exception of Heparin or Saline locked IV may be transported BLS.
- ✱ Four-lead cardiac monitoring does not require the patient to be transported ALS, but an ALS patient does require cardiac monitoring. If BLS patient with four-lead, do not document EKG monitoring. 12-lead EKG does require the patient to be ALS. Any EKG monitor for assessment must be transported ALS.

Advanced Life Support

- ✱ ALS indicated when:
  - ✱ Unresponsive.
  - ✱ Responsive meeting one of the following:
    - ✚ Altered mental status.
    - ✚ GCS <13.
    - ✚ Respiratory distress.
    - ✚ Signs of shock.
    - ✚ PulseOx <88.
    - ✚ Need for IV/IO or medications.
    - ✚ Chest discomfort.
    - ✚ *ADULT* vitals:
      - ✖ SBP <100 or >180
      - ✖ Pulse <60 or >120
      - ✖ Respirations <12 or >30
    - ✚ *PEDIATRIC* vitals:
      - ✖ SBP <70 + 2 x (age yrs)
      - ✖ Pulse <60 or >140
      - ✖ Respirations >30
- ✱ *PEDIATRIC*: Utilize Broslow tape for equipment and drug dosages.
- ✱ Rapid medical assessment.
- ✱ Treat per appropriate protocol.
- ✱ Transport.
  - ✱ Patients who do not meet the criteria for trauma, STEMI, or stroke center shall be transported to a hospital of their choice. (MO Statute 190.243.4)

Citation(s): (Chapter 190 - Emergency services, 2012)

2-10 Asystole

Basic Life Support

- ✱ Confirm pulselessness and apnea.
- ✱ Attempt to determine down-time, history, and DNR status.
- ✱ Begin **CPR**.
  - ✱ Push hard and fast at 100/min.
  - ✱ Minimize compression interruptions.
  - ✱ Rotate compressors every 2 minutes at rhythm check.
- ✱ Establish and maintain airway and ventilate 100% **OXYGEN**.
  - ✱ Establish BLS **AIRWAY**.
  - ✱ Compressions: Ventilations ratio = 30:2 unless intubated, then 8-10 breaths per min.
  - ✱ Avoid hyperventilation.
- ✱ Monitor pulseoximetry. Assist ALS with capnography.
- ✱ Apply cardiac monitor quick combo pads and limb leads.

Advanced Life Support

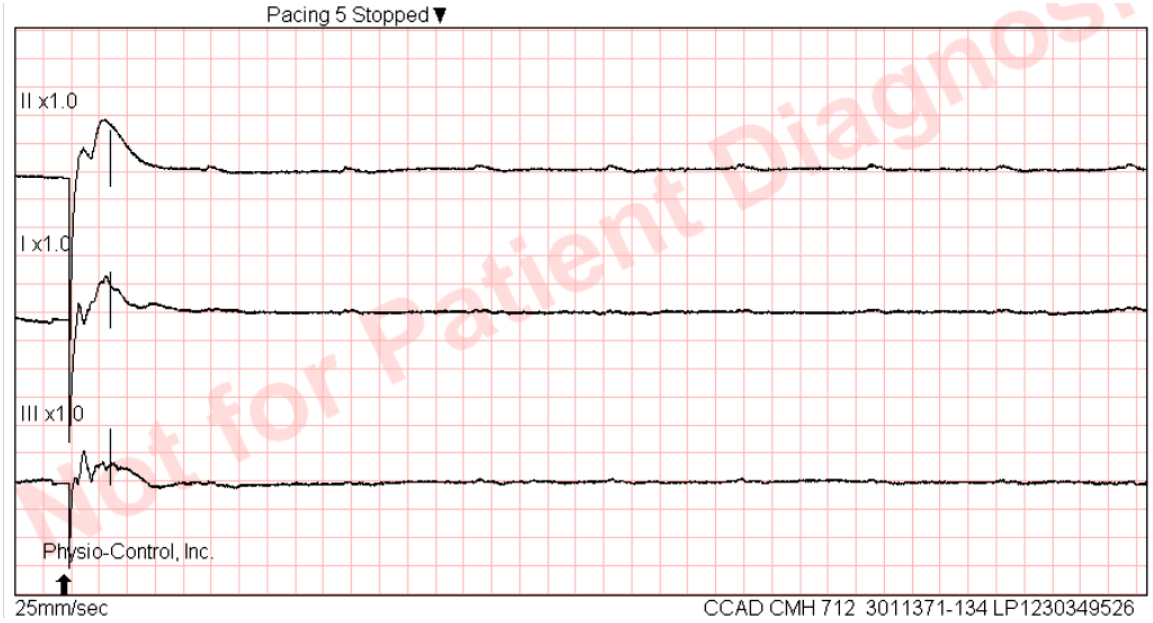
- ✱ Confirm in 2 leads.
- ✱ Consider **INTUBATION**.
- ✱ IV/IO **NS**.

- ✱ *ADULT*:
  - ✱ Consider **PACING**.
  - ✱ **EPINEPHRINE 1:10,000** 1 mg IV/IO every 3-5 min.
  - ✱ Consider **ATROPINE** 1 mg IV/IO every 3-5 min (max 3 mg).
  - ✱ Consider **SODIUM BICARB** 1 mEq/kg IV/IO every 10 min (ensure adequate ventilations)

- ✱ *PEDIATRIC*:
  - ✱ **EPINEPHRINE 1:10,000** 0.01 mg/kg IV/IO every 3-5 min (max 1 mg/dose).
  - ✱ OR **1:1,000** 0.1 mg/kg ETT (max 2.5 mg/dose).

- ✱ Consider and correct treatable causes: Hypovolemia, hypoxia, hypo/hyperkalemia, hypothermia, hypoglycemia, acidosis, tension pneumothorax, toxins, thrombosis, and cardiac tamponade.
- ✱ *ADULT*: Contact **MEDICAL CONTROL** if $ETCO_2$ <10 for 10 min or no response after 20 min, consider termination of resuscitation.

Citation(s):



Not for Patient Diagnosis

2-20 Atrial Fibrillation (A-Fib) / Atrial Flutter

Basic Life Support

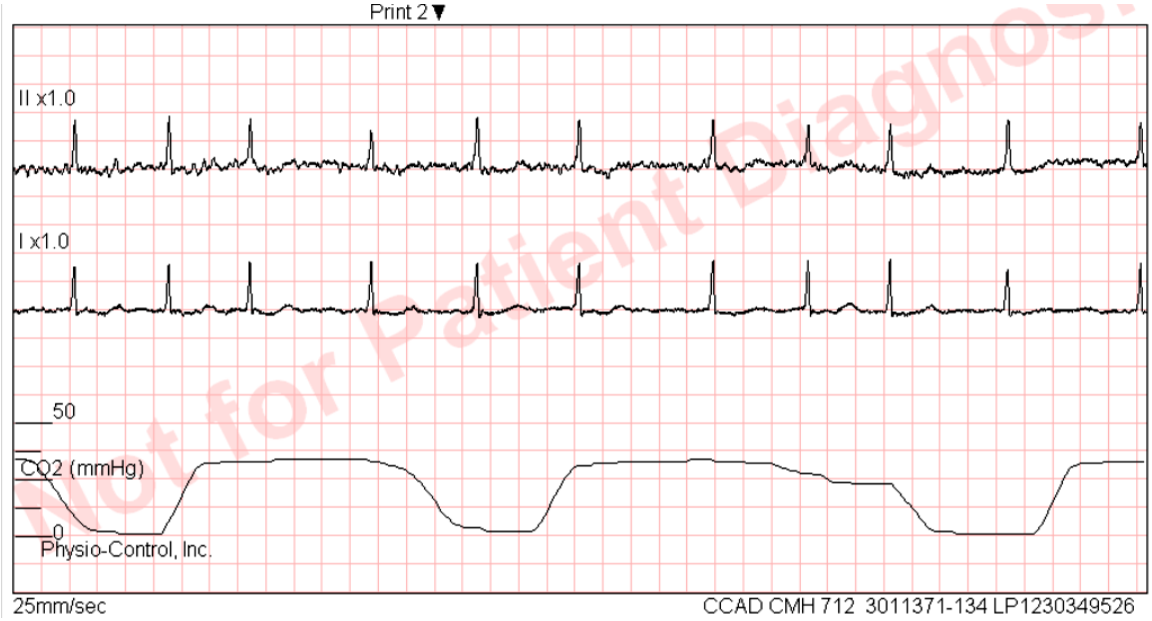
- ✱ Calm and reassure patient. Ensure patient does not exert themselves.
- ✱ **OXYGEN** to maintain SpO_2 between 94-99%.
- ✱ Apply cardiac monitor limb leads.
- ✱ *ADULT*: Rate >130 OR *PEDIATRIC*: Rate >160 (child), >220 (infant):
  - ✱ Apply quick combo pads anterior / posterior.
- ✱ Monitor pulseoximetry. Assist ALS with capnography.
- ✱ Obtain vital signs.

Advanced Life Support

- ✱ Obtain 12-lead **EKG**.
- ✱ IV/IO **NS**.

- ✱ *ADULT*: Rate >130:
  - ✱ Pulmonary edema: **AMIODARONE** 150 mg over 10 min. May repeat at 150 mg over 10 min if tachycardia returns.
  - ✱ No pulmonary edema: **CARDIZEM** 0.25 mg/kg (max 20 mg) IV/IO over 2 min. May repeat after 15 min at 0.35 mg/kg (max 25 mg) IV/IO over 2 min.
  - ✱ If converted, **CARDIZEM** drip at 10 mg/hr.
- ✱ *PEDIATRIC*: Rate >160 (child), >220 (infant): **CONTACT MEDICAL CONTROL**:
  - ✱ Consider **CARDIZEM**.
  - ✱ Consider **ADENOSINE**: 0.1 mg/kg RAPID IV/IO. If ineffective, second and/or third dose at 0.2 mg/kg.
  - ✱ Consider **VERSED** IV/IO/IN.
    - ✖ Over 12 yrs: Same as adult.
    - ✖ Between 6 yrs and 12 yrs: 0.05 mg/kg.
    - ✖ Under 6 yrs: 0.05-0.1 mg/kg.
  - ✚ OR **ATIVAN** 0.05 mg/kg (max 2 mg) IV/IO.
  - ✚ Consider **FENTANYL** 2-3 mcg/kg IV/IO/IN (max 150 mcg).
  - ✱ Consider synchronized **CARDIOVERSION** 0.5-1 J/kg.
- ✱ Consider and correct treatable causes: Hypovolemia, hypoxia, hypo/hyperkalemia, hypothermia, hypoglycemia, acidosis, tension pneumothorax, toxins, thrombosis, and cardiac tamponade.

Citation(s):

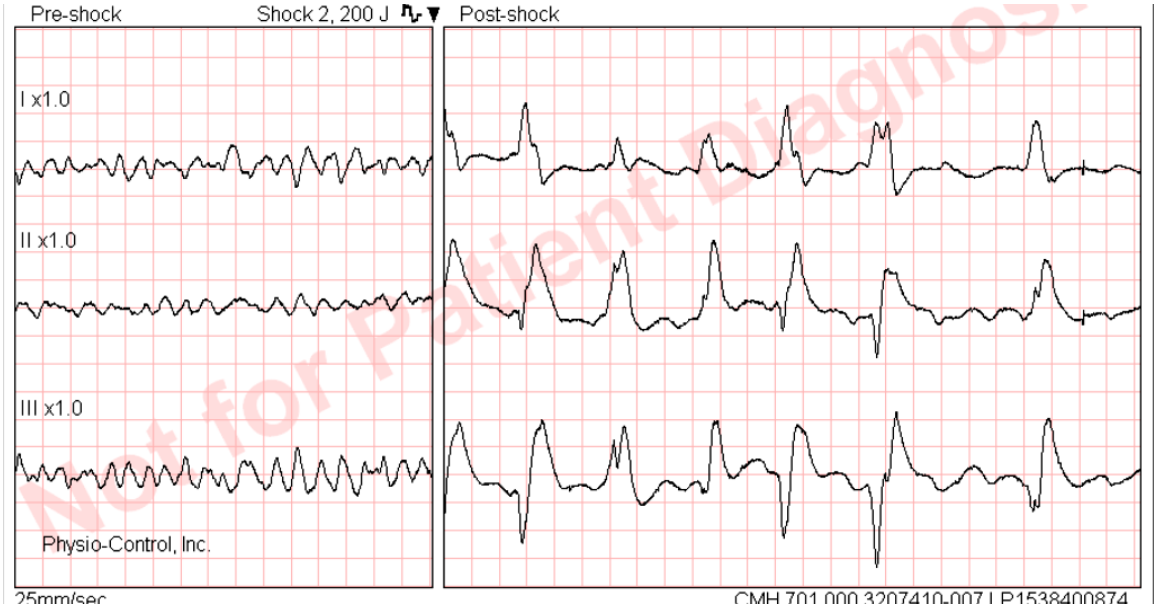


2-30 Automated External Defibrillation (AED)

Basic Life Support	Advanced Life Support

✱ Request **ALS** support if not already en route.
✱ Confirm pulselessness and apnea.
✱ Attempt to determine down-time, history, and DNR status.
✱ Begin **CPR**.
  ✱ Push hard and fast at 100/min.
  ✱ Minimize compression interruptions.
  ✱ Rotate compressors every 2 minutes at rhythm check or as soon as practical.
✱ Establish and maintain airway and ventilate 100% **OXYGEN**.
  ✱ Establish BLS **AIRWAY**.
  ✱ Compressions: Ventilations ratio = 30:2 unless intubated, then 8-10 breaths per min.
  ✱ Avoid hyperventilation.
✱ Apply cardiac monitor (in **AED** mode) quick combo pads.
  ✱ Press **ANALYZE** and clear patient.
  ✱ Shock indicated: clear and **SHOCK**. Continue compressions while charging.
✱ Monitor pulseoximetry. Assist ALS with capnography.
	✱ If ALS and LifePak 12/15 available, manual defibrillation is preferred.

Citation(s):



Not for Patient Diagnosis

2-40 Bradycardia

Basic Life Support

- ✱ Calm and reassure patient. Ensure patient does not exert themselves.
- ✱ **OXYGEN** to maintain SpO_2 between 94-99%.
- ✱ Apply cardiac monitor limb leads.
- ✱ Rate <60: Apply quick combo pads anterior / posterior.

- ✱ *PEDIATRIC*: HR <60: **VENTILATE**. Initiate chest compressions if ventilation does not raise HR above 60.
- ✱ Monitor pulseoximetry. Assist ALS with capnography.
- ✱ Obtain vital signs.

Advanced Life Support

- ✱ Obtain 12-lead EKG.
- ✱ IV/IO **NS**.

- ✱ *ADULT*: Rate <60 and symptomatic:
  - ✱ Unstable: **PACING**.
    - ✚ **VERSED** 2.5-5 mg IV/IO (max 10 mg). Maintain SBP >100.
      - ✖ OR **ATIVAN** 2 mg IV/IO.
      - ✖ Consider **FENTANYL** 50-100 mcg IV/IO/IN (max 300 mcg).
  - ✱ Stable: **ATROPINE** 0.5 mg IV/IO. May repeat 0.5 mg every 5 min (max 3 mg).
  - ✱ Consider **DOPAMINE** 5-20 mcg/kg/min IV/IO.
  - ✱ Contact **MEDICAL CONTROL** for: Consider **EPINEPHRINE 1:10,000** 2-10 mcg/min IV/IO.
    - ✚ Mix 1 mg in 250 ml **NS**.
    - ✚ 2 mcg/min = 30 ml/hr.
    - ✚ 10 mcg/min = 150 ml/hr.

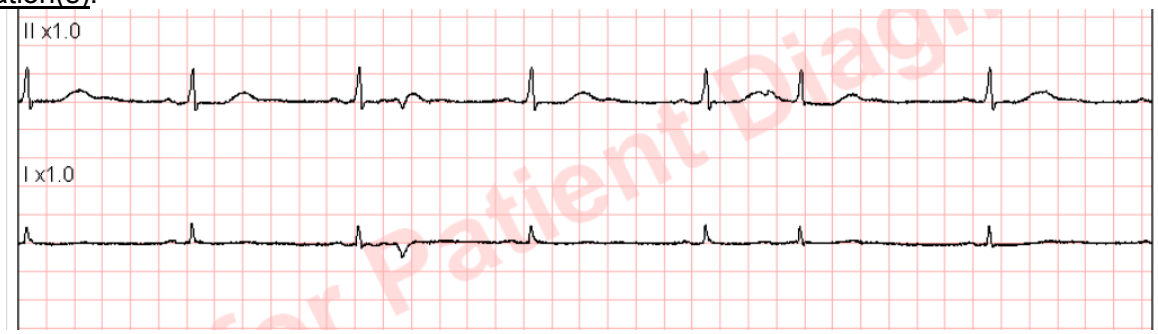
- ✱ *PEDIATRIC*: Rate <60 and symptomatic:
  - ✱ **EPINEPHRINE 1:10,000** 0.01 mg/kg IV/IO repeat every 3-5 min.
  - ✱ **ATROPINE** 0.02 mg/kg IV/IO may repeat once (min 0.1 mg) (max 0.5 mg).
  - ✱ Consider **PACING** at age appropriate rate:

0-1yr: **135**	2-3yr: **130**	4-5yr: **105**	6-9yr: **90**	10-18yr: **80**

    - ✚ **VERSED** IV/IO/IN.
      - ✳ Over 12 yrs: Same as adult.
      - ✳ Between 6 yrs and 12 yrs: 0.05 mg/kg.
      - ✳ Under 6 yrs: 0.05-0.1 mg/kg.
    - ✖ OR **ATIVAN** 0.05 mg/kg IV/IO.
    - ✚ Consider **FENTANYL** 2-3 mcg/kg IV/IO/IN (max 150 mcg).

- ✱ Consider and correct treatable causes: Hypovolemia, hypoxia, hypo/hyperkalemia, hypothermia, hypoglycemia, acidosis, tension pneumothorax, toxins, thrombosis, and cardiac tamponade.

Citation(s):



2-50 Chest Discomfort (Cardiac)

Basic Life Support

- ✱ Calm and reassure patient. Ensure patient does not exert themselves.
- ✱ **OXYGEN** to maintain SpO_2 between 94-99%.
- ✱ Apply cardiac monitor limb leads.
- ✱ Monitor pulseoximetry. Assist ALS with capnography.
- ✱ Obtain vital signs.

- ✱ *ADULT*: **ASPIRIN** 324 mg (4 chewable tablets).

- ✱ STEMI: Consider **COMBO PADS** anterior/posterior.

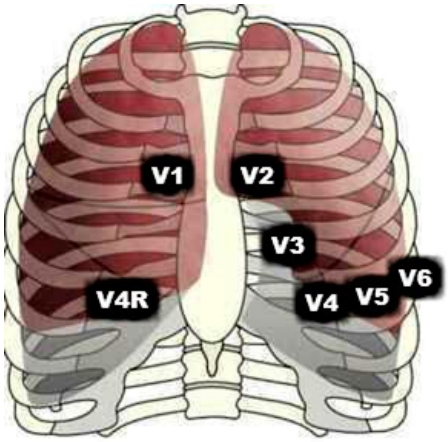
Advanced Life Support

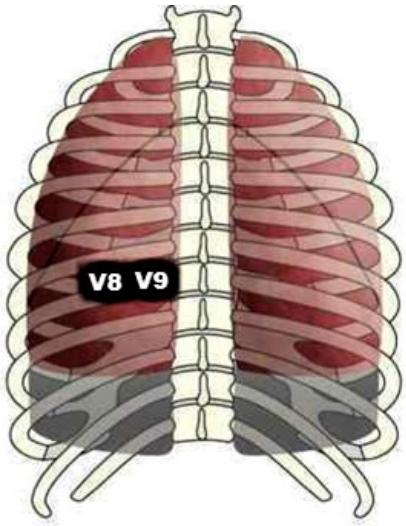
- ✱ IV/IO **NS**. Preferred left AC (not distal of right AC). Use pigtail extension.
  - ✱ Draw blood samples.
- ✱ Obtain 12-lead EKG within 10 minutes of patient contact.
  - ✱ 15-lead indicated when: normal EKG, inferior MI, ST depression in V-leads.
  - ✱ STEMI (ST elevation > 0.1 MV in at least 2 contiguous leads OR new LBBB):
    - ✚ Begin transport and contact ER to activate STEMI as early as possible. (CMH ER Charge Nurse: **417-328-6923**).
      - ✖ Include name, age, time of onset, assessment, treatment, response to treatment, vitals, cardiac/bleeding history. Provide your contact phone number.
    - ✚ Transmit EKG to receiving facility (if possible).
      - ✖ If CMH, email to **ekg_hospital@citizensmemorial.com**.

- ✱ *ADULT*:
  - ✱ Inferior MI (ST elevation in II, III, aVF):
    - ✚ Pulmonary edema: Refer to CHF protocol.
    - ✚ **NS** 250 ml fluid bolus. Repeat as long as no pulmonary edema.
    - ✚ Contact **MEDICAL CONTROL**:
      - ✖ SBP >120: Consider **NITROGLYCERIN** 0.4 mg SL (1 spray or 1 tablet). Every 5 min until no pain or SBP <90.
      - ✖ Consider **NITROGLYCERIN** initiate at 10 mcg/min IV/IO titrated to BP and pain.
  - ✱ Not Inferior MI AND SBP >100: **NITROGLYCERIN** 0.4 mg SL (1 spray or 1 tablet). Every 5 min until no pain or SBP <90.
    - ✚ Consider **NITROGLYCERIN** initiate at 10 mcg/min IV/IO titrated to BP and pain.
  - ✱ Nausea/Vomiting: Consider **ZOFRAN** 4 mg IV/IM/IN (max 8 mg).
    - ✚ OR **PHENERGAN** 12.5-25 mg IM or IV/IO infused in **NS** over 15-30 min.
  - ✱ **MORPHINE** 2 mg IV/IO (max 10 mg). Maintain SBP >100.
  - ✱ Contact **MEDICAL CONTROL**: Consider **HEPARIN** 4,000 u.
- ✱ Consider **air ambulance** to expedite transport.
  - ✱ Patients who suffer a STEMI shall be transported to a STEMI center (MO Statute 190.243.1).
  - ✱ When transport from the scene would be prolonged, the patient may be transported to the nearest appropriate facility for stabilization (MO Statute 190.243.2).

Citation(s): (Chapter 190 - Emergency services, 2012), (Citizens Memorial Hospital, 2014), (Clemency, Thompson, Tundo, & Lindstrom, 2013), (Missouri EMS Regional Committee - Southwest Region, 2013), (Proposed regulations, 2010)

EKG Interpretation Guide



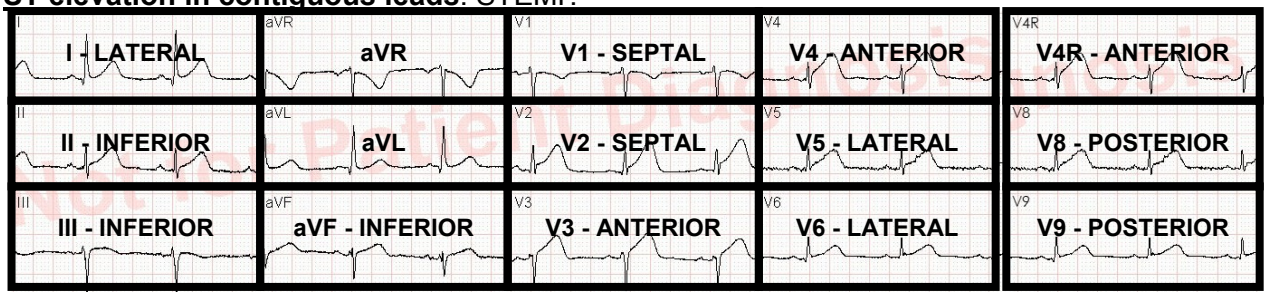


Check lead placement.
- ✱ Lead I positive and aVR negative: Good placement?

Rhythm:
- ✱ Regular or irregular?
- ✱ Brady or tachy?
- ✱ P-Waves:
  - ✱ Heart block:
    - ✚ PR >200ms: First degree heart block?
    - ✚ PR widening: Second degree type I?
    - ✚ Dropping P-waves: Second degree type II?
    - ✚ P-waves not associated: Third degree?
  - ✱ Greater than 2.5mm high: Right atrial enlargement or PE?
  - ✱ "M" shape: Left atrial enlargement?
- ✱ QRS:
  - ✱ >120ms: Bundle branch block (**LBBB** or ventricular pacing, go to Sgarbossa)?
  - ✱ QTc between 390 and 450?
  - ✱ Peaked T-waves: Hyperkalemia?
  - ✱ Q >40ms: Pathological Q (previous MI)?
  - ✱ Q>35mm combined V5 & V1: Left ventricular hypertrophy?
  - ✱ Q>7mm V1: Right ventricular hypertrophy?
  - ✱ Delta wave (sloped R) with PR <120ms: Wolff-Parkinson-White

Axis:
- ✱ -30 to -90 degrees (up, dn, dn): Left axis deviation (obesity, pregnancy, **LBBB**, left ventricular hypertrophy, LEFT ANTERIOR HEMIBLOCK, INFERIOR MI)?
- ✱ 90 to 180 degrees (dn, up, up): Right axis deviation (slender, pulmonary disease, RBBB, right ventricular hypertrophy, LEFT POSTERIOR HEMIBLOCK)?
- ✱ -90 to -180 degrees (dn, dn, dn): Extreme right axis deviation (MYOCARDIAL INFARCTION)?

ST:
- ✱ ST elevation in all leads: Pericarditis?
- ✱ Cup or dome ST in V-leads: Early repolarization?
- ✱ **ST elevation in contiguous leads**: STEMI?



Sgarbossa Criteria (LBBB or Pacing):
- ✱ A = ST elevation >1mm concordant with QRS in any lead?
- ✱ B = ST depression >1mm in V1, V2, or V3?
- ✱ C = ST elevation >5mm discordant with QRS in any lead?

2-60 Post Resuscitative Care

Basic Life Support	Advanced Life Support
✱ Establish and maintain airway and ventilate with **OXYGEN**. ✱ Avoid hyperventilation. ✱ Conscious: Attempt to maintain SpO_2 between 92-96%. ✱ Unconscious: Attempt to maintain SpO_2 between 88-92%. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Apply cardiac monitor quick combo pads and limb leads. ✱ Obtain vital signs.	✱ Obtain 12-lead EKG. ✱ Treat rate and rhythm per protocol. ✱ Secure airway if necessary. ✱ IV/IO **NS**. ✱ *ADULT*: ✱ Hypotension: Assess lung sounds for pulmonary edema. ✚ Clear lung sounds: **NS** 250-500 ml IV/IO. ✚ Pulmonary edema: Consider **DOPAMINE** 5-20 mcg/kg/min IV/IO. ✱ Continued sedation: **VERSED** 2.5-5 mg IV/IO every 5 min as needed (max 10 mg). Maintain SBP >100. ✚ OR **ATIVAN** 1-2 mg IV/IO every 5 min (max 4 mg). ✚ Consider **FENTANYL** 50-100 mcg IV/IO/IN every 10 min as needed (max 300 mcg). ✱ *PEDIATRIC*: ✱ Hypotension: Assess lung sounds for pulmonary edema. ✚ Clear lung sounds: Consider 20 ml/kg **NS**. ✚ Pulmonary edema: **CONTACT MEDICAL CONTROL: DOPAMINE** 5-20 mcg/kg/min IV/IO. ✱ Continued sedation: **VERSED** IV/IO/IN. ✖ Over 12 yrs: Same as adult. ✖ Between 6 yrs and 12 yrs: 0.05 mg/kg. ✖ Under 6 yrs: 0.05-0.1 mg/kg. ✚ OR **ATIVAN** 0.05 mg/kg IV/IO. ✚ Consider **FENTANYL** 2-3 mcg/kg IV/IO/IN (max 150 mcg). ✱ Consider **air ambulance** to expedite transport.

Citation(s):

2-70 Pulseless Electrical Activity (PEA)

Basic Life Support	Advanced Life Support

✱ Confirm pulselessness and apnea.
✱ Attempt to determine down-time, history, and DNR status.
✱ Begin **CPR**.
  ✱ Push hard and fast at 100/min.
  ✱ Minimize compression interruptions.
  ✱ Rotate compressors every 2 minutes at rhythm check.
✱ Establish and maintain airway and ventilate 100% **OXYGEN**.
  ✱ Establish BLS **AIRWAY**.
  ✱ Compressions : Ventilations ratio = 30:2 unless intubated, then 8-10 breaths per min.
  ✱ Avoid hyperventilation.
✱ Monitor pulseoximetry. Assist ALS with capnography.
✱ Apply cardiac monitor quick combo pads and limb leads.
	✱ Consider **INTUBATION**.
	✱ IV/IO **NS**.
	✱ *ADULT*:
	  ✱ **EPINEPHRINE 1:10,000** 1 mg IV/IO every 3-5 min.
	  ✱ Slow PEA rate: Consider **ATROPINE** 1 mg IV/IO every 3-5 min (max 3 mg).
	  ✱ Consider **SODIUM BICARB** 1 mEq/kg IV/IO.
	✱ *PEDIATRIC*:
	  ✱ **EPINEPHRINE 1:10,000** 0.01 mg/kg IV/IO every 3-5 min (max 1 mg/dose). OR **1:1,000** 0.1 mg/kg ET.
	✱ Consider and correct treatable causes: Hypovolemia, hypoxia, hypo/hyperkalemia, hypothermia, hypoglycemia, acidosis, tension pneumothorax, toxins, thrombosis, and cardiac tamponade.
	✱ *ADULT*: Contact **MEDICAL CONTROL** if $ETCO_2$ <10 for 10 min or no response after 20 min, consider termination of resuscitation.

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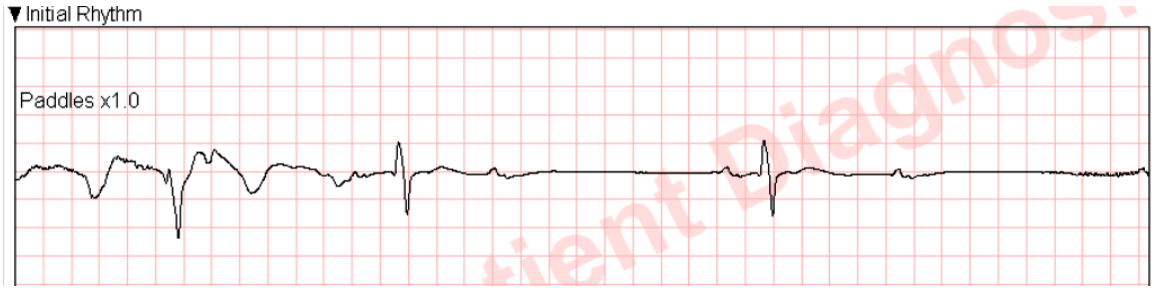

2-80 Tachycardia, Narrow Stable

Basic Life Support	Advanced Life Support
✱ Calm and reassure patient. Ensure patient does not exert themselves. ✱ **OXYGEN** to maintain SpO_2 between 94-99%. ✱ Apply cardiac monitor limb leads. ✱ *ADULT*: Rate >150 OR *PEDIATRIC*: Rate >160 (child), >220 (infant): ✱ Consider: apply quick combo pads anterior / posterior. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Obtain vital signs.	✱ Obtain 12-lead EKG. ✱ **Vagal** maneuvers. (Contraindicated for CAD and stroke). ✱ IV/IO **NS**. ✱ *ADULT*: Rate >150: ✱ **ADENOSINE** 6 mg RAPID IV/IO. If ineffective, second and/or third dose at 12 mg. ✱ Pulmonary edema: **AMIODARONE** 150 mg over 10 min. May repeat at 150 mg over 10 min if tachycardia returns (max 300 mg). ✱ No pulmonary edema: **CARDIZEM** 0.25 mg/kg (max 20 mg) IV/IO over 2 min. May repeat after 15 min at 0.35 mg/kg (max 25 mg) IV/IO over 2 min. ✚ If converted, **CARDIZEM** drip at 10 mg/hr. ✱ *PEDIATRIC*: Rate >160 (child), >220 (infant): **CONTACT MEDICAL CONTROL**: ✱ Consider **ADENOSINE**: 0.1 mg/kg RAPID IV/IO. If ineffective, second and/or third dose at 0.2 mg/kg. ✱ Consider **VERSED** IV/IO/IN. ✖ Over 12 yrs: Same as adult. ✖ Between 6 yrs and 12 yrs: 0.05 mg/kg. ✖ Under 6 yrs: 0.05-0.1 mg/kg. ✚ OR **ATIVAN** 0.05 mg/kg (max 2 mg) IV/IO. ✚ Consider **FENTANYL** 2-3 mcg/kg IV/IO/IN (max 150 mcg). ✱ Consider synchronized **CARDIOVERSION** 0.5-1 J/kg. ✱ Consider and correct treatable causes: Hypovolemia, hypoxia, hypo/hyperkalemia, hypothermia, hypoglycemia, acidosis, tension pneumothorax, toxins, thrombosis, and cardiac tamponade.

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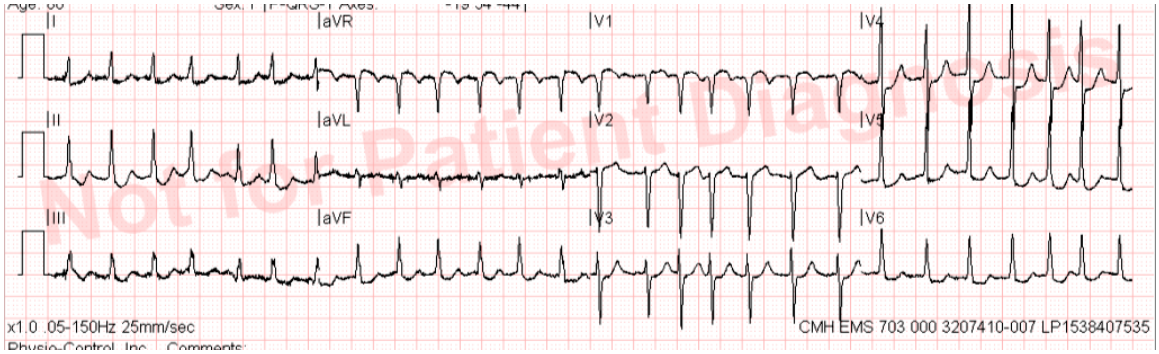
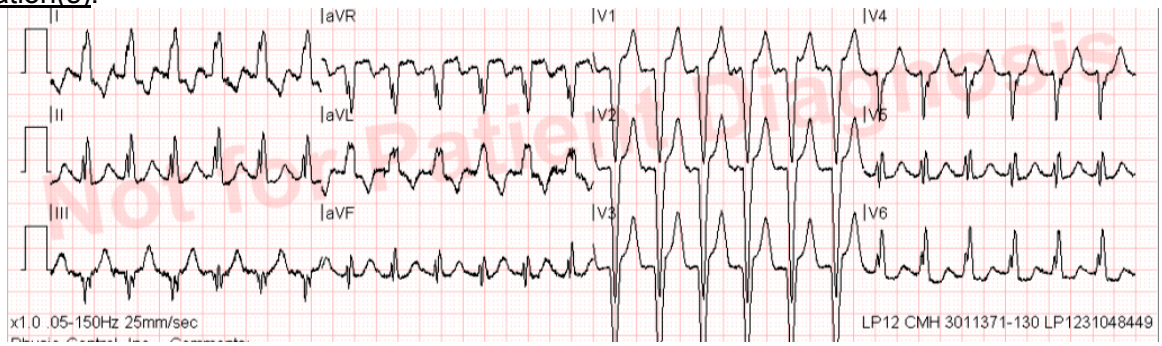


2-90 Tachycardia, Narrow Unstable

Basic Life Support	Advanced Life Support
✱ Calm and reassure patient. Ensure patient does not exert themselves. ✱ **OXYGEN** to maintain SpO_2 between 94-99%. ✱ Apply cardiac monitor limb leads. ✱ *ADULT*: Rate >150 OR *PEDIATRIC*: Rate >160 (child), >220 (infant): ✱ Apply quick combo pads anterior / posterior. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Obtain vital signs.	✱ Obtain 12-lead **EKG**. ✱ IV/IO **NS**. ✱ *ADULT*: Rate >150 and symptomatic: ✱ Conscious: Consider **VERSED** 2.5-5 mg IV/IO/IN. ✚ OR **ATIVAN** 2 mg IV/IO. ✚ Consider **FENTANYL** 50-100 mcg IV/IO/IN (max 300 mcg). ✱ Synchronized **CARDIOVERSION** 125 J (if unsuccessful, increase to 200 J). ✱ *PEDIATRIC*: Rate >180 (child), >220 (infant) and symptomatic: ✱ Consider **vagal** maneuvers. ✱ **ADENOSINE** 0.1 mg/kg RAPID IV/IO (max 6 mg). ✚ If ineffective, 2nd and/or 3rd dose at 0.2 mg/kg (max 12 mg). ✱ Conscious: Consider **VERSED** IV/IO/IN. ✖ Over 12 yrs: Same as adult. ✖ Between 6 yrs and 12 yrs: 0.05 mg/kg. ✖ Under 6 yrs: 0.05-0.1 mg/kg. ✚ OR **ATIVAN** 0.05 mg/kg (max 2 mg) IV/IO. ✚ Consider **FENTANYL** 2-3 mcg/kg IV/IO/IN (max 150 mcg). ✱ Synchronized **CARDIOVERSION** 0.5-1 J/kg. ✱ **CONTACT MEDICAL CONTROL**. ✱ Consider and correct treatable causes: Hypovolemia, hypoxia, hypo/hyperkalemia, hypothermia, hypoglycemia, acidosis, tension pneumothorax, toxins, thrombosis, and cardiac tamponade.

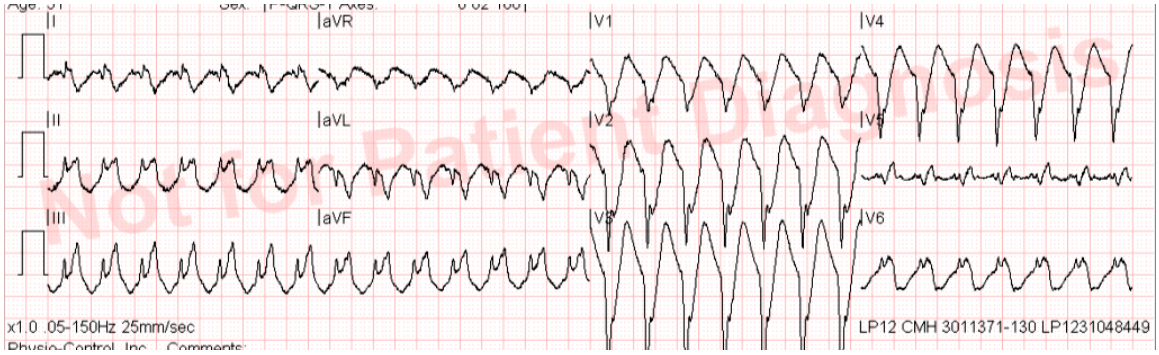
Citation(s):



2-100 Tachycardia, Wide Stable

Basic Life Support	Advanced Life Support
✱ Calm and reassure patient. Ensure patient does not exert themselves. ✱ **OXYGEN** to maintain SpO_2 between 94-99%. ✱ Apply cardiac monitor limb leads. ✱ *ADULT*: Rate >150 OR *PEDIATRIC*: Rate >160 (child), >220 (infant): ✱ Consider: Apply quick combo pads anterior / posterior. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Obtain vital signs.	✱ Obtain 12-lead EKG. ✱ IV/IO **NS**. ✱ *ADULT*: Rate >150: ✱ **AMIODARONE** 150 mg IV/IO over 10 min. Repeat as needed (max 2.2 gm over 24 hr). 150 mg in 100 ml **D5W** over 10 min. ✚ OR **LIDOCAINE** 0.5-0.75 mg/kg IV/IO. ✱ QT/RR >0.4: **MAGNESIUM SULFATE** 1-2 g IV/IO over 15-20 min. ✚ Mix 1-2 g in 100 ml **D5W**. ✱ *PEDIATRIC*: Rate >160 (child), >220 (infant): **CONTACT MEDICAL CONTROL**: ✱ Consider **AMIODARONE** 5 mg/kg IV/IO over 20-60 min. ✚ OR **PROCAINAMIDE** 15 mg/kg IV/IO over 30-60 min. ✱ Consider **VERSED** IV/IO/IN. ✖ Over 12 yrs: Same as adult. ✖ Between 6 yrs and 12 yrs: 0.05 mg/kg. ✖ Under 6 yrs: 0.05-0.1 mg/kg. ✚ OR **ATIVAN** 0.05 mg/kg (max 2 mg) IV/IO. ✚ Consider **FENTANYL** 2-3 mcg/kg IV/IO/IN (max 150 mcg). ✱ Consider synchronized **CARDIOVERSION** 0.5-1 J/kg. ✱ Consider and correct treatable causes: Hypovolemia, hypoxia, hypo/hyperkalemia, hypothermia, hypoglycemia, acidosis, tension pneumothorax, toxins, thrombosis, and cardiac tamponade.

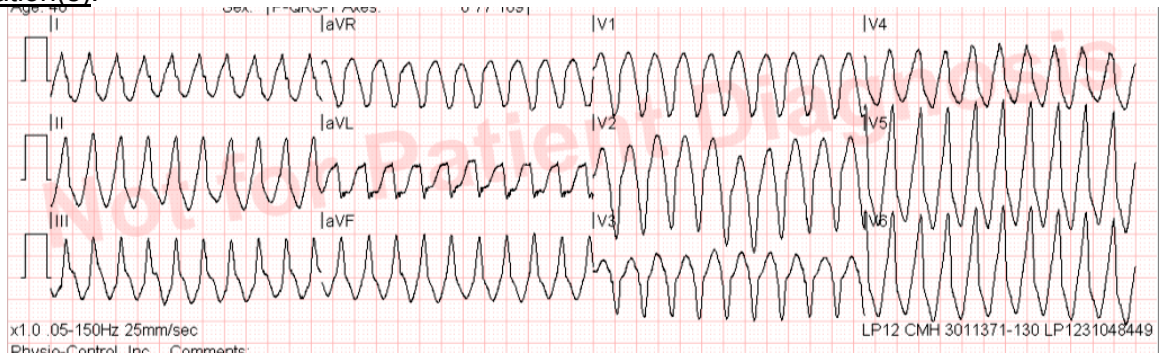
Citation(s):



2-110 Tachycardia, Wide Unstable

Basic Life Support	Advanced Life Support
✱ Calm and reassure patient. Ensure patient does not exert themselves. ✱ **OXYGEN** to maintain SpO_2 between 94-99%. ✱ Apply cardiac monitor limb leads. ✱ *ADULT*: Rate >150 OR *PEDIATRIC*: Rate >160 (child), >220 (infant): ✱ Apply quick combo pads anterior / posterior. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Obtain vital signs.	✱ Obtain 12-lead **EKG**. ✱ IV/IO **NS**. ✱ *ADULT*: Rate >150 and symptomatic: ✱ Conscious: Consider **VERSED** 2.5-5 mg IV/IO/IN. ✚ OR **ATIVAN** 2 mg IV/IO. ✚ Consider **FENTANYL** 50-100 mcg IV/IO/IN (max 300 mcg). ✱ Synchronized **CARDIOVERSION** 125 J (if unsuccessful, increase to 200 J). ✱ QT/RR >0.4: **MAGNESIUM SULFATE** 1-2 g IV/IO over 15-20 min. ✚ Mix 1-2 g in 100 ml **D5W**. ✱ *PEDIATRIC*: Rate >180 (child), >220 (infant) and symptomatic: ✱ Conscious: Consider **VERSED** IV/IO/IN. ✖ Over 12 yrs: Same as adult. ✖ Between 6 yrs and 12 yrs: 0.05 mg/kg. ✖ Under 6 yrs: 0.05-0.1 mg/kg. ✚ OR **ATIVAN** 0.05 mg/kg (max 2 mg) IV/IO. ✚ Consider **FENTANYL** 2-3 mcg/kg IV/IO/IN (max 150 mcg). ✱ Synchronized **CARDIOVERSION** 0.5-1 J/kg. ✱ **CONTACT MEDICAL CONTROL**: ✚ **AMIODARONE** 5 mg/kg IV/IO over 20-60 min. ✖ OR **PROCAINAMIDE** 15 mg/kg IV/IO over 30-60 min. ✱ Consider and correct treatable causes: Hypovolemia, hypoxia, hypo/hyperkalemia, hypothermia, hypoglycemia, acidosis, tension pneumothorax, toxins, thrombosis, and cardiac tamponade.

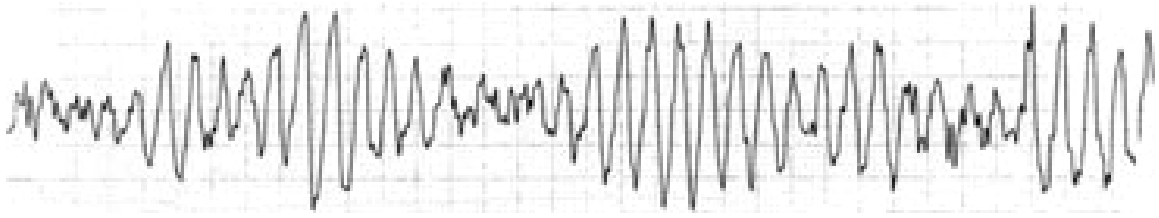
Citation(s):



2-120 Torsades de Pointes

Basic Life Support	Advanced Life Support
✱ Calm and reassure patient. Ensure patient does not exert themselves. ✱ **OXYGEN** to maintain SpO_2 between 94-99%. ✱ Apply cardiac monitor limb leads. Apply quick combo pads anterior / posterior. ✱ Monitor pulseoximetry. Assist ALS with capnograpny. ✱ Obtain vital signs.	✱ Obtain 12-lead **EKG**. ✱ IV/IO **NS**. ✱ *ADULT*: ✱ **MAGNESIUM SULFATE** 1-2 g over 15-20 min. ✚ Mix 1-2 g in 100 ml **D5W**. ✱ Follow with **MAGNESIUM SULFATE** 0.5-1 g/hr IV/IO titrated to control Torsades de Pointes. ✱ Conscious: Consider **VERSED** 2.5-5 mg IV/IO/IN. ✚ OR **ATIVAN** 2 mg IV/IO. ✚ Consider **FENTANYL** 50-100 mcg IV/IO/IN (max 300 mcg). ✱ Synchronized **CARDIOVERSION** 200 J. ✱ *PEDIATRIC*: ✱ **MAGNESIUM SULFATE** 25-50 mg/kg over 15-20 min. ✚ Mix in 100 ml **D5W** (max 2 g). ✱ Conscious: Consider **VERSED** IV/IO/IN. ✖ Over 12 yrs: Same as adult. ✖ Between 6 yrs and 12 yrs: 0.05 mg/kg. ✖ Under 6 yrs: 0.05-0.1 mg/kg. ✚ OR **ATIVAN** 0.05 mg/kg (max 2 mg) IV/IO. ✚ Consider **FENTANYL** 2-3 mcg/kg IV/IO/IN (max 150 mcg). ✱ Synchronized **CARDIOVERSION** 0.5-1 J/kg.

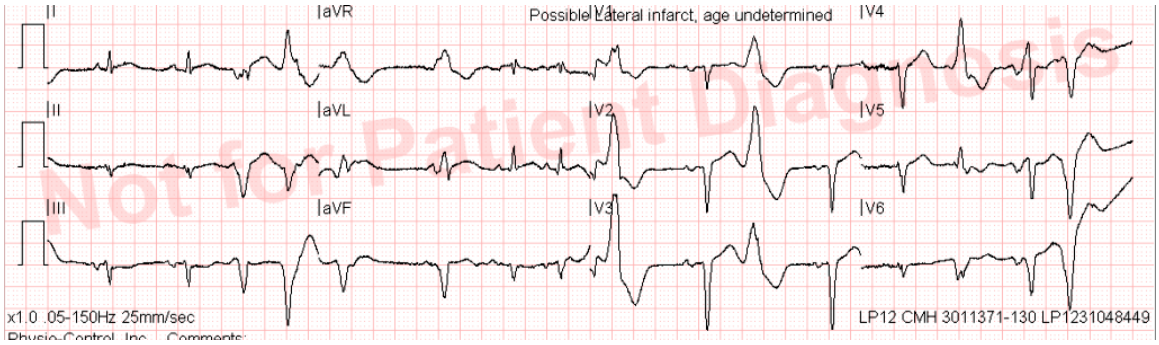
Citation(s):



2-130 Ventricular Ectopy

Basic Life Support	Advanced Life Support
✱ Calm and reassure patient. Ensure patient does not exert themselves. ✱ **OXYGEN** to maintain SpO_2 between 94-99%. ✱ Apply cardiac monitor limb leads. ✱ Consider apply quick combo pads anterior / posterior. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Obtain vital signs.	✱ Obtain 12-lead EKG. ✱ IV/IO **NS**. ✱ Treat causes of ectopy: Hypoxia, infarction, or ischemia. ✱ **CONTACT MEDICAL CONTROL**. ✱ Consider **LIDOCAINE**. ✱ Consider **AMIODARONE**.

Citation(s):



2-140 Ventricular Fibrillation (V-Fib / V-Tach)

Basic Life Support

- ✱ Confirm pulselessness and apnea.
- ✱ Attempt to determine down-time, history, and DNR status.
- ✱ Begin **CPR**.
  - ✱ Push hard and fast at 100/min.
  - ✱ Minimize compression interruptions.
  - ✱ Rotate compressors every 2 minutes at rhythm check.
- ✱ Establish and maintain airway and ventilate 100% **OXYGEN**.
  - ✱ Establish BLS **AIRWAY**.
  - ✱ Compressions : Ventilations ratio = 30:2 unless intubated, then 8-10 breaths per min.
  - ✱ Avoid hyperventilation.
- ✱ Monitor pulseoximetry. Assist ALS with capnography.
- ✱ Apply cardiac monitor quick combo pads and limb leads.

Advanced Life Support

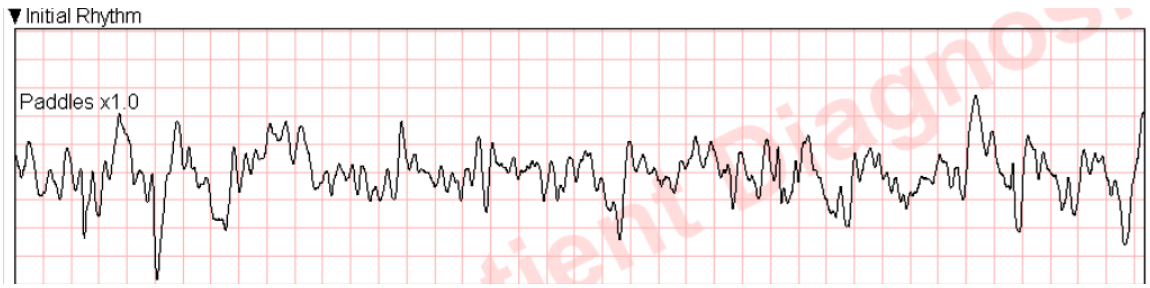
- ✱ Witnessed arrest: **DEFIBRILLATE** immediately. Unwitnessed: 2 min of **CPR**, then **DEFIBRILLATE**. Immediately do **CPR** for 2 min after each shock before rhythm or pulse check.
  - ✱ *ADULT*: 360 J.
  - ✱ *PEDIATRIC*: 4 J/kg.
- ✱ Consider **INTUBATION**.
- ✱ IV/IO **NS**.

- ✱ *ADULT:*
  - ✱ **EPINEPHRINE 1:10,000** 1 mg IV/IO every 3-5 min.
  - ✱ **DEFIBRILLATE** 360 J and immediately resume **CPR**.
  - ✱ **LIDOCAINE** 1-1.5 mg/kg IV/IO repeat 3-5 min at half dose (max 3 mg/kg).
    - ✚ OR **AMIODARONE** 300 mg IV/IO. Recurrent VF/VT: Additional 150 mg (total max 450 mg).
  - ✱ Torsades de points: Consider **MAGNESIUM SULFATE** 1-2 g over 15-20 min IV/IO.

- ✱ *PEDIATRIC:*
  - ✱ **EPINEPHRINE 1:10,000** 0.01 mg/kg IV/IO OR **1:1,000** 0.1 mg/kg ET every 3-5 min.
  - ✱ **DEFIBRILLATE** 4 J/kg, add 2 J/kg each shock (max 10 J/kg) and immediately resume **CPR**.
  - ✱ **LIDOCAINE** 1-1.5 mg/kg IV/IO repeat 3-5 min at half dose (max 3 mg/kg).
    - ✚ OR **AMIODARONE** 5 mg/kg (max 3 doses) IV/IO.
  - ✱ Torsades de points: Consider **MAGNESIUM SULFATE** 25-50 mg/kg over 15-20 min IV/IO.

- ✱ Consider **SODIUM BICARB** 1 mEq/kg IV/IO every 10 min (ensure adequate ventilations)
- ✱ Consider and correct treatable causes.
- ✱ *ADULT*: Contact **MEDICAL CONTROL** If $ETCO_2$ <10 for 10 min or no response after 20 min, consider termination of resuscitation.

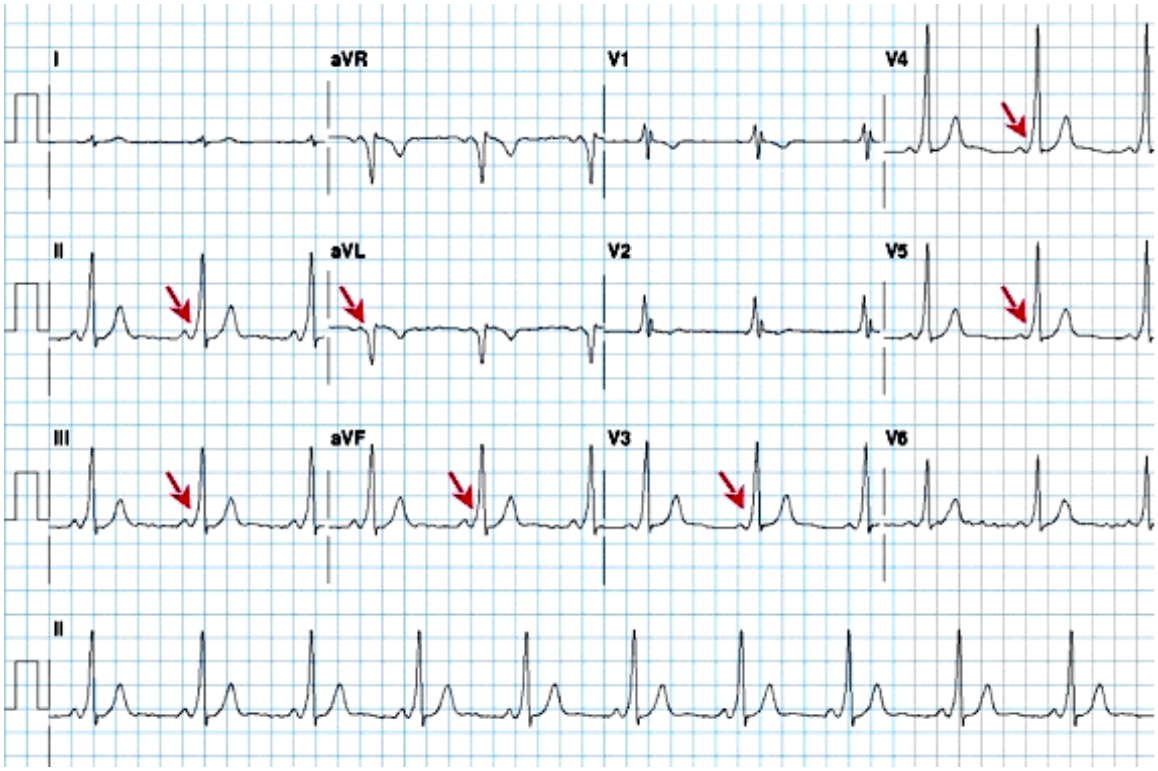
Citation(s):



2-150 Wolff-Parkinson-White (WPW)

Basic Life Support	Advanced Life Support
✱ Calm and reassure patient. Ensure patient does not exert themselves. ✱ **OXYGEN** to maintain SpO_2 between 94-99%. ✱ Apply cardiac monitor limb leads. ✱ Consider apply quick combo pads anterior / posterior. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Obtain vital signs.	✱ Obtain 12-lead EKG. ✱ IV/IO **NS**. ✱ **PROCAINAMIDE** 20 mg/min. Continue until: arrhythmia subsides, hypotension, QRS widens by >50%, or total dose of 17 mg/kg. ✱ Mix 1 g in 250 ml **D5W** = 4 mg/ml. ✚ 5 ml/min = 20 mg/min = 300 ml/hr. ✱ Post conversion: **PROCAINAMIDE** 1-4 mg/min. ✚ 1 ml/min = 4 mg/min = 60 ml/hr.

Citation(s):



3-10 Drowning / Near Drowning

Basic Life Support	Advanced Life Support

✱ Remove from water.
✱ Open and maintain airway.
  ✱ Be prepared to suction airway.
✱ Pulseless: Begin **CPR**.
  ✱ Push hard and fast at 100/min.
  ✱ Minimize compression interruptions.
  ✱ Rotate compressors every 2 minutes at rhythm check or as soon as practical.
  ✱ Establish and maintain airway and ventilate 100% **OXYGEN**.
  ✚ Establish BLS **AIRWAY**.
  ✚ Compressions : Ventilations ratio = 30:2 unless intubated, then 8-10 breaths per min.
  ✚ Avoid hyperventilation.
✱ *ADULT*: Consider assisting ALS with **CPAP**.
✱ Dry and warm patient.
✱ Obtain core body temperature.
✱ Monitor pulseoximetry. Assist ALS with capnography.
✱ Apply cardiac monitor limb leads.
✱ Consider apply quick combo pads.
✱ Obtain vital signs.
✱ Attempt to determine down-time, and history.
	✱ IV/IO warm **NS**.
	✱ Pulseless: *ADULT*: V-Fib: **DEFIBRILLATE** 360 J once.
	  ✱ Core temp >86 F: **ACLS** per protocol.
	  ✚ Remember, hypothermic patients requires longer intervals between drugs due to slower absorption and metabolism rates.
	  ✱ Core temp <86 F: **CPR** only.
	✱ Consider **INTUBATION**.
	✱ Treat cardiac dysrhythmias per specific protocol.
	✱ Consider **air ambulance** to expedite transport.

Citation(s):

3-20 Heat Exhaustion / Heat Stroke

Basic Life Support	Advanced Life Support
✱ Remove from exposure. ✱ Open and maintain airway. ✱ Attempt to determine down-time, and history. ✱ Consider **OXYGEN** if SpO_2 <88%. ✱ Passively **cool** patient. ✱ Obtain core body temperature. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs.	✱ IV/IO cool **NS** or **LR**. ✱ *ADULT*: 125 ml/hr. ✱ *PEDIATRIC*: 20 ml/kg may repeat once. ✱ Normal mentation: Heat exhaustion. ✱ Treat specific complaints per protocol. ✱ Altered mentation: Heat stroke. ✱ **Rapid cooling** is indicated. Attempt to cool to 102 F. ✱ Monitor closely for arrhythmias. Treat per protocol. ✱ Tremors: **ATIVAN** 2 mg IV/IO.

Citation(s):

NOAA's National Weather Service

Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

3-30 Hypothermia / Frostbite

Basic Life Support

- ✱ Remove from exposure.
- ✱ Open and maintain airway.
  - ✱ Be prepared to suction airway.
- ✱ Pulseless: Begin **CPR**.
  - ✱ Push hard and fast at 100/min.
  - ✱ Minimize compression interruptions.
  - ✱ Rotate compressors every 2 minutes at rhythm check or as soon as practical.
  - ✱ Establish and maintain airway and ventilate 100% **OXYGEN**.
    - ✚ Establish BLS **AIRWAY**.
    - ✚ Compressions : Ventilations ratio = 30:2 unless intubated, then 8-10 breaths per min.
    - ✚ Avoid hyperventilation.
- ✱ **Dry** and **warm** patient.
- ✱ Remove constricting or wet clothing and jewelry.
- ✱ Cover affected tissue with loose, dry, sterile dressing.
- ✱ Obtain core body temperature.
- ✱ Monitor pulseoximetry. Assist ALS with capnography.
- ✱ Apply cardiac monitor limb leads.
- ✱ Consider: Apply quick combo pads.
- ✱ Obtain vital signs.
- ✱ Attempt to determine down-time, and history.

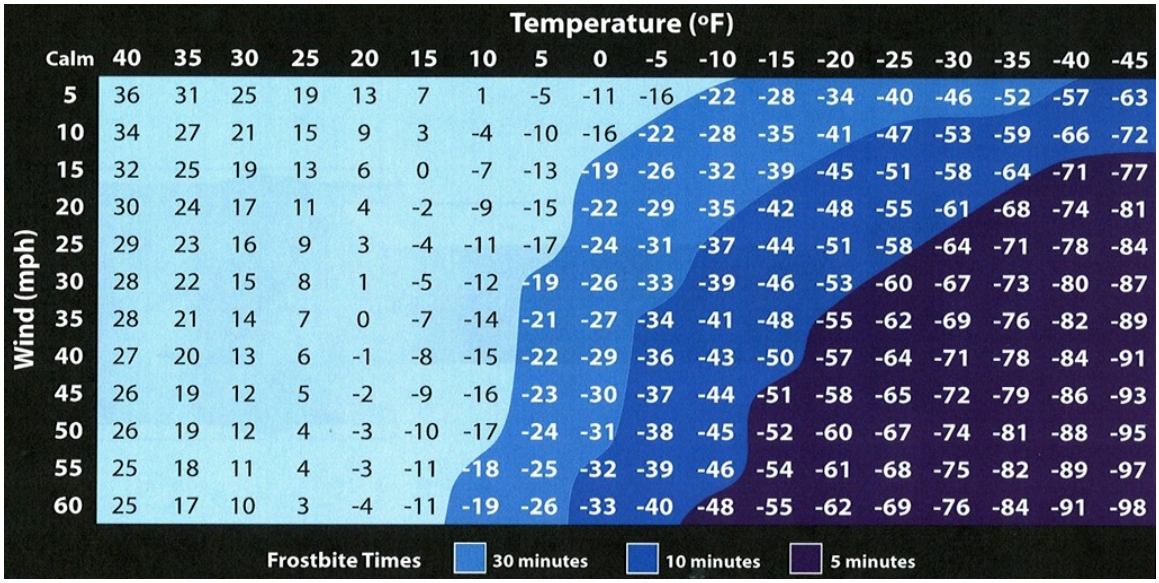
Advanced Life Support

- ✱ IV/IO warm **NS**.
- ✱ Consider **INTUBATION**.

- ✱ *ADULT*:
  - ✱ Consider **FENTANYL** 50-100 mcg every 5-20 min (max 300 mcg) IV/IO/IN.
    - ✚ OR **MORPHINE** 2-5 mg (max 10 mg). Maintain SBP >100 IV/IO.
  - ✱ Nausea/Vomiting: Consider **ZOFRAN** 4 mg IV/IM/IN (max 8 mg).
    - ✚ OR **PHENERGAN** 12.5-25 mg IM or IV/IO infused in **NS** over 15-30 min.

- ✱ *PEDIATRIC*:
  - ✱ Consider **FENTANYL** 2-3 mcg/kg (max 150 mcg) IV/IO/IN.
    - ✚ OR **MORPHINE** 0.1-0.2 mg/kg IV/IO.

Citation(s):

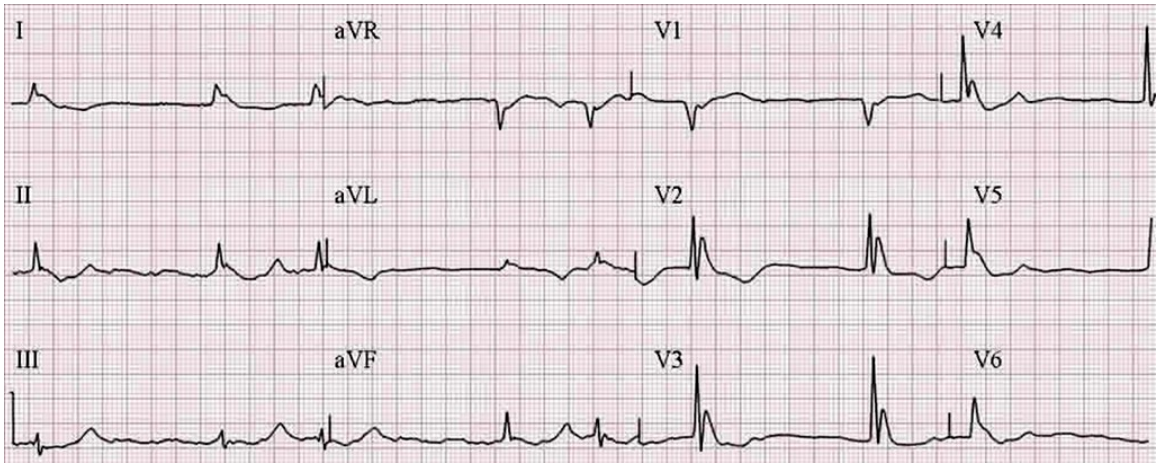


3-40 Hypothermic Cardiac Arrest

Basic Life Support	Advanced Life Support

✱ Remove from exposure.
✱ Open and maintain airway.
✱ Pulseless: Begin **CPR**.
  ✱ Push hard and fast at 100/min.
  ✱ Minimize compression interruptions.
  ✱ Rotate compressors every 2 minutes at rhythm check or as soon as practical.
✱ Establish and maintain airway and ventilate 100% **OXYGEN**.
  ✱ Establish BLS **AIRWAY**.
  ✱ Compressions : Ventilations ratio = 30:2 unless intubated, then 8-10 breaths per min.
  ✱ Avoid hyperventilation.
✱ **Dry** patient.
✱ **Warm** patient with blankets and warming packs in arm pits and groin.
✱ Obtain core body temperature.
✱ Monitor pulseoximetry. Assist ALS with capnography.
✱ Apply cardiac monitor quick combo pads and limb leads.
✱ Obtain vital signs.
✱ Attempt to determine down-time, and history.
	✱ V-Fib: **DEFIBRILLATE** once.
	  ✱ *ADULT*: 360 J.
	  ✱ *PEDIATRIC*: 2 J/kg.
	✱ Consider **INTUBATION**.
	✱ IV/IO warm **NS**.
	✱ Core temp >86 F: **ACLS** per protocol.
	  ✱ Remember, hypothermic patients requires longer intervals between drugs due to slower absorption and metabolism rates.
	✱ Core temp <86 F: **CPR** only.
	✱ Do not delay transport for rewarming.
	✱ Rapid transport to hospital.

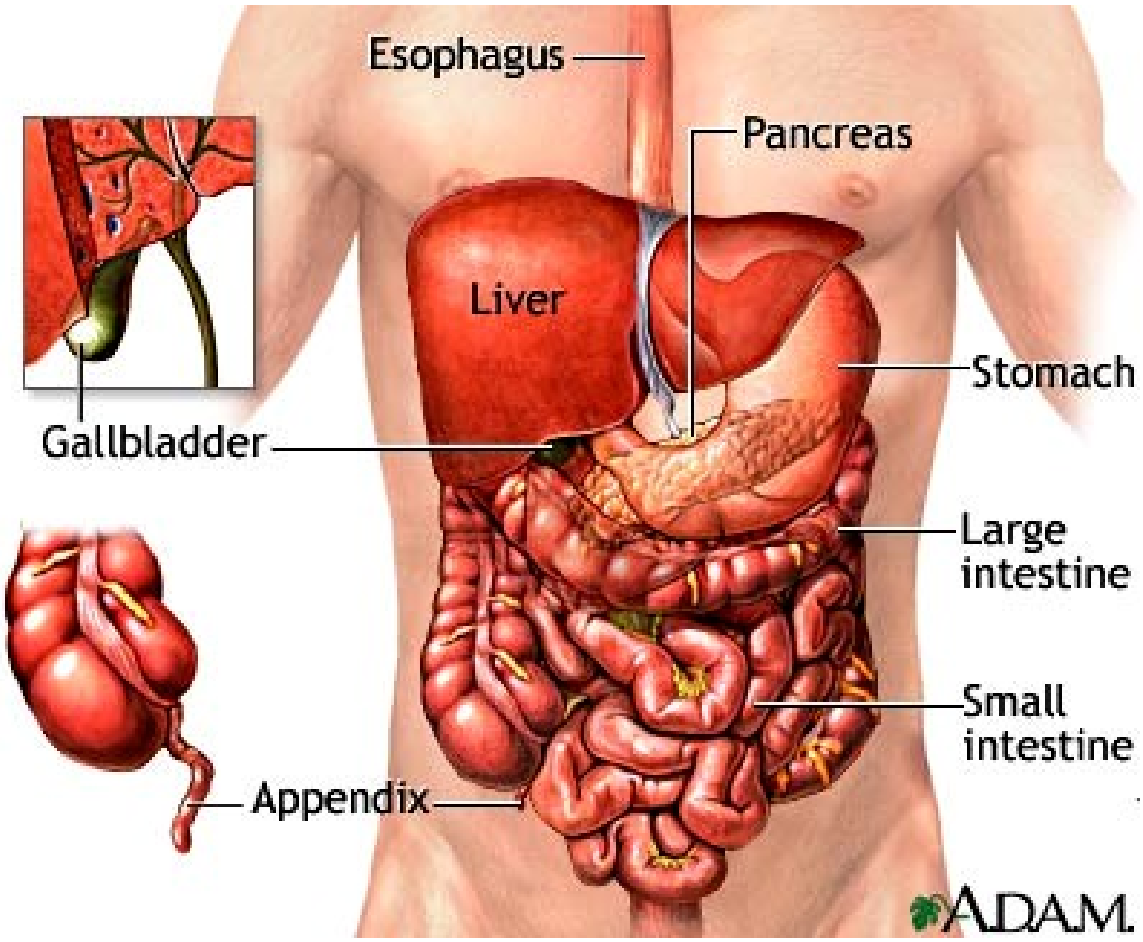
Citation(s):



4-10 Abdominal Pain / Nausea

Basic Life Support	Advanced Life Support
✱ Consider **OXYGEN** if SpO_2 <88%. ✱ Obtain vital signs. ✱ Monitor pulseoximetry. ✱ Apply cardiac monitor limb leads. ✱ Identify possible causes.	✱ IV/IO **NS**. ✱ *ADULT*: ✱ Nausea/Vomiting: Consider **ZOFRAN** 4 mg IV/IM/IO/IN. ✚ OR **PHENERGAN** 12.5-25 mg IM or IV/IO infused in **NS** over 15-30 min. ✱ Consider **FENTANYL** 50-100 mcg (max 300 mcg) IV/IO/IN. ✚ OR **MORPHINE** 2-5 mg (max 10 mg) IV/IO. Maintain SBP >100. ✱ *PEDIATRIC*: ✱ Nausea/Vomiting (>2 yrs & <27 kg): Consider **ZOFRAN** 0.15 mg IV/IM/IO/IN. ✚ OR **PHENERGAN** 0.25-1 mg/kg IM or IV/IO infused in **NS** over 15-30 min (max 25 mg). ✱ Consider **FENTANYL** 2-3 mcg/kg (max 150 mcg) IV/IO/IN. ✚ OR **MORPHINE** 0.1-0.2 mg/kg IV/IO. ✱ Anxiety: Contact **MEDICAL CONTROL** for: ✚ Consider: **VERSED** IV/IO/IN. ✖ Over 12 yrs: Same as adult. ✖ Between 6 yrs and 12 yrs: 0.05 mg/kg. ✖ Under 6 yrs: 0.05-0.1 mg/kg. ✚ Consider: **ATIVAN** 0.05 mg/kg (max 2 mg) IV/IO.

Citation(s):



4-20 Anaphylaxis / Allergic Reaction

Basic Life Support	Advanced Life Support
✱ Remove allergen. ✱ Obtain vital signs. ✱ **OXYGEN** to maintain SpO_2 at 100%. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Apply cardiac monitor limb leads. ✱ If paramedic unavailable and difficulty breathing, trouble swallowing, or hypotensive: ✱ **EPINEPHRINE AUTO-INJECTOR**. ✚ ALS unit should be en route. ✱ Identify possible causes.	✱ IV/IO **NS**. ✱ *ADULT*: ✱ Uncompensated shock: **EPINEPHRINE 1:10,000** 0.3 mg IV/IO. Repeat every 15 min as needed. ✚ OR **EPINEPHRINE 1:1,000** 0.3-0.5 mg IM/SQ. ✱ **BENADRYL** 25-50 mg IV/IO/IM. ✱ **SOLU-MEDROL** 125 mg IV/IO. ✱ Wheezing or obstructed $ETCO_2$ waveform: Consider **DUONEB** nebulized (max 1 dose). ✖ 0.5 mg **IPRATROPIUM** + 1.5mg **ALBUTEROL**. ✚ Consider **ALBUTEROL** 2.5 mg nebulized. ✚ Consider **XOPENEX** 0.63-1.25 mg nebulized. ✱ *PEDIATRIC*: ✱ **EPINEPHRINE 1:1,000** 0.01 mg/kg IM/SQ (max 0.3 mg) repeat every 15 min as needed. ✱ **BENADRYL** 1.25 mg/kg IV/IO/IM (max 50 mg). ✱ **SOLU-MEDROL** 1-2 mg/kg IV/IO (max 125 mg). ✱ Wheezing or obstructed $ETCO_2$ waveform: Consider **DUONEB** nebulized (max 1 dose). 0.25 mg **IPRATROPIUM** + 1.5mg **ALBUTEROL**. ✚ Consider **ALBUTEROL** 2.5 mg nebulized. ✚ >6 yr old: Consider **XOPENEX** 0.31-0.63 mg nebulized.

Citation(s): (Citizens Memorial Hospital, 2014)

4-30 Asthma

Basic Life Support	Advanced Life Support
✱ **OXYGEN** to maintain SpO_2 between 88-92%. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs.	✱ IV/IO **NS**. ✱ *ADULT*: ✱ Consider **DUONEB.** ✚ 0.5 mg **IPRATROPIUM** + 2.5 mg **ALBUTEROL** nebulized (max 1 dose). ✱ **ALBUTEROL** 2.5 mg in NS 3ml nebulized. ✱ HR >100: Consider **XOPENEX** 0.63-1.25 mg nebulized. ✱ **SOLU-MEDROL** 125 mg IV/IO. ✱ Decompensating: Consider **DECADRON** 12 mg via nebulizer (max 1 dose). ✱ Consider **EPINEPHRINE 1:1,000** 0.3-0.5 mg IM/SQ. Caution when >55 yr old with cardiac history. ✱ Contact **MEDICAL CONTROL** for: Consider **MAGNESIUM SULFATE** 1-2 g IV/IO over 15-20 min. ✱ Consider trial of **CPAP** with nebulizer. ✱ *PEDIATRIC*: ✱ Consider **DUONEB.** ✚ 0.25 mg **IPRATROPIUM** + 2.5 mg **ALBUTEROL** nebulized (max 1 dose). ✱ **ALBUTEROL** 2.5mg in NS 3 ml nebulized. ✱ >6 yr old: Consider **XOPENEX** 0.31-0.63 mg nebulized. ✱ **CONTACT MEDICAL CONTROL**: ✚ Consider **SOLU-MEDROL** 1-2 mg/kg IV/IO. ✚ Consider **MAGNESIUM SULFATE** 25-50 mg/kg IV/IO in D5W over 15-20 min. ✱ Consider **INTUBATION** only as a last resort.

Citation(s):

4-40 Behavioral / Psychiatric

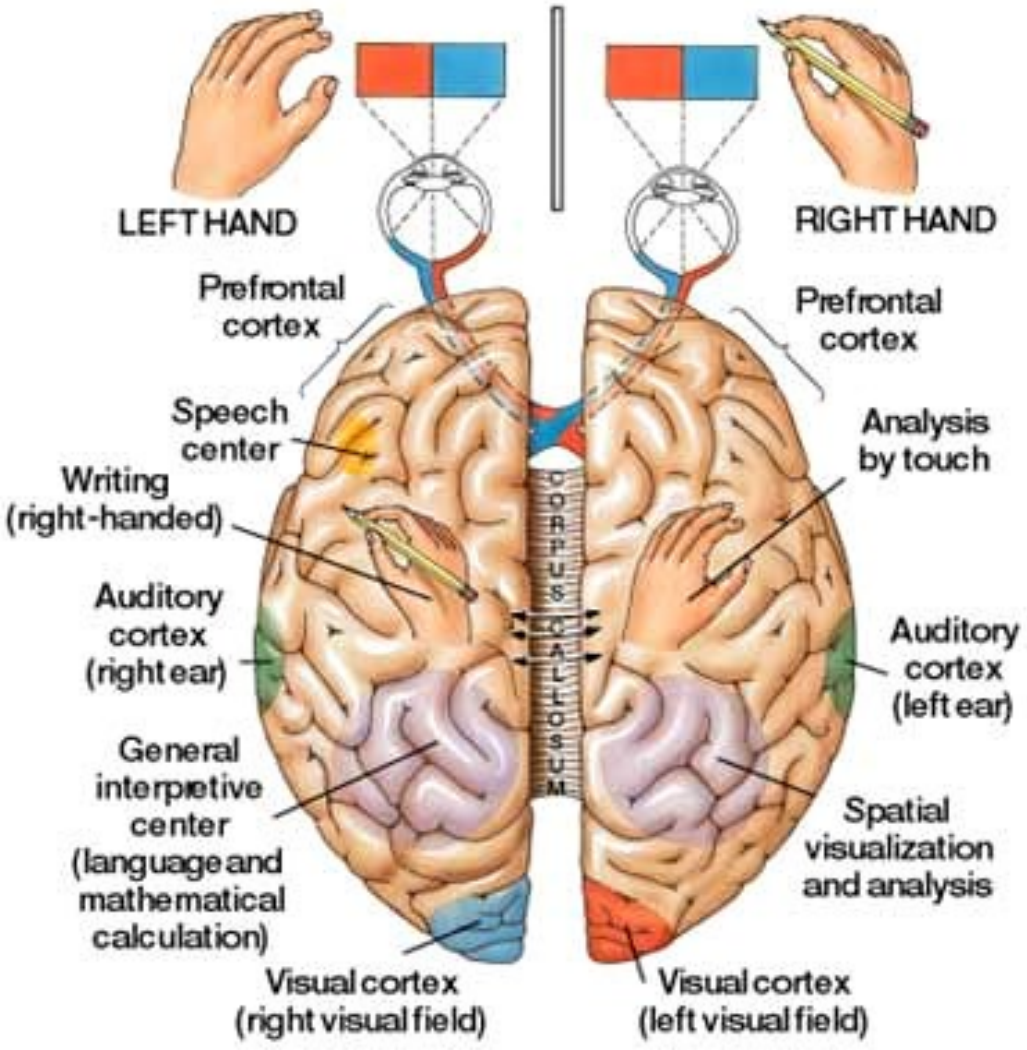
Basic Life Support	Advanced Life Support
✱ Ensure scene safety and consider law enforcement for physical restraint if necessary. ✱ Verbal de-escalation. Stay calm and calm the patient. ✱ Identify possible causes. Obtain history of current event, crisis, toxic exposure, drugs, ETOH, suicidal, or homicidal. ✱ Consider performing glucose check. ✱ ALOC: Treat per appropriate protocol.	✱ Mild (responds to verbal de-escalation): Contact **MEDICAL CONTROL** for: ✱ *ADULT* ✚ Anxiety: ✖ Consider **VALIUM** 2 mg IV/IM. ✖ Consider **ATIVAN** 2 mg IV/IO. ✚ Agitation: Consider **HALDOL** 2-5 mg IV/IM. ✱ *PEDIATRIC*: Anxiety: ✚ Consider **VALIUM** 0.2 mg/kg IV/IM. ✚ Consider **ATIVAN** 0.05 mg/kg (max 2 mg) IV/IO. ✱ Transport in position of comfort. ✱ Moderate to severe (requires restraint for crew/patient safety): ✱ *ADULT*: ✚ Physical restraints ✖ Least restrictive: manual restraint OR four-point soft **restraints**. ✖ If handcuffed by law enforcement, they must be present throughout entire transport. ✚ **HALDOL** 5 mg IV/IM. ✚ Consider **VALIUM** 2-5 mg IV/IM. ✚ Consider **ATIVAN** 2 mg IV/IO. ✚ Consider **BENADRYL** 50 mg IV/IM. ✱ *PEDIATRIC*: Anxiety: ✚ Consider **VALIUM** 1 mg IV/IM. ✚ Consider **ATIVAN** 0.05 mg/kg (max 2mg) IV/IO. ✱ **CONTACT MEDICAL CONTROL** after if sedation above used. ✚ Consider **KETAMINE** 1-4.5 mg/kg IV/IO/IM. ✱ Transport in position of safety. ✱ If **HALDOL** given: Obtain 12-lead EKG. Assess QT.

Citation(s): (Citizens Memorial Hospital, 2013)

4-50 CerebroVascular Accident (CVA) / Stroke

Basic Life Support	Advanced Life Support
✱ **OXYGEN** to maintain SpO_2 between 94-99%. ✱ Monitor pulseoximetry. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs. ✱ Perform **glucose check**. ✱ Glucose <70 mg/dl: Follow hypoglycemia protocol. ✱ Elevate head of cot.	✱ IV/IO **NS**. ✱ Draw blood samples. ✱ Complete Cincinnati Stroke Scale (facial droop, arm drift, speech). ✱ Obtain 12-lead EKG. ✱ If onset of symptoms <4 hours ago: Consider **air ambulance** to expedite transport. Stroke patients shall be transported to the closest appropriate stroke center. ✱ Patients who suffer a stroke (impaired blood flow to the brain) shall be transported to a stroke center (MO Statute 190.243.1). ✱ When initial transport from the scene would be prolonged, the patient may be transported to the nearest appropriate facility for stabilization (MO Statute 190.243.2). ✱ List of Stroke Centers is pending from MO BEMS. ✚ If receiving facility has cot scales, weigh pt and cot upon entry to ER and weigh empty cot after transfer. Report pt net weight to receiving RN.

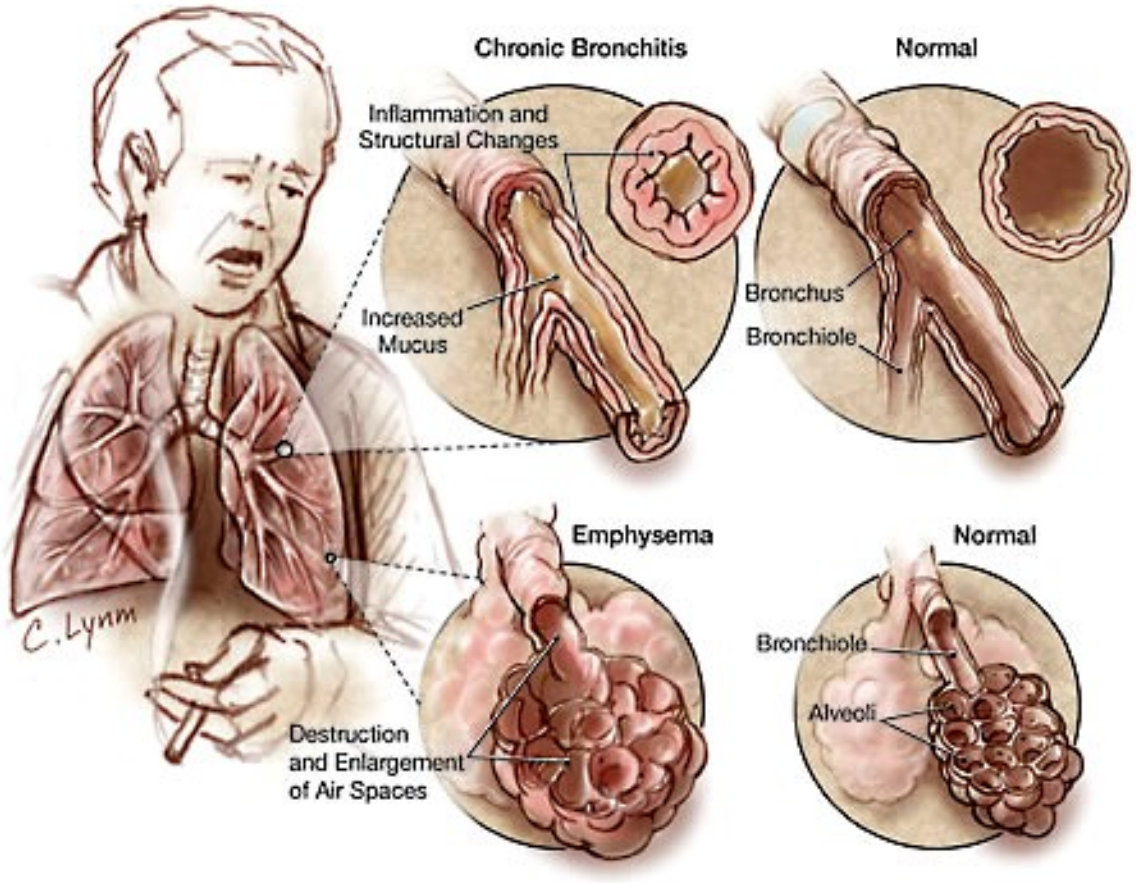
Citation(s): (Chapter 190 - Emergency services, 2012), (Proposed regulations, 2010)



4-60 Chronic Obstructive Pulmonary Disease (COPD)

Basic Life Support	Advanced Life Support
✱ **OXYGEN** to maintain SpO_2 between 88-92%. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ *ADULT*: Consider assisting ALS with **CPAP**. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs.	✱ Assess the need to **intubate**. ✱ IV/IO **NS**. ✱ Consider 12-lead EKG. ✱ *ADULT*: ✱ Consider **DUONEB** nebulized (max 1 dose). ✚ 0.5 mg **IPRATROPIUM** + 2.5 mg **ALBUTEROL**. ✱ Consider **ALBUTEROL** 2.5 mg in NS 3 ml nebulized. Repeat continuously as needed. ✱ Consider **XOPENEX** 0.63-1.25 mg nebulized. ✱ **SOLU-MEDROL** 125 mg IV/IO. ✱ Contact **MEDICAL CONTROL** for: Consider **MAGNESIUM SULFATE** 1-2 g IV/IO over 15-20 min.

Citation(s):



4-70 Congestive Heart Failure (CHF)

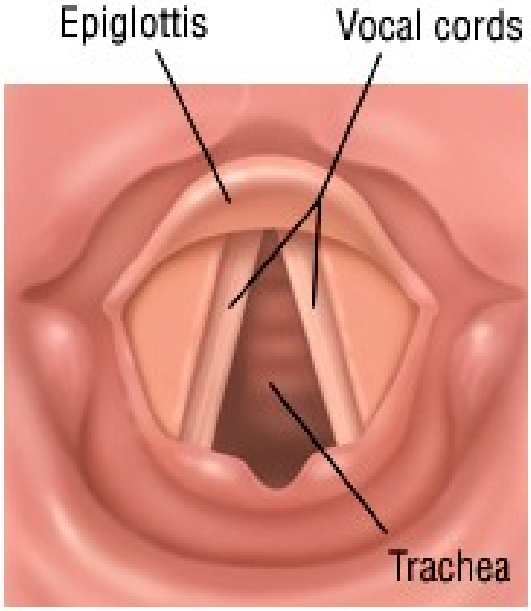
Basic Life Support	Advanced Life Support
✱ **OXYGEN** to maintain SpO_2 between 94-99%. ✱ Monitor pulseoximetry. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs. ✱ *ADULT*: Consider assisting ALS with **CPAP**. ✱ Elevate head of cot.	✱ Assess the need to **intubate**. ✱ IV/IO **SALINE LOCK**. ✱ Obtain 12-lead EKG. ✱ Consider 15-lead EKG. ✱ *ADULT*: ✱ SBP>100: **NITROGLYCERIN** 0.4 mg SL every 5 min until no dyspnea or SBP <90. ✱ **NITROGLYCERIN** 50 mcg/min titrate to SBP >100 and pain. ✱ SBP <100: **DOPAMINE** 5-15 mcg/kg/min. ✱ **LASIX** 40 mg IV/IO/IM. ✚ Patient currently on diuretics: **LASIX** double prescribed dose. ✱ Wheezing or obstructed $ETCO_2$ waveform: Consider **DUONEB.** ✖ 0.5 mg **IPRATROPIUM** + 2.5 mg **ALBUTEROL** nebulized (max 1 dose). ✚ Consider **ALBUTEROL** 2.5 mg in NS 3 ml nebulized. ✚ Consider **XOPENEX** 0.63-1.25 mg nebulized. ✱ Consider **CPAP**. ✱ *PEDIATRIC*: ✱ **LASIX** 1-2 mg/kg IV/IO/IM (max 40 mg). ✱ Wheezing or obstructed $ETCO_2$ waveform: Consider **DUONEB.** ✖ 0.25 mg **IPRATROPIUM** + 2.5 mg **ALBUTEROL** nebulized (max 1 dose). ✚ Consider **ALBUTEROL** 2.5 mg in NS 3 ml nebulized. ✚ >6 yr old: Consider **XOPENEX** 0.31-0.63 mg nebulized.

Citation(s):

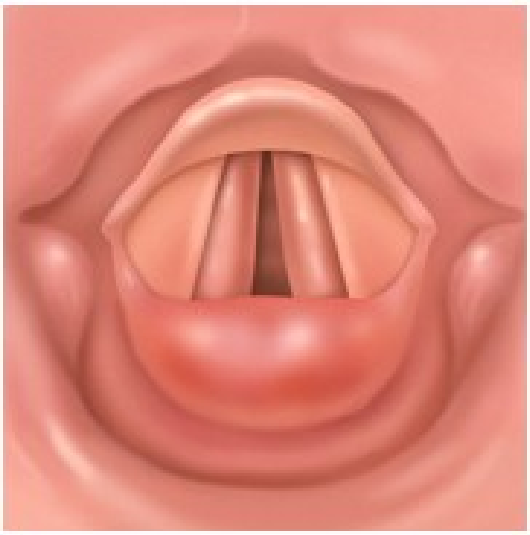
4-80 Croup

Basic Life Support	Advanced Life Support
✱ **OXYGEN** to maintain SpO_2 between 88-92%. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs.	✱ **DECADRON** 0.6 mg/kg IV/IM/PO/Neb (max 20 mg). ✱ In the absence of Decadron, **SOLU-MEDROL** 2 mg/kg IV/IO/IM. ✱ Consider **RACEMIC EPINEPHRINE** 0.5 ml with 3 ml **NS** via nebulizer. ✱ In the absence of Racemic Epinephrine, **EPINEPHRINE 1:1,000** may be used 0.5 ml/kg (max 5 ml) nebulized.

Citation(s):



Normal larynx

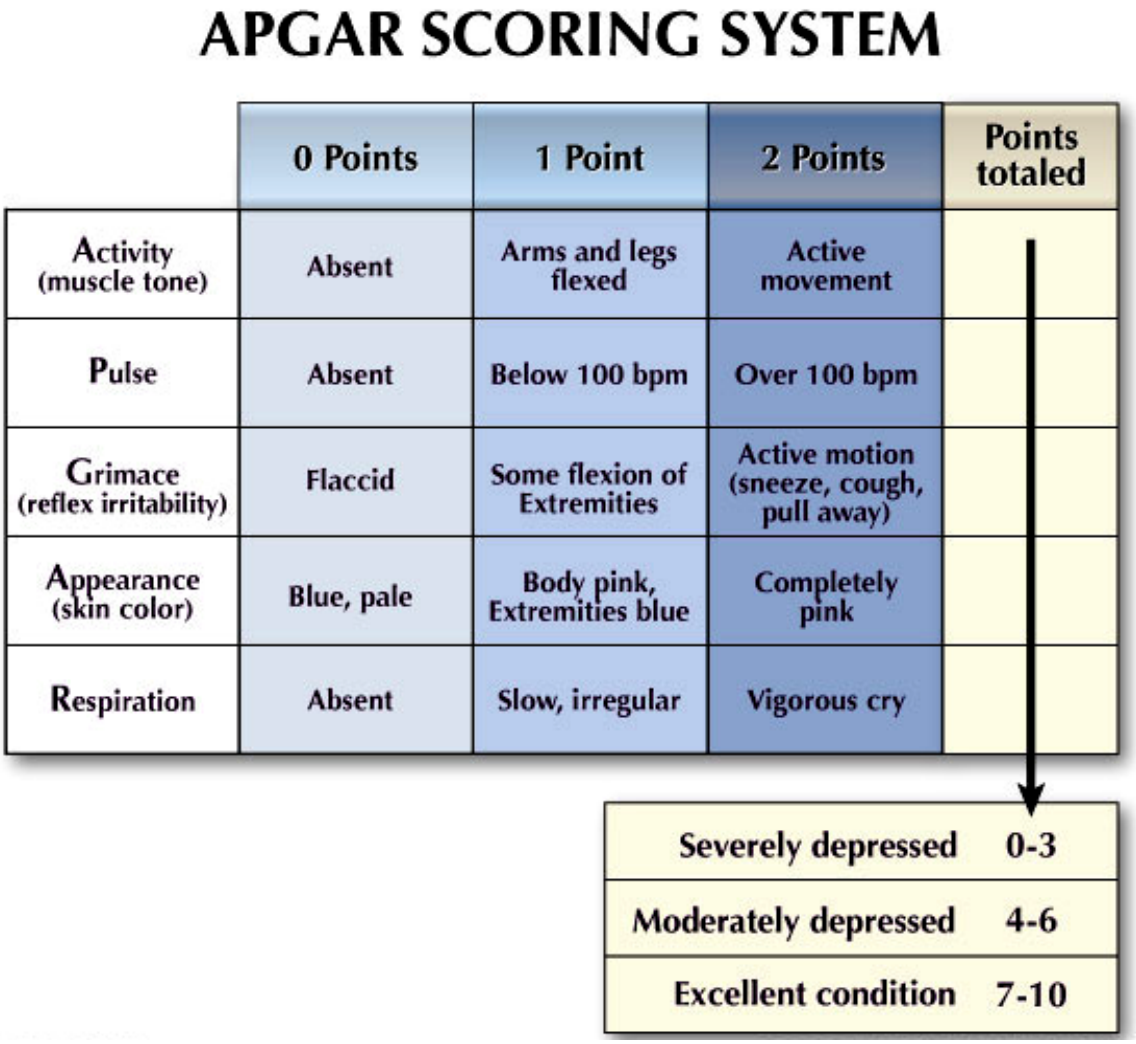


Inflamed larynx

4-90 Emergency Childbirth

Basic Life Support	Advanced Life Support
✱ Consider **OXYGEN** if SpO_2 <88%. ✱ Inspect for active bleeding / crowning. Determine amount of blood loss. ✱ Monitor pulseoximetry. ✱ Targeted Pre-Ductal SpO_2 After Birth: ✱ 1 min = 60-65% ✱ 2 min = 65-70% ✱ 3 min = 70-75% ✱ 4 min = 75-80% ✱ 5 min = 80-85% ✱ 10 min = 85-95% ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs. ✱ Consider orthostatic vital signs. ✱ Crowning: **Deliver** infant. ✱ Suction airway and assess APGAR at 1 min and 5 min.	✱ IV/IO **NS** titrated to BP. ✱ Treat any problems per appropriate protocol.

Citation(s):



4-100 Fever

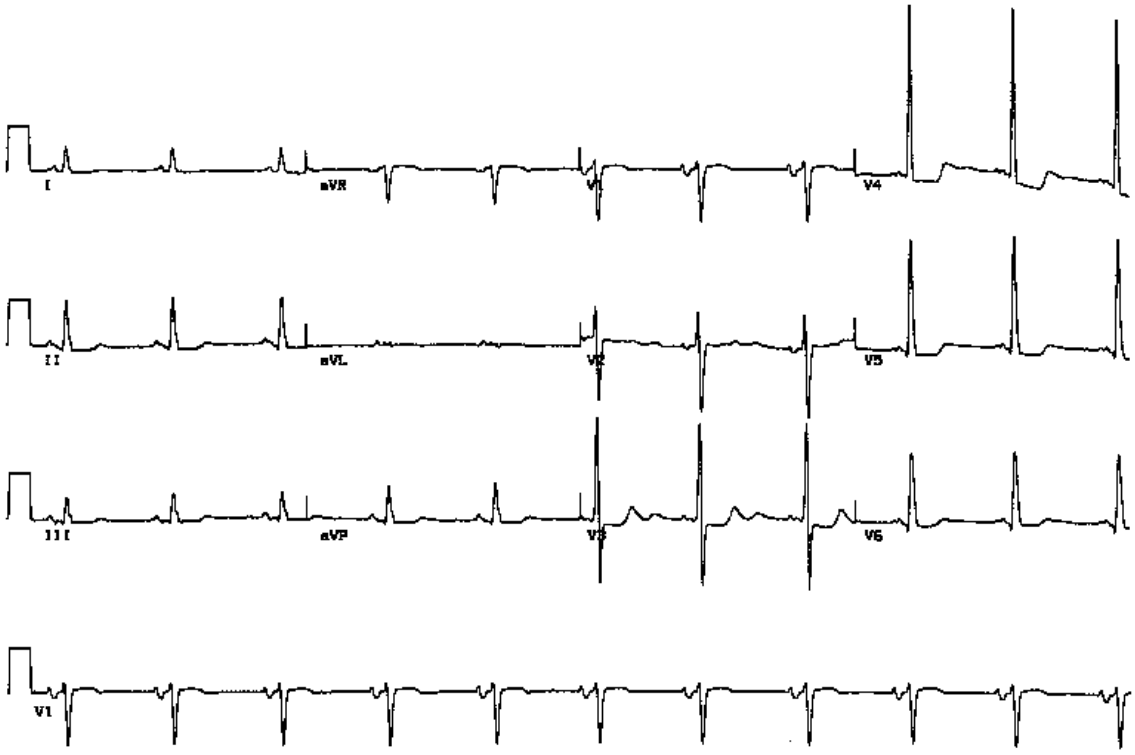
Basic Life Support	Advanced Life Support
✱ Consider **OXYGEN** if SpO_2 <88%. ✱ Remove excess clothing / blankets. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs.	✱ IV/IO **NS** with **blood draw**. ✱ Fever >102 F: Begin **cooling**. ✱ *ADULT:* ✚ Acetaminophen NOT given within 4hrs: **ACETAMINOPHEN** 325-650 mg PO. ✚ Acetaminophen given within 4 hrs: **IBUPROFEN** 200-400 mg PO. ✱ *PEDIATRIC*: ✚ Acetaminophen NOT given within 4hrs: **ACETAMINOPHEN ELIXIR** 15 mg/kg PO. ✚ Acetaminophen given within 4 hrs: **IBUPROFEN ELIXIR** 10 mg/kg PO.

Citation(s):

4-110 Hypertensive Crisis

Basic Life Support	Advanced Life Support
✱ Calm and reassure the patient. ✱ Identify possible causes. ✱ Consider **OXYGEN** if SpO_2 <88%. ✱ Monitor pulseoximetry. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs. ✱ Dim lights in ambulance, avoid loud noises and rough transport. ✱ Transport with head slightly elevated. ✱ Pregnant: ✱ Inspect for active bleeding / crowning. Determine amount of blood loss. ✱ Consider transport in left lateral recumbent position to reduce risk of Vena Cava compression.	✱ IV/IO **NS**. ✱ Diastolic >115 with nausea, ALOC, blurred vision, headache, or chest pain: Contact **MEDICAL CONTROL** for: ✱ *ADULT*: ✚ Consider **LABETALOL** 20 mg over 2 min IV/IO. ✚ Consider **HYDRALAZINE** 10-20 mg IV/IO/IM. ✚ Consider **NITROGLYCERIN** sublingual. ✚ Consider **NITROGLYCERIN** drip IV/IO. ✱ *PEDIATRIC*: ✚ Consider **LABETALOL** 0.4-1 mg/kg/hr IV/IO. ✚ Consider **HYDRALAZINE** 0.1-0.2 mg/kg (max 20 mg) IV/IO/IM. ✱ Pregnant: ✱ Actively seizing: **MAGNESIUM SULFATE** 4 g IM/IV/IO (IV/IO over 5 min) and see seizure protocol. ✱ Contact **MEDICAL CONTROL** for: ✚ Consider **MAGNESIUM SULFATE** 4-6 g IV/IO over 20 min or 2 g/hr. ✚ Consider **LABETALOL** 20 mg IV/IO over 2 min. ✚ Consider **HYDRALAZINE** 10-20 mg IV/IO/IM.

Citation(s):



4-120 Hypoglycemia

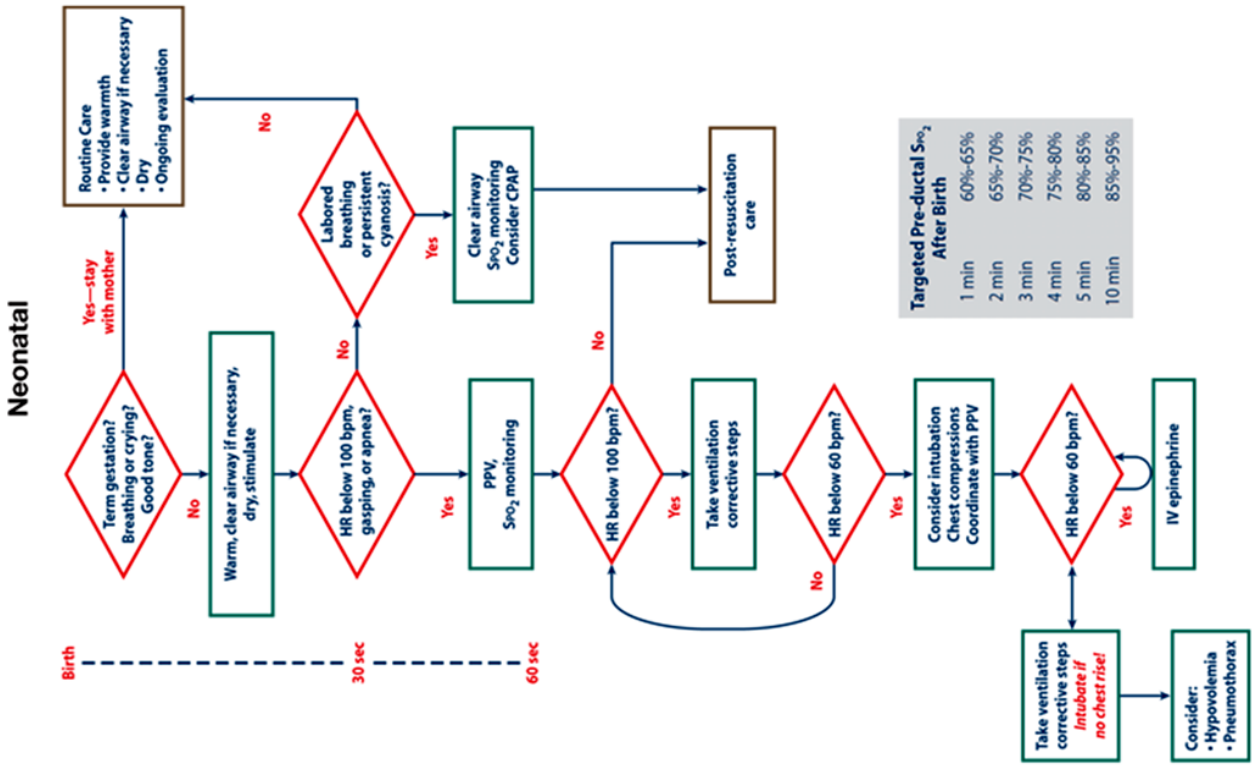
Basic Life Support	Advanced Life Support
✱ Identify possible causes. ✱ Consider **OXYGEN** if SpO_2 <88%. ✱ Monitor pulseoximetry. ✱ Consider cardiac monitor limb leads. ✱ Obtain vital signs. ✱ Perform glucose check. ✱ Glucose <70 mg/dl: Conscious and able to swallow: **ORAL GLUCOSE** 15 g PO. ✱ Have patient **eat** after treatment.	✱ Glucose <40 mg/dl, unconscious, and/or unable to swallow: ALS patient. ✱ IV/IO **NS**. ✱ Draw blood samples. ✱ *ADULT*: Glucose <70 mg/dl: ✱ **THIAMINE** 100 mg IM. ✚ If given IV, infuse in **NS** over 30 min. ✱ **DEXTROSE** (**D50W**, **D25W**, or **D10W**) 25 g IV. ✱ If unable to obtain IV: **GLUCAGON** 1 mg IM/SQ. ✱ *PEDIATRIC*: Glucose <40 mg/dl: ✱ **DEXTROSE** (**D25W**) 0.5-1 g/kg IV/IO (repeat as needed). ✚ 5 ml **D50W** + 5 ml **NS** = 2.5 g **D25W**. ✱ If unable to obtain IV: **GLUCAGON** 0.5 mg IM/SQ. ✱ *NEONATE*: **DEXTROSE** (**D10W**) 0.5-1 g/kg IV/IO (repeat as needed). ✚ 2 ml **D50W** + 8 ml **NS** = 1 g **D10W**. ✱ Contact **MEDICAL CONTROL** prior to PRC if: ✱ Oral hypoglycemic in patient med list. ✱ Long acting insulin in patient med list. ✱ Treated with **GLUCAGON**. ✱ IO inserted (should not be PRC'd).

Citation(s):

4-130 Neonatal Resuscitation

Basic Life Support	Advanced Life Support
✱ Confirm ABCs. ✱ Establish and maintain airway. ✱ Suction thoroughly. ✱ **OXYGEN** 100%. ✱ Apply cardiac monitor limb leads. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Targeted Pre-Ductal SpO_2 After Birth: ✱ 1 min = 60-65% ✱ 2 min = 65-70% ✱ 3 min = 70-75% ✱ 4 min = 75-80% ✱ 5 min = 80-85% ✱ 10 min = 85-95% ✱ Maintain warmth of infant. ✱ Check glucose. If <40, treat according to protocol.	✱ Meconium present: **Laryngoscopy** and **suction** trachea with ET tube. ✱ No meconium present: **Suction** mouth then nose with Meconium Aspirator or bulb syringe. ✱ Position on back. ✱ Open airway. ✱ **Stimulate**. Dry with clean towel. ✱ No vigorous response: **Intubate**. ✱ Meconium: Prolonged positive pressure **ventilation** at 40-60/min. ✱ HR <60: Chest **compressions** at 120/min. Ratio is 3:1. ✱ HR remains <80 despite BVM and chest compressions: ✱ **EPINEPHRINE 1:10,000** 0.01-0.03 mg/kg IV/IO. ✚ OR **EPINEPHRINE 1:10,000** 0.05-0.1 mg/kg ET. ✱ No response: ✚ **EPINEPHRINE 1:1,000** 0.05-0.1 mg/kg ET. ✚ Consider **NARCAN** 0.1 mg/kg IV/IO/IN/IM/SQ/ET.

Citation(s): (Bloom, 2006)



4-140 Poisoning / Overdose

Basic Life Support	Advanced Life Support
✱ Consider hazmat **DECONTAMINATE**. ✱ Identify possible causes. ✱ Identify substance. ✱ Consider **OXYGEN** 100%. ✱ Paraquat poisoning: Only administer **OXYGEN** if SpO_2 <88%. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs. ✱ Perform glucose check. ✱ Glucose <70 mg/dl: Follow hypoglycemia protocol.	✱ IV/IO **NS**. Draw blood samples. ✱ Consider **INTUBATION**. Consider **GASTRIC TUBE**. ✱ Beta-blocker overdose: ✱ Refer to bradycardia, PEA, etc. protocol as indicated. ✱ Contact **MEDICAL CONTROL** for **GLUCAGON**: ✚ *ADULT*: 2-5 mg IV/IO. Repeat at 10 mg if bradycardia and hypotension recur. ✚ *PEDIATRIC*: 0.5 mg IV/IO. ✱ Calcium channel blocker overdose: ✱ Contact **MEDICAL CONTROL** for **CALCIUM CHLORIDE.** ✱ Cyanide poisoning (structure/vehicle fire smoke inhalation with altered mental status): ✱ **DECONTAMINATE** with water. ✱ **CYANOKIT**: ✚ *ADULT*: 5 g IV/IO over 15 min. ✚ *PEDIATRIC*: 70 mg/kg IV/IO over 15 min. ✱ Narcotic overdose: ✱ *ADULT*: **NARCAN** 2 mg given at 0.4 mg increments to maintain airway and $ETCO_2$ IV/IO/IN/IM/SQ. ✚ OR **NARCAN** 2 mg in 3 ml **NS** ET. ✱ *PEDIATRIC*: **NARCAN** 0.1 mg/kg IV/IO/IN/IM/SQ/ET (max 2 mg). ✱ Organophosphate poisoning: ✱ **DECONTAMINATE** with water. ✱ *ADULT*: **ATROPINE** 1-2+ mg IV/IO. If intubation needed: 6 mg IV/IO. ✱ *PEDIATRIC*: **ATROPINE** 0.02-0.05 mg/kg IV/IO. ✱ If seizing, see Seizure protocol (**VALIUM** preferred). ✱ Hydrofluoric acid contact: ✱ **DECONTAMINATE** with water. ✱ Contact **MEDICAL CONTROL** for **CALCIUM GLUCONATE** / **KY JELLY** applied to exposed contact area. ✱ **CONTACT POISON CONTROL: 888-268-4195**. ✱ **CONTACT MEDICAL CONTROL**. ✱ If patient can protect their airway: Consider **ACTIVATED CHARCOAL** 0.5-1 g/kg PO.

Citation(s): (Citizens Memorial Hospital, 2014), (Cyanokit, 2012)

4-150 Post Partum Hemorrhage

Basic Life Support	Advanced Life Support
✱ Consider **OXYGEN** 100%. ✱ Inspect for active bleeding / crowning. Determine amount of blood loss. ✱ Monitor pulseoximetry. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs. ✱ Consider orthostatic vital signs. ✱ Treat for shock. ✱ Massage the fundus. ✱ Have mother breastfeed.	✱ IV/IO **NS**. Rapidly infuse IV/IO fluids. ✱ Contact **MEDICAL CONTROL** for: Consider **OXYTOCIN** 10-20 u in 1000 ml NS run wide open.

Citation(s):

4-160 Pre-Term Labor

Basic Life Support	Advanced Life Support
✱ Consider **OXYGEN** if SpO_2 <88%. ✱ Inspect for active bleeding / crowning. Determine amount of blood loss. ✱ Monitor pulseoximetry. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs. ✱ Consider orthostatic vital signs. ✱ Consider transport in left lateral recumbent position to reduce risk of Vena Cava compression.	✱ IV/IO **NS**. ✱ **NS** 500-1000 ml bolus.

Citation(s):

4-170 Seizures

Basic Life Support	Advanced Life Support
✱ Ensure open airway. ✱ **Identify possible causes**. ✱ Clear area to decrease chance of injury. ✱ Consider **OXYGEN** if SpO_2 <88%. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs. ✱ Perform glucose check. ✱ Glucose <70 mg/dl: Follow hypoglycemia protocol.	✱ IV/IO **NS**. ✱ Draw blood samples. ✱ Actively seizing: ✱ *ADULT*: **VALIUM** 5-10 mg (max 30 mg) IV/IO. ✚ OR **ATIVAN** 4 mg (max 8 mg) IV/IO. ✚ OR **VERSED** 2.5-5 mg IV/IO/IN. ✚ OR **VALIUM** 2.5-5 mg IN. ✚ OR **VERSED** 10 mg IM. ✱ *PEDIATRIC (5-18 yr)*: **VALIUM** 1 mg (max 10 mg) IV/IO. ✚ OR **VALIUM** 0.3 mg/kg (max 20 mg) PR. ✚ OR **ATIVAN** 0.07 mg/kg over 5 min IV/IO. May repeat in 15 min (max 8 mg). ✚ OR **VERSED** 5 mg IM. ✚ OR **VERSED** IV/IO/IN. ✖ Over 12 yrs: Same as adult. ✖ Between 6 yrs and 12 yrs: 0.05 mg/kg. ✖ Under 6 yrs: 0.05-0.1 mg/kg. ✱ *PEDIATRIC (6 mo-5 yr)*: **VALIUM** 0.2-0.5 mg/kg (max 5 mg) IV/IO. ✚ OR **VALIUM** 0.5 mg/kg (max 20 mg) PR. ✚ OR **ATIVAN** 0.1 mg/kg over 5 min IV/IO. May repeat half dose in 15 min. ✚ OR **VERSED** 0.05-0.1 mg/kg IV/IO/IN. ✱ *PEDIATRIC (0-6 mo)*: **VALIUM** 0.1-0.3 mg/kg over 5 min (max 2 mg). ✚ OR **ATIVAN** 0.05 mg/kg over 5 min IV/IO. May repeat in 15 min. ✱ Contact **MEDICAL CONTROL** for: **VALIUM**, **VERSED**, or **ATIVAN** higher dose. ✱ Use **RSI** with caution in seizure patients. Paralysis only masks the manifestation of seizures. ✱ Continued sedation for intubated pt: **ATIVAN** 1 mg.

Citation(s): (Bhattacharyya, Kalra, & Gulati, 2006), (Holsti, et al., 2007), (Silbergleit, et al., 2012)

4-180 Vaginal Bleeding

Basic Life Support	Advanced Life Support
✱ Consider **OXYGEN** 100%. ✱ Inspect for active bleeding / crowning. Determine amount of blood loss. ✱ Monitor pulseoximetry. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs. ✱ Consider orthostatic vital signs. ✱ Consider transport in left lateral recumbent position to reduce risk of Vena Cava compression.	✱ IV/IO **NS** titrated to BP.

Citation(s):

5-10 General Trauma Assessment and Treatment

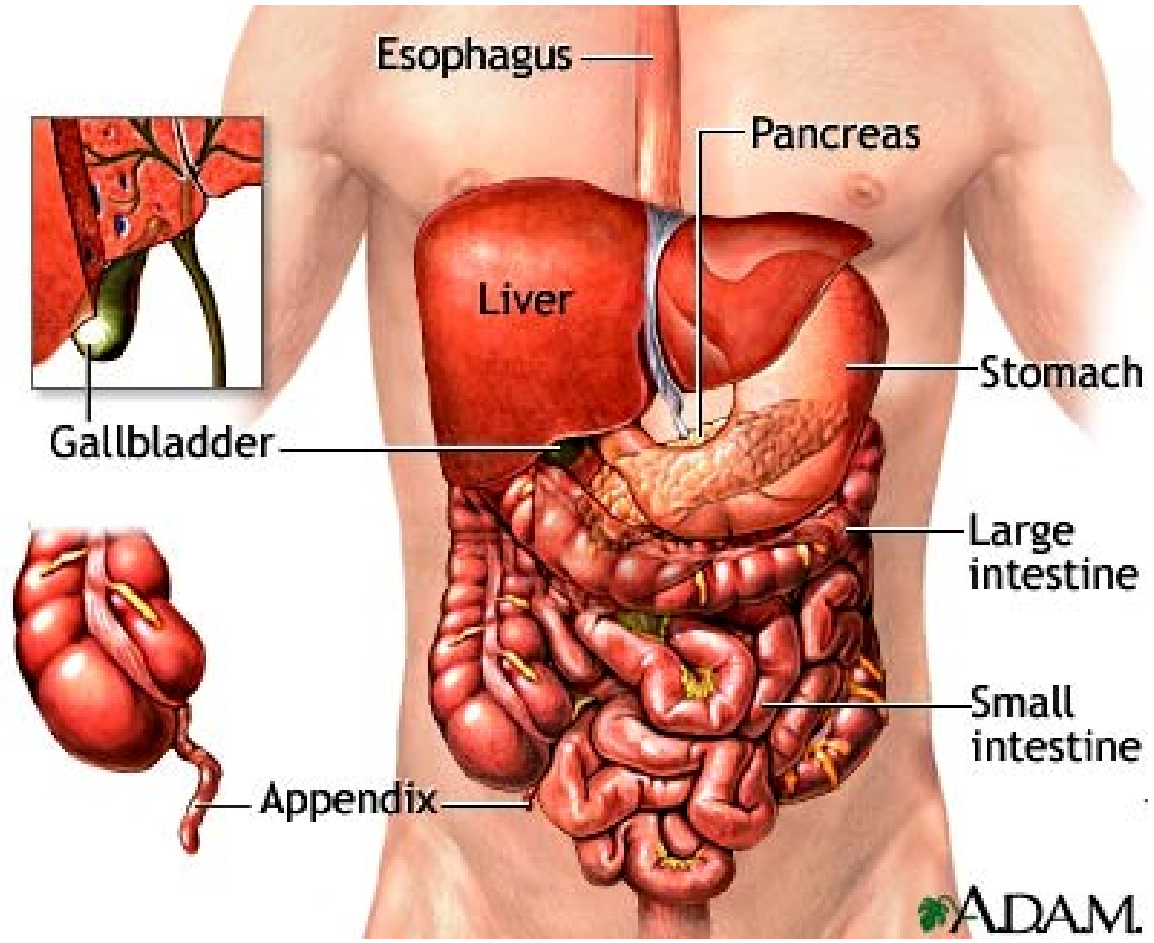
Basic Life Support	Advanced Life Support
✱ Scene safety. ✱ Coordinate with or establish incident command. ✱ BSI. ✱ Mechanism of Injury (MOI). ✱ Number of patients. ✱ Need for additional resources? ✱ ABCs. ✱ LOC. ✱ SAMPLE history. ✱ Focused assessment. ✱ Baseline vitals. ✱ Two sets of vitals should be obtained that include time, BP, pulse, respirations, SpO_2, and pain level. ✱ When appropriate, additional vitals may include temp, and glucose. Consider assisting ALS with $ETCO_2$. ✱ No significant MOI: ✱ Treatment decision (BLS/ALS). ✱ Transfer of patients meeting BLS criteria with the only exception of Heparin or Saline locked IV may be transported BLS.	✱ ALS indicated when: ✱ Significant MOI. ✱ Unresponsive. ✱ Responsive meeting one of the following: ✚ Altered mental status. ✚ GCS <13. ✚ Respiratory distress. ✚ Signs of shock. ✚ PulseOx <90. ✚ Need for IV/IO or medications. ✚ Chest discomfort. ✚ Severe pain. ✚ *ADULT* vitals: ✖ SBP<100 or >180 ✖ Pulse <60 or >120 ✖ Respirations <12 or >30 ✚ *PEDIATRIC* vitals: ✖ SBP <70 + 2 x (age yrs) ✖ Pulse <60 or >140 ✖ Respirations >30 ✱ *PEDIATRIC*: Utilize Broslow tape for equipment and drug dosages. ✱ Rapid trauma assessment. ✱ Treat per appropriate protocol. ✱ Transport. Consider proximity to nearest trauma facility. When greater than 10min transport time, consider rapid transport rather than time-consuming interventions at the scene. ✱ Severely injured patients shall be transported to a trauma center (MO Statute 190.243.1). ✱ When initial transport from the scene would be prolonged, the patient may be transported to the nearest appropriate facility for stabilization (MO Statute 190.243.2). ✱ Level I Trauma Centers: ✚ Mercy, Springfield ✚ Cox South, Springfield ✱ Level II Trauma Centers: ✚ Freeman, Joplin ✚ Mercy, Joplin (pending) ✱ Level III Trauma Centers: ✚ Citizens Memorial, Bolivar ✚ Lake Regional, Osage Beach

Citation(s): (Chapter 190 - Emergency services, 2012)

5-20 Abdominal Trauma

Basic Life Support	Advanced Life Support
✱ **SMR** as required. ✱ Assist ventilations as needed. ✱ Consider **OXYGEN** 100%. ✱ Control bleeding / **bandage** / **splint** / stabilize impaled objects as required. ✱ Monitor pulseoximetry. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs. ✱ Maintain body temperature. ✱ Moist, sterile **dressings** for eviscerations. ✱ Abdominal crush injury: Immediate release and rapid transport.	✱ IV/IO **LR** titrated to SBP >80. ✱ **Intubate** as necessary. ✱ *ADULT*: ✱ Consider **FENTANYL** 50-100 mcg every 5-20 min (max 300 mcg) IV/IO/IN. ✚ OR Consider **MORPHINE** 2-5 mg (max 10 mg) IV/IO. Maintain SBP >100. ✱ Nausea: ✚ Consider **ZOFRAN** 4 mg IV/IM/IN (max 8 mg). ✖ OR **PHENERGAN** 12.5-25 mg IM or IV/IO infused in **NS** over 15-30 min. ✱ *PEDIATRIC*: ✱ Consider **FENTANYL** 2-3 mcg/kg may repeat (max 150 mcg). IV/IO/IN. ✚ OR Consider **MORPHINE** 0.1-0.2 mg/kg IV/IO. **✱ CONTACT MEDICAL CONTROL.**

Citation(s):



5-30 Burns

Basic Life Support

- ✱ Assist **ventilations** as needed.
- ✱ Consider **OXYGEN** 100%.
- ✱ Control bleeding / **bandage**. Consider **saran wrap**.
- ✱ Monitor pulseoximetry. Assist ALS with capnography.
- ✱ Apply cardiac monitor limb leads.
- ✱ Obtain vital signs.
- ✱ Consider direct transport to Mercy Burn Unit if:
  - ✱ 2nd degree burn > 10%,
  - ✱ 3rd degree burn of any size,
  - ✱ Critical area burned (hands, feet, face, genitals),
  - ✱ Electrical or chemical burn,
  - ✱ Inhalation burn,
  - ✱ Trauma, OR
  - ✱ Pediatric.

Advanced Life Support

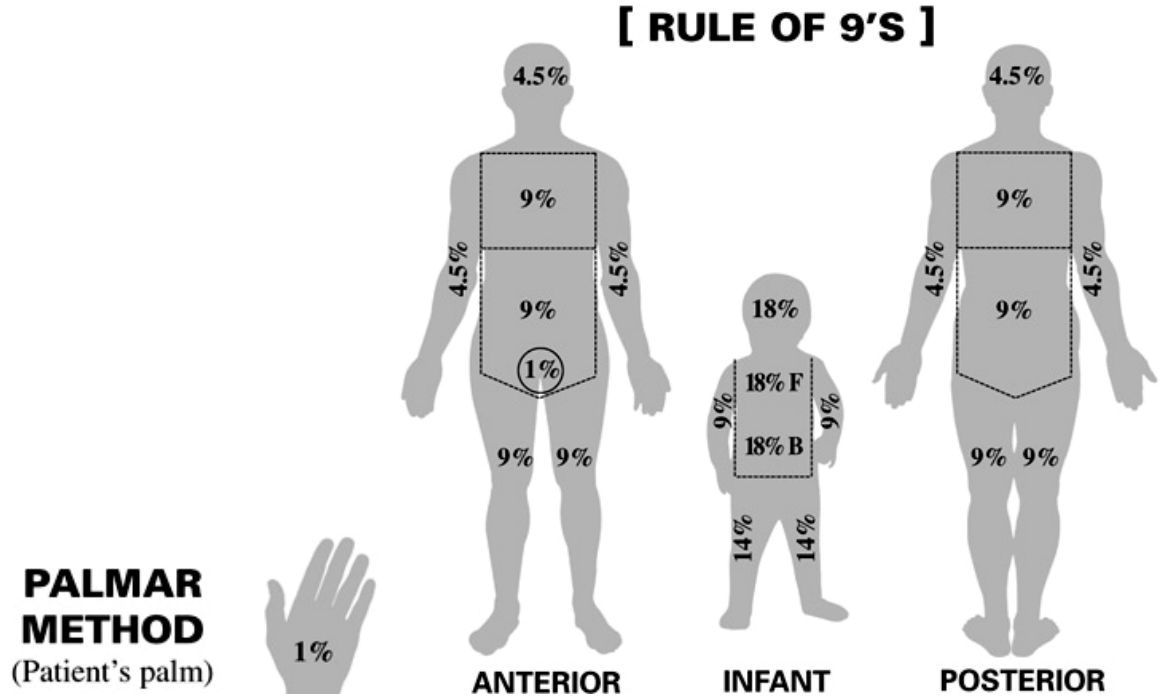
- ✱ IV/IO **LR** titrated to SBP >90.
  - ✱ *ADULT*: 500 ml/hr.
  - ✱ *PEDIATRIC*: 250 ml/hr.
- ✱ Intubate as necessary. Consider **RSI**. Be alert for airway burns. King airway contraindicated, 7.5 or larger ET desired.

- ✱ *ADULT*:
  - ✱ Consider **FENTANYL** 50-100 mcg every 5-20 min (max 300 mcg) IV/IO/IN.
    - ✚ OR Consider **MORPHINE** 2-5 mg (max 10 mg) IV/IO. Maintain SBP >100.
  - ✱ Nausea:
    - ✚ Consider **ZOFRAN** 4 mg IV/IM/IN (max 8 mg).
    - ✚ OR **PHENERGAN** 12.5-25 mg IM or IV/IO infused in **NS** over 15-30 min.

- ✱ *PEDIATRIC*:
  - ✱ Consider **FENTANYL** 2-3 mcg/kg may repeat (max 150 mcg). IV/IO/IN.
    - ✚ OR Consider **MORPHINE** 0.1-0.2 mg/kg IV/IO.

- ✱ Refer to 4-140 Poisoning / Overdose for Cyanide Poisoning.

Citation(s): (Borland, Bergesio, Pascoe, Turner, & Woodger, 2005), (Finn, et al., 2004)



5-40 Chest Trauma

Basic Life Support

- ✱ **SMR** as required.
- ✱ Assist ventilations as needed.
- ✱ Consider **OXYGEN** 100%.
- ✱ Control bleeding / **bandage** / **splint** / stabilize impaled objects as required.
- ✱ Monitor pulseoximetry. Assist ALS with capnography.
- ✱ Apply cardiac monitor limb leads.
- ✱ Obtain vital signs.
- ✱ Flail segment: **Stabilize**.
  - ✱ *ADULT*: Consider assisting ALS with **CPAP**.
- ✱ Apply **3-sided occlusive dressing** to open wounds.
- ✱ Chest crush injury: Immediate release and rapid transport.

Advanced Life Support

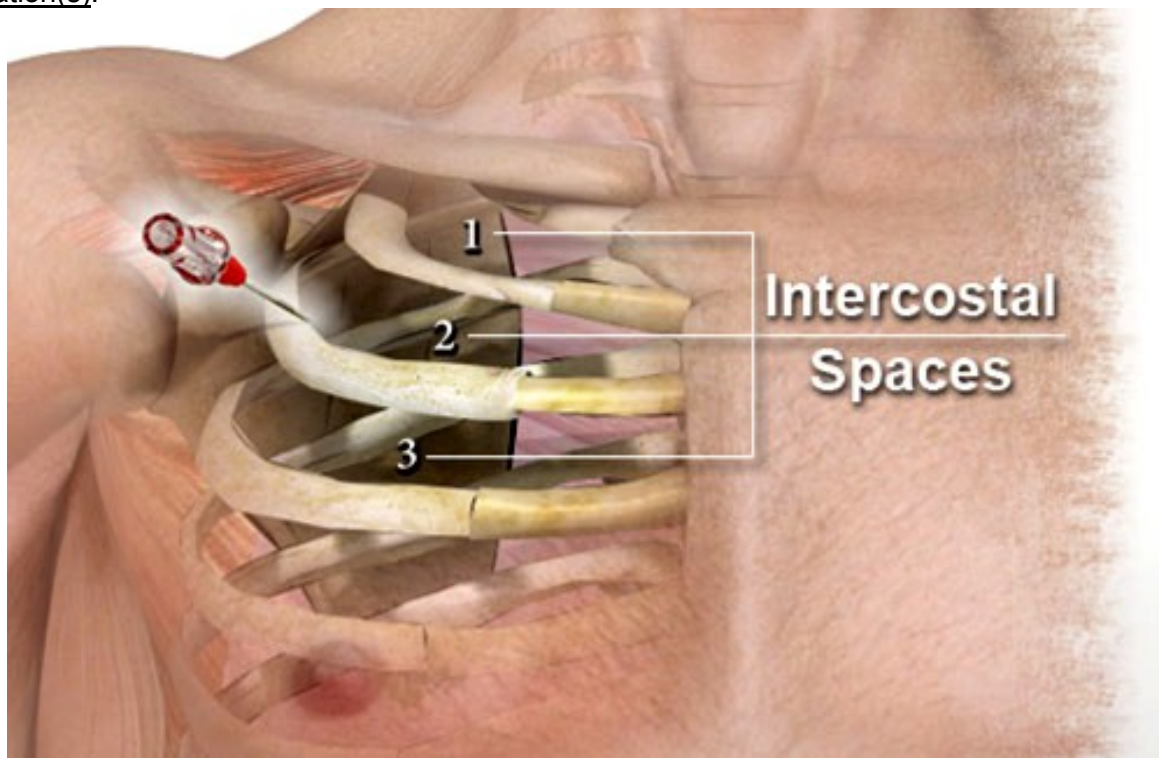
- ✱ IV/IO **LR** titrated to SBP >80.
- ✱ **Intubate** as necessary.
- ✱ Consider **chest decompression** (at 2nd intercostal space, mid-clavicular line) if respiratory compromise and suspect pneumothorax.

- ✱ *ADULT*:
  - ✱ Consider **FENTANYL** 50-100 mcg every 5-20 min (max 300 mcg) IV/IO/IN.
    - ✚ OR Consider **MORPHINE** 2-5 mg (max 10 mg) IV/IO. Maintain SBP >100.
  - ✱ Nausea:
    - ✚ Consider **ZOFRAN** 4 mg IV/IM/IN (max 8 mg).
    - ✚ OR **PHENERGAN** 12.5-25 mg IM or IV/IO infused in **NS** over 15-30 min.

- ✱ *PEDIATRIC*:
  - ✱ Consider **FENTANYL** 2-3 mcg/kg may repeat (max 150 mcg). IV/IO/IN.
    - ✚ OR Consider **MORPHINE** 0.1-0.2 mg/kg IV/IO.

✱ CONTACT MEDICAL CONTROL.

Citation(s):



5-50 Extremity Trauma

Basic Life Support

- ✱ **SMR** as required.
- ✱ Assist **ventilations** as needed.
- ✱ Consider **OXYGEN** 100%.
- ✱ Control bleeding / **bandage** / **splint** / stabilize impaled objects as required.
  - ✱ Splint in position of comfort.
  - ✱ Open fracture: Cover with sterile saline dressings.
- ✱ Consider tourniquet.
- ✱ Elevate.
- ✱ Assess distal neurovascular status.
- ✱ Consider cold pack.
- ✱ Monitor pulseoximetry.
- ✱ Apply cardiac monitor limb leads.
- ✱ Obtain vital signs.

Advanced Life Support

- ✱ No crush injury: IV/IO **LR** titrated to SBP >80.
- ✱ **Intubate** as necessary.

- ✱ *ADULT*:
  - ✱ Consider **FENTANYL** 50-100 mcg every 5-20 min (max 300 mcg) IV/IO/IN. Maintain SBP >100.
    - ✚ OR Consider **MORPHINE** 2-5 mg (max 10 mg) IV/IO. Maintain SBP >100.
  - ✱ Nausea:
    - ✚ Consider **ZOFRAN** 4 mg IV/IM/IN (max 8 mg).
    - ✚ OR **PHENERGAN** 12.5-25 mg IM or IV/IO infused in **NS** over 15-30 min.

- ✱ *PEDIATRIC*:
  - ✱ Consider **FENTANYL** 1-2 mcg/kg may repeat (max 150 mcg). IV/IO/IN.
    - ✚ OR Consider **MORPHINE** 0.1-0.2 mg/kg IV/IO.
  - ✱ **CONTACT MEDICAL CONTROL**.

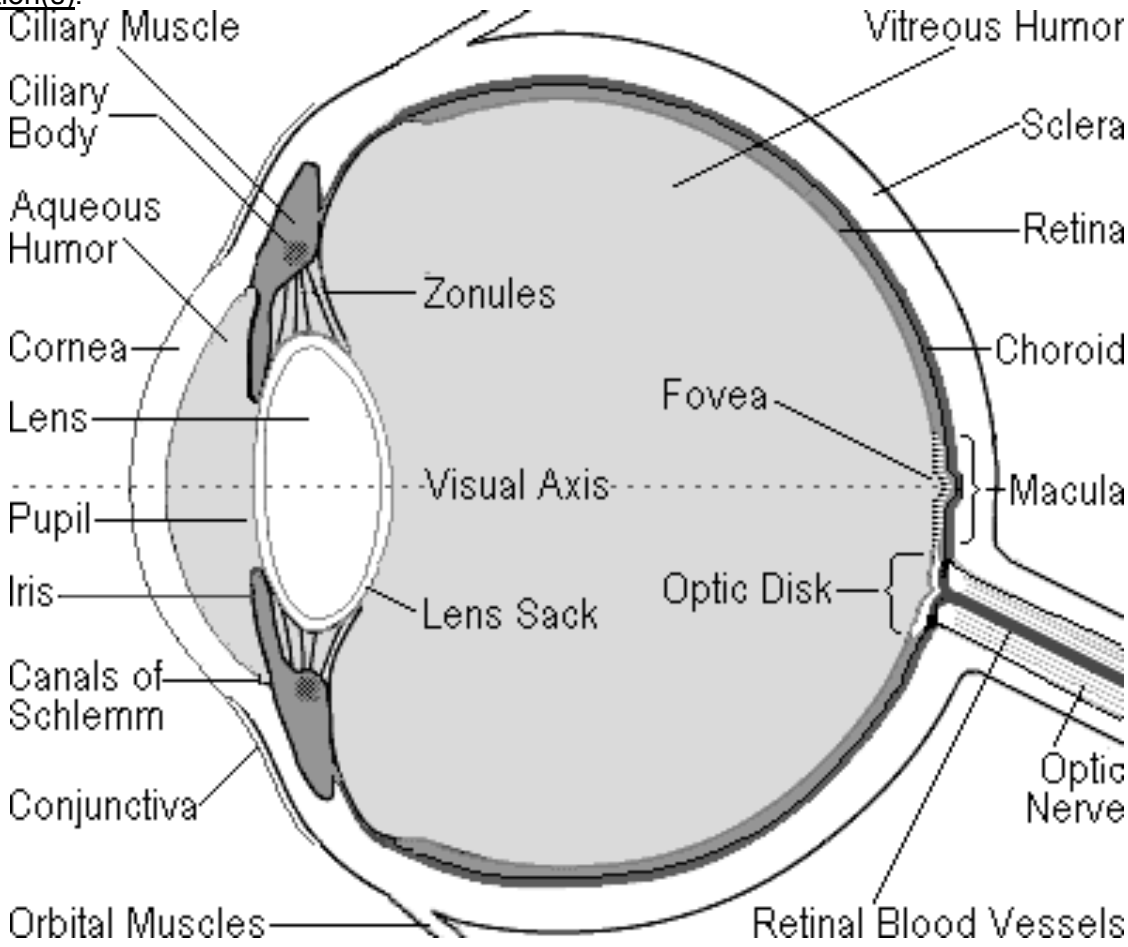
- ✱ Extremity crush injury (suspected compartment and/or crush syndrome if extremity pinned for 15 minutes to 6 hours depending on weight and other factors):
  - ✱ IV/IO **NS**. Two large bore IVs.
  - ✱ **CONTACT MEDICAL CONTROL**:
    - ✚ Consider **TOURNIQUET**.
      - ✖ (To limit acid and potassium release).
    - ✚ Consider **NS** 2 L prior to release, then 500 ml/hr after.
    - ✚ Consider **SODIUM BICARB** 1 mEq/kg (max 100 mEq) IV/IO prior to release, then add 100 mEq to 1 L NS and drip at 100 ml/hr.
      - ✖ (To alkalize blood and urine).
    - ✚ Consider **CALCIUM CHLORIDE** 1g IV/IO over 10-15 min. Do not mix with **SODIUM BICARB**.
      - ✖ (To decrease cell membrane permeability).
    - ✚ Consider **ALBUTEROL** neb high dose (10-20 mg).
      - ✖ (To lower potassium).
    - ✚ Consider **DEXTROSE** IV/IO.
      - ✖ (To facilitate insulin administration in ER).

Citation(s): (Cain, 2008), (Citizens Memorial Hospital, 2014), (Composite Resources, Inc), (Doyle & Taillac, 2008), (Flores, 2012), (Kragh, et al., 2008), (Niven & Castle, 2010), (Richey, 2007)

5-60 Eye Injuries

Basic Life Support	Advanced Life Support
✱ Assist **ventilations** as needed. ✱ Consider **OXYGEN** if SpO_2 <88%. ✱ Control bleeding / **bandage** / **stabilize** impaled objects as required. ✱ Monitor pulseoximetry. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs. ✱ Foreign substance: ✱ Non-penetrating injuries: Flush eye with at least 1 L **NS** over 20 min.	✱ Trauma: ✱ Cover open wounds. ✱ Do not apply pressure to eye. ✱ **Cover** both eyes. ✱ Foreign substance: ✱ Consider **TETRACAINE** 1-2 drops in affected eye. ✱ Non-penetrating injuries: Flush eye with at least 1 L **NS** over 20 min. Consider **MORGAN LENS**. ✱ *ADULT*: ✱ Consider **FENTANYL** 50-100 mcg every 5-20 min (max 300 mcg) IV/IO/IN. ✚ OR Consider **MORPHINE** 2-5 mg (max 10 mg) IV/IO. Maintain SBP >100. ✱ Nausea: ✚ Consider **ZOFRAN** 4 mg IV/IM/IN (max 8 mg). ✚ OR **PHENERGAN** 12.5-25 mg IM or IV/IO infused in **NS** over 15-30 min. ✱ *PEDIATRIC*: ✱ Consider **FENTANYL** 1-2 mcg/kg may repeat (max 150 mcg). IV/IO/IN. ✚ OR Consider **MORPHINE** 0.1-0.2 mg/kg IV/IO. ✱ **CONTACT MEDICAL CONTROL**.

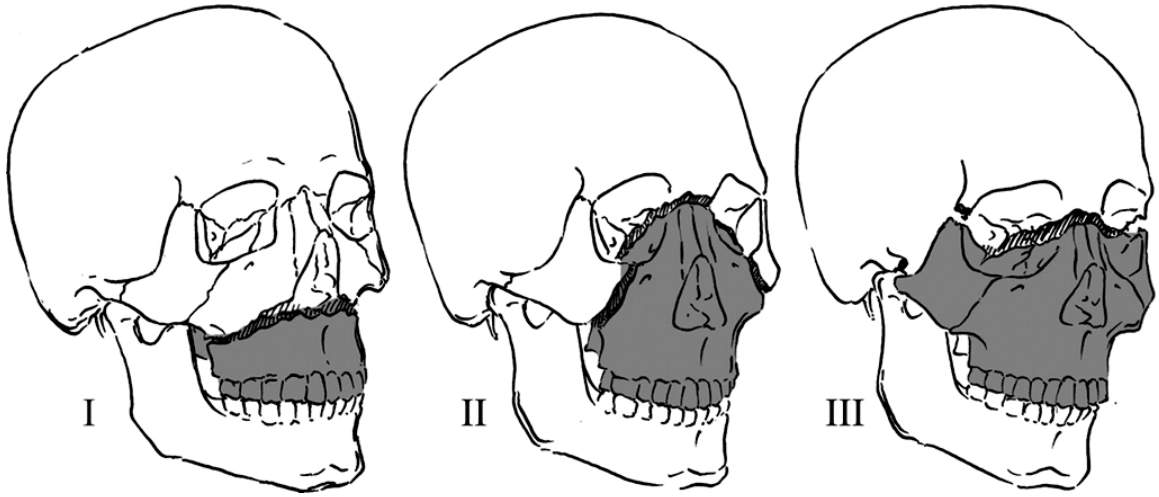
Citation(s):



5-70 Head Trauma

Basic Life Support	Advanced Life Support
✱ **SMR** as required. ✱ Assist **ventilations** as needed. ✱ Consider **OXYGEN** 100%. ✱ Control bleeding / **bandage** / **splint** / stabilize impaled objects as required. ✱ Monitor pulseoximetry. Assist ALS with capnography. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs. ✱ GSC <9 or unequal pupils: Maintain $ETCO_2$ at 30-35. ✱ Elevate head of cot. ✱ Head crush injury: Immediate release and rapid transport.	✱ IV/IO **LR** titrated to SBP >80. ✱ GCS <8: Intubate as necessary. Consider **RSI**. ✱ *ADULT*: ✱ **LIDOCAINE** 1.5 mg/kg IV/IO prior to intubation. ✱ Consider **FENTANYL** 50-100 mcg every 5-20 min (max 300 mcg) IV/IO/IN. (Morphine is contraindicated for head injury.) ✱ Nausea: Consider **ZOFRAN** 4mg IV/IM/IN (max 8 mg). ✱ *PEDIATRIC*: ✱ **LIDOCAINE** 1 mg/kg IV/IO prior to intubation. ✱ Age <3 yrs: **ATROPINE** 0.02 mg/kg (min 0.1 mg) IV. ✱ Consider **FENTANYL** 1-2 mcg/kg may repeat (max 150 mcg) IV/IO/IN. (Morphine is contraindicated for head injury.) ✱ **CONTACT MEDICAL CONTROL**.

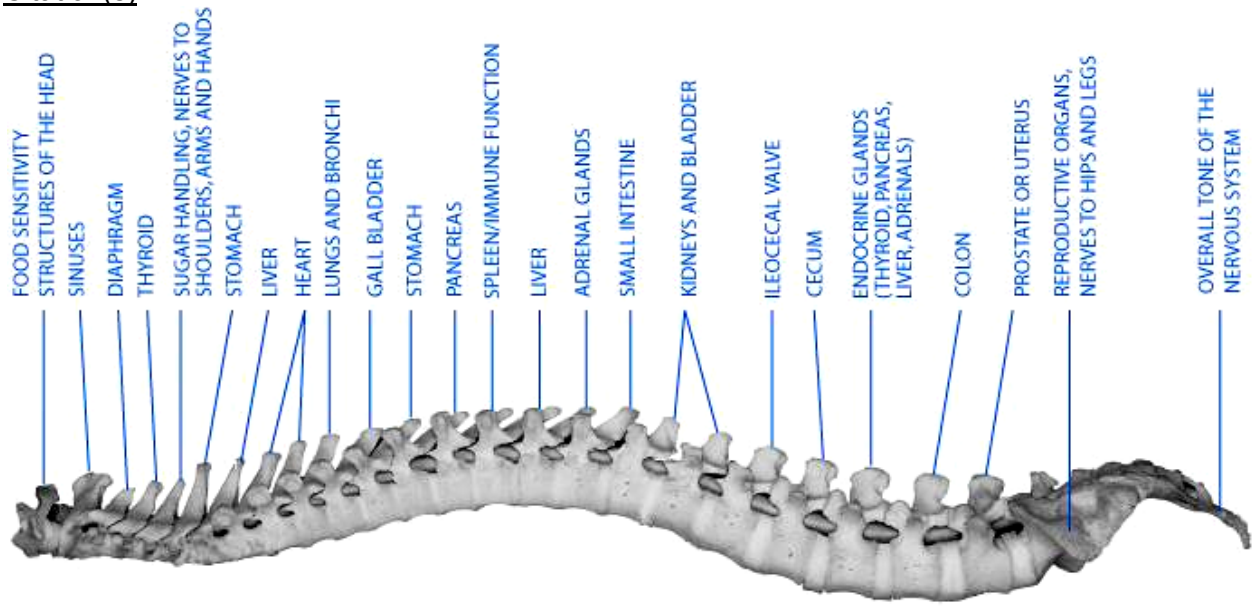
Citation(s): (Flower & Hellings, 2012)



5-80 Spinal Trauma

Basic Life Support	Advanced Life Support
✱ **SMR**. ✱ Assist **ventilations** as needed. ✱ Consider **OXYGEN** 100%. ✱ Control bleeding / **bandage** / **splint** / stabilize impaled objects as required. ✱ Monitor pulseoximetry. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs.	✱ IV/IO **LR** titrated to SBP >80. ✱ Intubate as necessary. Consider **RSI**. ✱ *ADULT*: ✱ Consider **FENTANYL** 50-100 mcg every 5-20 min (max 300 mcg) IV/IO/IN. ✚ OR Consider **MORPHINE** 2-5 mg (max 10 mg) IV/IO. Maintain SBP >100. ✱ Nausea: ✚ Consider **ZOFRAN** 4 mg IV/IM/IN (max 8 mg). ✚ OR **PHENERGAN** 12.5-25 mg IM or IV/IO infused in **NS** over 15-30 min. ✱ *PEDIATRIC*: ✱ Consider **FENTANYL** 1-2 mcg/kg may repeat (max 150 mcg). IV/IO/IN. ✚ OR Consider **MORPHINE** 0.1-0.2 mg/kg IV/IO. ✱ **CONTACT MEDICAL CONTROL**.

Citation(s):



5-90 Trauma Arrest

Basic Life Support	Advanced Life Support

✱ Confirm pulselessness and apnea.
✱ Attempt to determine down-time, and history.
✱ **SMR**.
✱ Begin **CPR**.
  ✱ Push hard and fast at 100/min.
  ✱ Minimize compression interruptions.
  ✱ Rotate compressors every 2 minutes at rhythm check or as soon as practical.
✱ Establish and maintain airway and ventilate 100% **OXYGEN**.
  ✱ Establish BLS **AIRWAY**.
  ✱ Compressions : Ventilations ratio = 30:2 unless intubated, then 8-10 breaths per min.
  ✱ Avoid hyperventilation.
✱ **Control bleeding**, **bandage**, **splint** as required.
✱ Monitor pulseoximetry. Assist ALS with capnography.
✱ Apply cardiac monitor quick combo pads and limb leads.
	✱ IV/IO **LR** wide open (x2 large bore).
	✱ Consider in-line **INTUBATION**.
	✱ Treat rhythm per protocol.
	✱ Bilateral chest **decompression** if chest trauma etiology.
	✱ *ADULT*: Field termination may be requested from **MEDICAL CONTROL** regardless of how long ACLS efforts have been underway.
	✱ *PEDIATRIC*: **CONTACT MEDICAL CONTROL**.
	✱ Immediate **transport**.

Citation(s):

6-10 Acquisition of Medical Control

Advanced Life Support

- ✱ Medical control shall be the responsibility of the CMH paramedic.
- ✱ Medical control shall only be provided by a physician. Medical control shall not accepted from nurses, nurse practitioners, physician assistants, midwifes, or any physician extenders.
- ✱ Medical control shall be provided by receiving hospital. If contact cannot be made, CMH Emergency Room will be the default medical control.
- ✱ When transporting from another facility and treatment that deviates from protocol is suggested by transferring physician, paramedic should contact receiving **MEDICAL CONTROL** in the ambulance to verify orders.
- ✱ If medical control cannot be contacted, protocols should be utilized as standing orders including those designated as requiring medical control. Medical control should be contacted as soon as possible and attempts at contact shall be documented.
- ✱ If an on-scene physician gives orders, paramedic shall require credential evidence and the requesting physician must accompany the patient in transport to the receiving facility. This process should not be considered if the physician does not have the appropriate medical sub-specialties as determined by the paramedic.

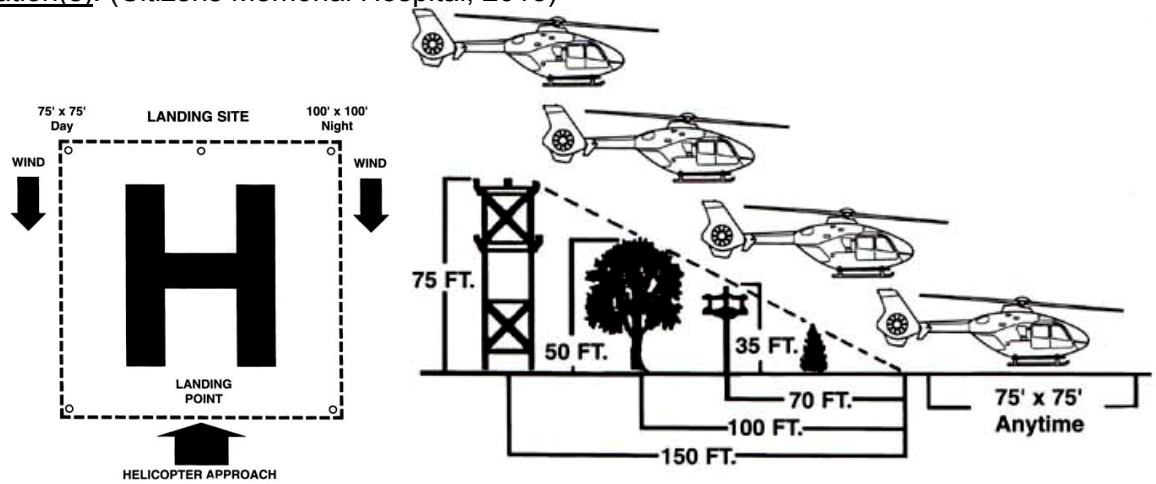
Appleton City	Ellett Memorial Hospital	660-476-2111
Bolivar	Citizens Memorial Healthcare	417-328-6301
Butler	Bates County Memorial Hospital	660-200-7000
Carthage	McCune Brooks Regional Hospital	417-358-8121
Clinton	Golden Valley Memorial Hospital	660-885-5511
Columbia	Boone County Hospital	573-815-8000
Columbia	University Hospital	573-882-8091
Columbia	Veterans Hospital	573-814-6000
El Dorado Springs	Cedar County Memorial Hospital	417-876-2511
Ft Leonard Wood	Ft Leonard Wood Hospital	573-596-0803
Joplin	Freeman West	417-347-1111
Joplin	Hawthorne	417-625-2350
Joplin	Ozarks Community Hospital	417-837-4170
Kansas City	Veterans Hospital	800-525-1483
Lamar	Barton County Memorial Hospital	417-681-5100
Lebanon	Mercy	417-533-6350
Monett	Cox Monett Hospital	417-235-3144
Neosho	Freeman Neosho Hospital	417-451-1234
Nevada	Nevada Regional Medical Center	417-667-3355
Osage Beach	Lake Regional Health System	573-348-8000
Osceola	Sac-Osage Hospital	417-646-8181
Springfield	Cox North	417-269-3393
Springfield	Cox South	417-269-4983
Springfield	Mercy	417-820-2115
Springfield	Ozarks Community Hospital	417-874-4596
St Louis	Barnes Jewish Hospital	314-294-1403

Citation(s): (Citizens Memorial Hospital, 2013)

6-20 Air Ambulance Utilization

Basic Life Support	Advanced Life Support
✱ Consider air ambulance if ONE or more of the following are true: ✱ Ground resources are exhausted. ✱ Prolonged extrication time (>20 min) is anticipated. ✱ Road or bridge conditions which prevent ground transport. ✱ Request for air ambulance should be made as early as possible. Can be made while en route. ✱ Request for air ambulance should be made through dispatch. ✱ Once en route, the request can only be canceled by EMS personnel on scene. ✱ Prepare a safe landing zone. Utilize local law enforcement and fire department. ✱ Final decision to accept a mission is the responsibility of the pilot. ✱ Patient requests for specific aircraft and destinations should be discussed with air crew.	✱ Consider air ambulance if ONE or more of the following are true: ✱ MVA with associated fatality(s); ✱ Decreased LOC; ✱ GCS<10; ✱ High risk OB patient; ✱ Active GI bleed; ✱ Burn >20% BSA; ✱ Uncontrollable cardiac dysrhythmias; ✱ Airway control intervention; ✱ Acute MI or chest pain suggestive of MI; ✱ Spinal trauma with neurological deficits; ✱ Fall greater than 20 feet; ✱ Ejection; ✱ Pedestrian hit by vehicle >20 mph. ✱ Consider air ambulance if TWO or more of the following are true: ✱ SBP <90 or >200; ✱ Respirations <10 or >30; ✱ Heart rate <60 or >120; ✱ External pacing in progress; ✱ Hypo or hyperthermia; ✱ Shortness of breath; ✱ Nausea; ✱ Diaphoresis; ✱ Overdose; ✱ Pulsating abdominal mass; ✱ Seizure activity; ✱ <8 yrs or >55 yrs old; ✱ CVA or GI bleed; ✱ Trauma during pregnancy; ✱ Gross bleeding; ✱ Positive loss of consciousness; ✱ Penetrating injury; ✱ Medication administration requiring an infusion pump; ✱ Injuries to head, neck, chest, abdomen or extremities.

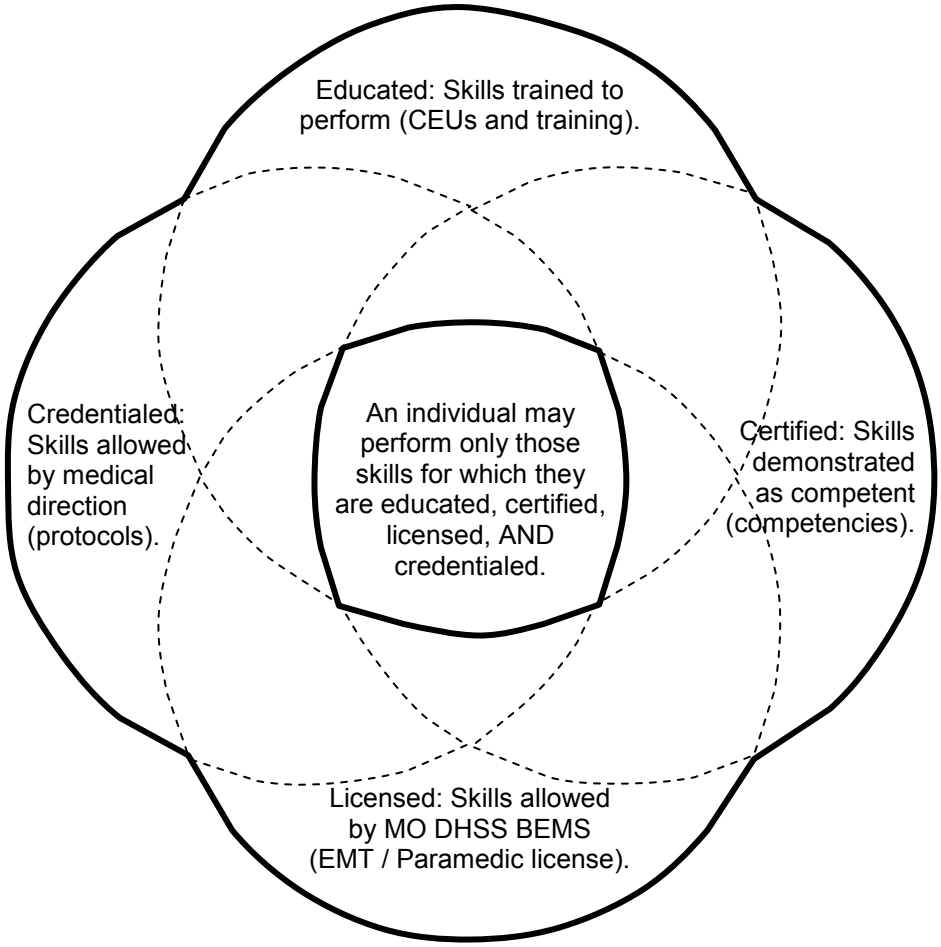
Citation(s): (Citizens Memorial Hospital, 2013)



6-30 Competency Training

Basic Life Support	Advanced Life Support
✱ Each quarter, a list of competency requirements will be compiled from input from QI program, medical control, and staff. ✱ Competency schedule will be posted and announced at least 30days ahead. Each quarter, at least two competency dates will be provided. ✱ Each EMT shall successfully complete each quarter's **BLS** competencies with at least a **90% pass rate**.	✱ Each paramedic shall successfully complete each quarter's **BLS** and **ALS** competencies with at least a **90% pass rate**.

Citation(s): (Citizens Memorial Hospital, 2013), (National Highway Traffic Safety Administration, 2007)



6-40 Control of Nausea

Basic Life Support	Advanced Life Support
✱ Identify possible causes. ✱ Consider **OXYGEN** if SpO_2 <88%. ✱ Monitor pulseoximetry. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs.	✱ IV/IO **NS** or **LR**. ✱ *ADULT (>27 kg)*: ✱ Consider **ZOFRAN** 4 mg IV/IO/IM/IN (max 8 mg). ✚ OR **PHENERGAN** 12.5-25 mg IM or IV/IO infused in **NS** over 15-30 min. ✱ *PEDIATRIC (>2 yr & <27 kg)*: ✱ Consider **ZOFRAN** 0.1-0.2 mg/kg IV/IO/IM/IN (max 8 mg). ✚ OR **PHENERGAN** 0.25-0.5 mg/kg IM or IV/IO infused in **NS** over 15-30 min.

Citation(s):

6-50 Control of Pain

Basic Life Support	Advanced Life Support
✱ Identify possible causes. ✱ Consider **OXYGEN** if SpO_2 <88%. ✱ Monitor pulseoximetry. ✱ Apply cardiac monitor limb leads. ✱ Obtain vital signs.	✱ IV/IO **NS** or **LR**. ✱ Acute (non traumatic) or chronic (acute exacerbation) with autonomic signs and symptoms (for traumatic injuries, refer to appropriate trauma protocol): ✱ *ADULT*: ✚ Consider **FENTANYL** 50-100 mcg may repeat every 5 min (max 300 mcg) IV/IO/IN. ✖ OR **MORPHINE** 2-5 mg (max 10 mg) IV/IO. Maintain SBP >100. ✱ *PEDIATRIC*: ✚ Consider **FENTANYL** 1-2 mcg/kg may repeat every 5 min (max 150 mcg) IV/IO/IN. ✖ OR **MORPHINE** 0.1-0.2 mg/kg IV/IO. ✚ Anxiety: Contact **MEDICAL CONTROL** for: ✖ Consider: **VERSED** IV/IO/IN. ∗ Over 12 yrs: Same as adult. ∗ Between 6 yrs and 12 yrs: 0.05 mg/kg. ∗ Under 6 yrs: 0.05-0.1 mg/kg. ✖ Consider: **ATIVAN** 0.05 mg/kg (max 2 mg) IV/IO. ✱ Consider **MEDICAL CONTROL** for **KETAMINE** 1-4.5 mg/kg IV/IO/IM. ✱ Chronic without autonomic signs and symptoms: ✱ Transport in position of comfort. ✱ Any patient receiving pain medication must be transported.

Citation(s): (Borland, Bergesio, Pascoe, Turner, & Woodger, 2005), (Finn, et al., 2004)

6-60 Do Not Resuscitate (DNR) Orders

Basic Life Support	Advanced Life Support

✱ The documented wishes of patients not wanting to be resuscitated shall be honored.
✱ Original documentation must be with patient or presented to EMS crew at time of arrival on the scene.
✱ DNR documentation must contain:
  ✱ Patient signature.
  ✱ Patient's physician signature.
  ✱ Dated within the last 365 days.
✱ If any doubt exists regarding the validity of the documentation, immediate resuscitation should be initiated.
	✱ All therapeutic care and vigorous support (IVs, medications, etc.) shall be given until the point of cardiac respiratory arrest.
	✱ If a valid DNR form is present, it may be honored without contacting medical control. If a valid DNR is presented after resuscitation has been initiated, it can also be honored without contacting medical control and resuscitation may be terminated.
	✱ DNR form shall remain with the patient.
	✱ Document DNR form number and signing physician's name on ePCR.

Citation(s):

6-70 Documentation

Basic Life Support	Advanced Life Support
✱ An ePCR must be completed for **every EMS response**. ✱ The ePCR shall be completed by end of shift and faxed to appropriate facility (non-CMH).	✱ If patient care would have met **ALS** criteria, PRC must be completed by the paramedic.
✱ No Care Needed (NCN): After scene assessment, there may be no patients (i.e. false alarms). An ePCR shall be completed including: situation description, number of individuals, and medical screening. ✱ If the patient exhibits any mechanism of injury, pain behaviors, indications of altered mental status, or the patient is the 9-1-1 caller or at any time requested medical care or an ambulance: Treatment and transport or **PRC** must be completed.	
✱ Patient Refusal of Care (PRC): If the patient refuses care and/or transport, patient should be informed of potential risks, and need for transport and comprehensive physician evaluation. ✱ Obtain **signature of patient**. If patient refuses to sign, document this fact. ✱ Obtain **signature of witness**. Preferably law enforcement official, fire personnel, or family member.	
✱ All PCRs shall be **completed**, **faxed**, and **exported prior to end of shift** unless approved by supervisor.	

Citation(s): (Citizens Memorial Hospital, 2013)

6-80 Event Standby

Basic Life Support	Advanced Life Support

✱ Park the ambulance in a manner to allow view of the scene from a distance but always have the ability to leave the scene in an expedient manner.
✱ Treat illnesses and injuries per appropriate protocol.
✱ Dedicated standby:
  ✱ Make contact with athletic trainers upon arrival (if they are present).
  ✱ Place first in bag, oxygen, monitor, and SMR supplies on cot and have it ready in the truck.
  ✱ If medical care is needed for a player, event staff should wave EMS onto the field/track if you are needed.
  ✱ Football player injury:
  ✚ Only remove helmet and pads under extreme circumstances and under direction of athletic trainer.
  ✖ Secure player to backboard with helmet and pads remaining in place.
  ✖ If CPR is required, request athletic trainer to cut chest pads and keep shoulder pads and helmet in place.
  ✚ Request athletic trainer to remove face mask.
  ✚ Utilize athletic trainer staff and equipment for extremity splinting.
  ✱ Preferred to request second unit to transport and standby unit remain at event.
  ✚ Consider requesting a second unit to cover standby if critical patient.
  ✚ Athletic training staff may ride with patient in back if requested.
  ✚ Air ambulance landing zone should not be on the playing field.
  ✱ A standby ePCR report shall be completed for all dedicated standbys. Be specific about which standby it is and which location.
	✱ When requested and approved by supervisor, CMH may provide an ALS ambulance for dedicated or non-dedicated event standby.
	✱ Treat illnesses and injuries per appropriate protocol.

Citation(s): (Citizens Memorial Hospital, 2012)

6-90 IDLH Standby

Basic Life Support	Advanced Life Support
✱ Non-dedicated ambulance may be requested by any public safety agency engaged in operations deemed Immediately Dangerous to Life and Health (IDLH). Examples include, but are not limited to: Structure fires, hazardous materials, clandestine drug labs, etc. ✱ If Incident Commander requests ambulance to be dedicated and remain on the scene, contact the duty officer or supervisor on call. ✱ Once on scene, check in with the Staging Officer or Incident Commander via radio. ✱ Park the ambulance in a manner to allow view of the scene from a distance but always have the ability to leave the scene in an expedient manner. ✱ Rehab of responders, baseline vitals, hydration, etc. shall be conducted by fire department and/or emergency management personnel. ✱ Ambulance crew duties are to care for civilians, bystanders, and/or responders that require treatment and/or transport for an injury or illness. ✱ Due to possible contamination, firefighters shall not be placed in an ambulance for cooling/warming unless they require treatment and/or transport for injuries or illnesses. ✱ **DECONTAMINATE** as appropriate prior to contaminating personnel, equipment, and ambulance.	✱ Treat illnesses and injuries according to appropriate protocol.

Citation(s):

6-100 Off-Duty Protocols

Basic Life Support	Advanced Life Support
✱ While off duty, current CMH Pre-Hospital and CMH Emergency Department EMTs, Paramedics, and RNs may provide **Basic Life Support** according to these protocols. ✱ Ensure **9-1-1** is contacted and an ambulance is responding as appropriate. ✱ Coordinate with responding emergency services.	✱ While off-duty, current CMH Pre-Hospital Paramedics and CMH Emergency Department RNs may provide **Advanced Life Support** according to these protocols if the following conditions are met: ✱ A CMH ambulance must be the transporting unit and an on-duty CMH paramedic must provide primary patient care.

Citation(s):

6-110 Rapid Sequence Intubation (RSI) - CALL FOR ORDERS

Basic Life Support

- ✱ Request second ALS unit or supervisor, if possible.
- ✱ Maintain airway and ventilate with 100% **OXYGEN**.
  - ✱ Should not let SpO_2 drop below 90% at any time.
- ✱ Monitor pulseoximetry. Assist ALS with capnography.
- ✱ Attach cardiac monitor.

- ✱ RSI contraindications:
  - ✱ Unable to ventilate with BVM.
  - ✱ Facial or neck trauma.
  - ✱ Possibility of failure of failed airways.
  - ✱ Cricothyrotomy would be difficult or impossible.
  - ✱ Acute epiglottitis.
  - ✱ Upper airway obstruction.

- ✱ Press "PRINT" on the monitor after intubation and at transfer to ER/LZ to record capnography waveform.

Advanced Life Support

- ✱ IV/IO **NS** or **LR**.
- ✱ Assign duties.

- ✱ Premedicate:
  - ✱ *ADULT*:
    - ✚ Bradycardic: **ATROPINE** 0.5 mg IV/IO.
    - ✚ Seizing: **ATIVAN** 2 mg IV/IO (may repeat).
  - ✱ *PEDIATRIC*:
    - ✚ **ATROPINE** 0.01 mg/kg IV/IO (min 0.1 mg) (max 0.5 mg).
    - ✚ Seizing: **ATIVAN** 0.07 mg/kg IV/IO.

- ✱ Sedate: **KETAMINE** 1 mg/kg IV/IO.
  - ✱ OR Consider **ETOMIDATE** 0.3 mg/kg IV/IO.

- ✱ Paralyze: **SUCCINYLCHOLINE** IV/IO.
  - ✱ *ADULT*: 1.5 mg/kg.
  - ✱ *PEDIATRIC*: 2 mg/kg.
  - ✱ Succinycholine contraindicated (burns or crush injuries >48 hrs, rhabdomyolysis):
    - ✚ Consider **ROCURONIUM** 1 mg/kg IV/IO (45 sec onset, 40 min duration).
    - ✚ OR Consider **ROCURONIUM** 0.1 mg/kg IV/IO (2 min onset, 10 min duration).
    - ✚ OR Consider **VECURONIUM** 0.1 mg/kg IV/IO.

- ✱ **INTUBATE**. Confirm with capnography. Maximum of three attempts.

- ✱ Continued paralysis (consider if extended transport to ER): **VECURONIUM** 0.1 mg/kg IV/IO.
  - ✱ Consider **ROCURONIUM** 1 mg/kg IV/IO.

- ✱ Continued sedation:
  - ✱ *ADULT*: **VERSED** 2.5-5 mg IV/IO every 5 min as needed maintaining SBP >100.
    - ✚ Consider **FENTANYL** 50-100 mcg IV/IO/IN (max 300 mcg).
    - ✚ OR **ATIVAN** 2 mg IV/IO. (6 mg if seizing).
  - ✱ *PEDIATRIC*: **VERSED** IV/IO/IN.
    - ✖ Over 12 yrs: Same as adult.
    - ✖ Between 6 yrs and 12 yrs: 0.05 mg/kg.
    - ✖ Under 6 yrs: 0.05-0.1 mg/kg.
    - ✚ Consider **FENTANYL** 1-2 mcg/kg IV/IO/IN (max 150 mcg).
    - ✚ OR **ATIVAN** 0.05 mg/kg IV/IO. (0.07 mg/kg if seizing).

Citation(s): (Filanovsky, Miller, & Kao, 2010), (Flower & Hellings, 2012)

6-120 Transfer of Care between Agencies

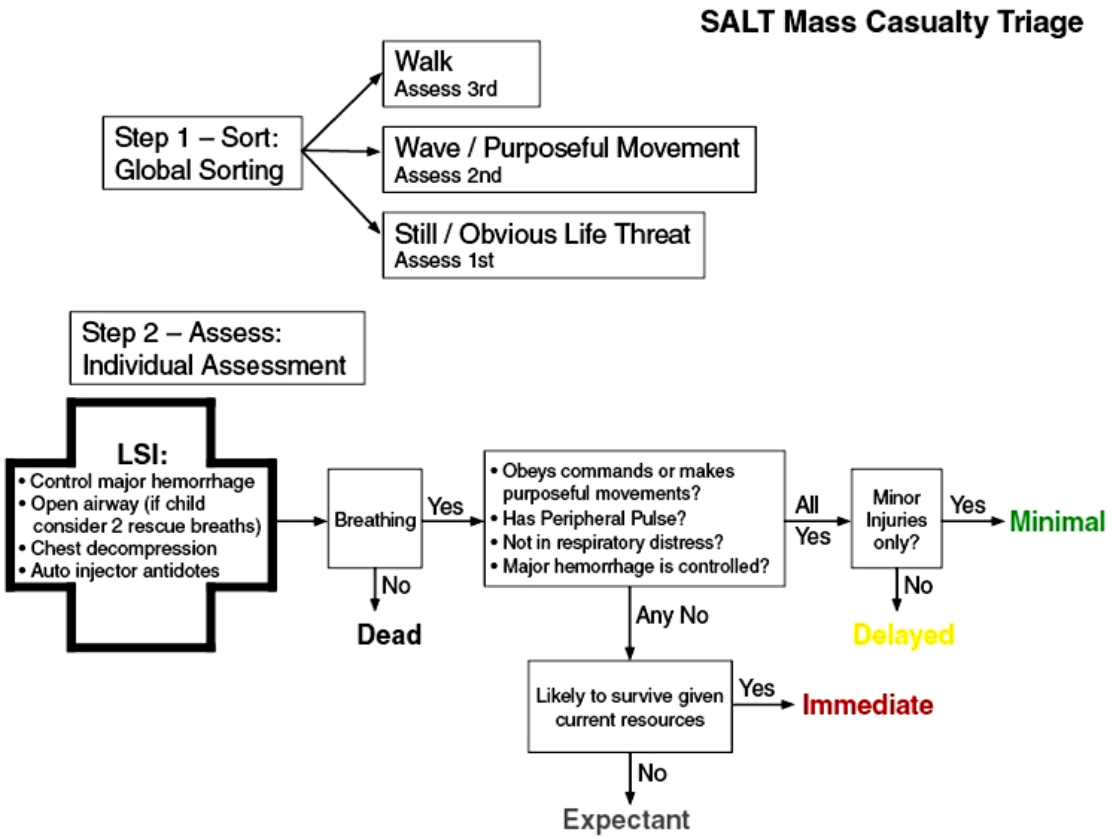
Basic Life Support	Advanced Life Support
✱ CMH EMS personnel will assume patient care from initial patient contact or face-to-face verbal report from on-scene medical personnel until face-to-face verbal report given to flight crew or receiving facility. ✱ Verbal report shall include, but not limited to: patient history, current status, treatments provided. ✱ Available documentation should also be transferred (i.e. EKGs, blood draw, patient information, etc.). ✱ In the event of mechanical difficulty or other situation requiring transferring BLS patient to another ambulance, CMH EMT may maintain patient care in the new ambulance (even if the new ambulance is not a CMH ambulance).	✱ In the event of mechanical difficulty or other situation requiring transferring ALS patient to another ambulance, CMH paramedic may maintain patient care in the new ambulance (even if the new ambulance is not a CMH ambulance). ✱ In a multi-patient incident, CMH paramedic will continue patient care until care can be transferred to appropriate in-coming ambulance with face-to-face verbal report.

Citation(s):

6-130 Triage

✱ HEAR REPORT: Every patient report on HEAR radio to an ER shall be triaged according to the following:
- ✱ **MEDICAL RED** or **TRAUMA RED**: Requires immediate life-saving intervention (i.e. STEMI, Stroke, Unconscious, Unstable).
- ✱ **MEDICAL YELLOW** or **TRAUMA YELLOW**: High risk or multiple resources needed in ER (i.e. ALOC, Labs, ECG, X-ray, CT, Ultrasound, Respiratory therapy).
- ✱ **MEDICAL GREEN** or **TRAUMA GREEN**: Minor complaints and manageable with limited resources.

✱ MASS CASUALTY INCIDENT:
- ✱ Defined as greater than five patients.
- ✱ Notify ER as soon as possible (include number of patients, if known).
- ✱ First arriving ambulance assignments:
  - ✚ Paramedic: Designated **TRIAGE OFFICER**.
    - ✖ Determine **number of patients**.
    - ✖ Establish **triage area(s)**.
    - ✖ **Triage and tag** patients.
  - ✚ EMT: Designated **TRANSPORTATION OFFICER**.
    - ✖ Communicate number of patients.
    - ✖ Establish **staging area(s)**.
    - ✖ Coordinate **patient transport**.
- ✱ Second arriving ambulance assignment:
- ✱ Establish **treatment area(s)**.



Triage tags will be used on mass casualty incidents, all patients transferred by air ambulance, and all patient transported to an ER on Tuesdays.

Citation(s): (Citizens Memorial Hospital, 2012)

6-140 Withholding or Termination of Resuscitation

Basic Life Support	Advanced Life Support
✱ Initiate **CPR** immediately in the event of acute cardiac or respiratory arrest if: ✱ There is a possibility that the brain is viable. ✱ AND There are no legal or medical reasons to withhold resuscitation (DNR, declaration of intent, terminal illness, and verifiable absence of ABCs longer than 10min).	✱ The following scenarios should always be transported to the closest appropriate facility as soon as possible and field termination is not an option: ✱ Pediatrics, drownings, poisonings, or hypothermia. ✱ If airway cannot be maintained and/or IV/IO cannot be accessed. ✱ If witnessed, non-trauma arrest, full **ACLS resuscitation** efforts should continue for at least 20 minutes prior to consideration of field termination. ✱ When considering termination, paramedic should consult with the family. If family believes the patient would wish continued resuscitative efforts, resuscitation will continue and the patient shall be transported to closest appropriate facility.
✱ Resuscitation should not be started if: ✱ Decapitation. ✱ OR Rigor mortis. ✱ OR Tissue decomposition. ✱ OR Extreme dependent lividity. ✱ OR Obvious mortal injury. ✱ OR Properly documented DNR order. ✱ OR Properly documented advance directive.	✱ In the event there is no clear evidence to withhold CPR, however patient has a terminal condition and the patient's wishes have been conveyed by the family, contact **MEDICAL CONTROL** to withhold resuscitation. ✱ Field termination may be requested from **MEDICAL CONTROL** for victims of trauma with no signs of life regardless of how long ACLS efforts have been underway. ✱ If field termination is decided, **CONTACT MEDICAL CONTROL**: Inform emergency physician of patient, history, causes, efforts, and treatments.
✱ When any doubt exists of the validity of DNR orders or advance directive, **resuscitation** should be initiated immediately.	✱ After resuscitation has been terminated, contact local law enforcement and remain on scene until at least law enforcement or coroner arrival on the scene. If at healthcare facility, scene may be cleared prior to body retrieval. ✱ Fax the ePCR to the facility providing medical control if the facility is not CMH.

Citation(s): (Citizens Memorial Hospital, 2013)

Appendix A - Change Log

	Protocol	Date	Description
	Entire document	08/29/13	9/1/13 Version 1 approved by Roger Merk, MD.
		10/09/13	Modification to most documents to include oxygen titration based on Mercy Life Line protocols.
		12/13/13	Modification to most documents to remove capnography as a BLS skill, now is "assist ALS."
		12/16/13	1/1/14 Version 2 approved by Roger Merk, MD.
		12/20/13	1/1/14 Version 2 re-approved by Roger Merk, MD (includes CVA and STEMI changes).
		2/10/14	Removed QR codes and renamed to version 3.
	1-10 General medical	10/04/13	Added orthostatic. Added 4-lead and 12-lead BLS vs ALS clarification.
		11/11/13	Added quote from MO Statutes on transporting TCD.
		1/28/14	Changed ALS indicated pulseox to reflect oxygen titration changes.
Cardiac	2-20 A-Fib	10/04/13	Added rates to BLS combo pads.
	2-40 Brady	10/04/13	Added rates to BLS combo pads. Added "unstable" to pacing. Added "stable" to atropine.
	2-50 Chest discomfort	10/07/13	Clarified image for 12- and 15-lead placement.
		11/11/13	Added quote from MO Statues on transporting TCD STEMI.
		12/20/13	Added CMH Cath Lab activation procedure.
		1/29/14	Added preferred IV locations, combo pads. Changed ER contact phone number. Changed EKG email address. Coordinated protocol with CMH policies.
		2/2/14	Changed EKG email address again.
	2-80 Tachy narrow stable	10/04/13	Added rates and "consider" to combo pads.
	2-90 Tachy narrow unstable	10/04/13	Added rates to combo pads.
	2-100 Tachy wide stable	10/04/13	Added rates and "consider" to combo pads.
	2-110 Tachy wide unstable	10/04/13	Added rates to combo pads. Added "symptomatic" to ALS treatments.
	2-130 Ventricular ectopy	10/04/13	Added "consider" to combo pads.
	2-140 V-Fib	10/04/13	Changed witnessed pediatric energy from 2 J/kg to 4 J/kg.
	2-150 WPW	10/04/13	Added "consider" to combo pads.
	2-200 Tachycardia, Wide Stable	11/11/13	Fixed Mag Sulfate dose over 5 min to over 15-20 min (assume it was a typo).
Environ	3-10 Drowning	10/04/13	Added "consider combo pads."
		12/13/13	Removed CPAP as BLS skill, now is "assist ALS."
	3-30 Hypothermia	10/04/13	Added "consider combo pads."
Medical	4-20 Anaphylaxis	1/29/14	Coordinated protocol with CMH policies.
		2/22/14	Changed Oxygen dose to maintain 100%.
	4-40 Behavioral / Psychiatric	11/11/13	Removed Versed and replaced with valium.
		1/29/14	Added types of restraints allowed by policy. Added handcuff comment from policy.
		2/22/14	Added Ketamine after medical control for severe.
	4-50 CVA / Stroke	11/11/13	Added quote from MO Statutes on transporting TCD stroke.
		12/20/13	Added comment that TCD only applies when onset of symptoms < 4 hours ago.
		1/29/14	Coordinated protocol with CMH policies.
	4-60 COPD	12/13/13	Removed CPAP as BLS skill, now is "assist ALS."
	4-70 CHF	12/13/13	Removed CPAP as BLS skill, now is "assist ALS."
	4-80 Croup	10/04/13	Added "(max 1 dose)" to Racemic.
		11/11/13	Added IV/IM/PO for Decadron and added Solu-Medrol.
	4-90 Childbirth	10/04/13	Added "consider" to orthostatic.
	4-100 Fever	11/11/13	Added adult doses of Acetaminophen and Ibuprofen.
	4-120 Hypoglycemia	10/04/13	Removed "(entire tube)" from oral Glucose.
	4-140 Poisoning	1/9/14	Corrected poison control number.
		1/29/14	Added consider hazmat decon. Added hydrofluoric acid treatment. Coordinated with CMH policies.
	4-150 Post partum hemorrhage	10/04/13	Added "consider" to orthostatic.
		11/11/13	Changed "put baby to nurse" to "have mother breastfeed."
	4-160 Pre-term labor	10/04/13	Added "consider" to orthostatic.
	4-170 Seizures	11/11/13	Added "ensure open airway" to BLS. Moved IM Versed to bottom of options.
	4-180 Vaginal bleeding	10/04/13	Added "consider" to orthostatic.
Trauma	5-10 General trauma	11/11/13	Added quote from MO Statutes on transporting TCD trauma.
	5-30 Burns	1/29/14	Added consider saran wrap. Replaced Parkland formulas with new ABLS fluid guidelines. Added consider direct transport to burn center guidelines. Added contraindication for King airway and 7.5 ET tube desired.
	5-40 Chest trauma	10/04/13	Indented BLS CPAP under flail segment.
		12/13/13	Removed CPAP as BLS skill, now is "assist ALS."
	5-50 Extremity trauma	11/29/13	Added "consider tourniquet" to BLS.
		1/29/14	Added cold pack and dressings from orthopedic injury CMH policy.
	5-60 Eye injury	10/04/13	Moved Morgan Lens from ALS to BLS.
	5-70 Head trauma	11/19/13	Changed SMR mandatory to SMR "as required."

	5-90 Trauma arrest	10/04/13	Removed need for 20 minutes of ACLS and added immediate trauma termination from 6-140.
General	6-10 Med Control	1/29/14	Added comment if med control cannot be contacted from CMH policies.
	6-20 Air Ambulance	1/29/14	Coordinated protocol with CMH policies.
	6-30 Competencies	12/13/13	Added National Scope of Practice graphic.
		1/29/14	Coordinated protocol with CMH policies.
	6-50 Pain	2/22/14	Added medical control for Ketamine.
	6-70 Documentation	1/29/14	Coordinated protocol with CMH policies.
	6-80 Event standby	10/04/13	Changed “ALS bag” to “first-in bag.” Changed “will” to “may” provide ALS ambulance.
		1/29/14	Coordinated protocol with CMH policies.
	6-90 IDLH	1/29/14	Removed “rehabilitation” from title.
	6-110 RSI	1/29/14	Added “request second unit if possible.”
		2/22/14	Removed Ketamine contraindication to head injury.
	6-120 Transfer	10/04/13	Added BLS section for EMT maintaining care in new ambulance after breakdown. Specified EMT/Medic maintains care even if new ambulance is not CMH.
		11/11/13	Changed “should maintain pt care” to “may maintain pt care.”
	6-130 Triage	1/29/14	Defined mass casualty from policy. Added first arriving crew’s responsibilities from policies. Added when triage tags used from policies.
	6-140 Termination	10/04/13	Specified faxing ePCR only to non-CMH facilities.
		1/29/14	Added if at healthcare facility, scene may be cleared. Coordinated with CMH policies.
Medications	All medications	10/07/13	Added images of typical medication (vials).
		2/24/14	Added half-life of most medications.
	7-10 Acetaminophen	11/11/13	Added adult dose.
	7-60 Aspirin	12/20/13	Added EMT scope of practice statement.
	7-70 Ativan	10/09/13	Added option for SL tablet.
	7-140 Decadron	11/11/13	Added IV/IO/IM/PO and moved Neb to last resort.
	7-190 Epi 1:1,000	10/06/13	Added “medication” should be protected from light.
		12/20/13	Added EMT scope of practice statement.
	7-200 Epi 1:10,000	10/06/13	Added “medication” should be protected from light.
	7-220 Etomidate	2/22/14	Added contraindication of sepsis.
	7-230 Fentanyl	1/29/14	Coordinated with CMH policies.
	7-250 Glucose, Oral	12/20/13	Added EMT scope of practice statement.
	7-300 Ibuprofen	11/11/13	Added adult dose.
	7-390 Morphine	1/29/14	Coordinated with CMH policies.
	7-450 NS irrigation	12/20/13	Added EMT scope of practice statement.
	7-460 Oxygen	10/09/13	Major modification to include titration based on Mercy Life Line protocols.
		12/20/13	Added EMT scope of practice statement.
		1/29/14	Coordinated with CMH policies.
		2/22/14	Added unresponsive ROSC dosage and cleaned graphic of SpO_2 titration rates.
	7-580 Valium	1/29/14	Coordinated with CMH policies.
	7-600 Versed	1/29/14	Coordinated with CMH policies.
Equip	8-10 AED	12/15/13	Added EMT scope of practice statement.
	8-20 Blood Draw	1/29/14	Coordinated with CMH policies.
	8-40 CombiTube	12/15/13	Added EMT scope of practice statement.
	8-50 CPAP	12/15/13	Changed to ALS skill.
	8-60 Cot	12/15/13	Added EMT scope of practice statement.
		1/29/14	Added number of lifters based on patient weight from CMH policies.
	8-90 Evac-U-Splint	12/15/13	Added EMT scope of practice statement.
	8-120 Glucometer	12/15/13	Added EMT scope of practice statement.
	8-130 Intranasal	11/11/13	Added comment that IV route is preferred.
	8-150 KED	12/15/13	Added EMT scope of practice statement.
	8-160 King	12/15/13	Added EMT scope of practice statement.
	8-170 LMA	12/15/13	Added EMT scope of practice statement.
	8-190 LifePak	12/15/13	Added EMT scope of practice statements.
	8-210 Morgan lens	11/11/13	Changed to BLS and added ALS section for Tetracaine.
		12/15/13	Changed back to ALS skill.
	8-230 NPA	12/15/13	Added EMT scope of practice statement.
	8-250 Capnograph	12/15/13	Changed to ALS skill.
	8-260 OPA	12/15/13	Added EMT scope of practice statement.
	8-270 Ventilator	12/15/13	Changed to BLS skill
		1/29/14	Changed back to ALS skill.
	8-310 MAST	12/15/13	Added EMT scope of practice statement.
	8-340 Sager	12/15/13	Added EMT scope of practice statement.
	8-350 SMR	11/19/13	Added EMS Physicians position statement on backboards to only immobilize patients with spinal symptoms or altered consciousness.
		12/15/13	Added EMT scope of practice statement. Added facial bleeding and supine dyspnea to backboard contraindications. Added multi-person lift to procedure vs log-roll.
		1/29/14	Added c-collars should only be removed by ER MD from CMH policies.
	8-360 Splint	12/15/13	Added EMT scope of practice statement.
	8-370 Suction	12/15/13	Added EMT scope of practice statement.
	8-375 Tablet	2/10/14	Added Tablet protocol (for STEMI transmission) .
	8-390 Tourniquet	11/29/13	Added indications for use. Added precautionary statement about re-profusion injury. Added ALS analgesics and tourniquet removal instructions. Added Combat Application Tourniquet instructional graphic.

		12/15/13	Added EMT scope of practice statement.
	8-400 Traction	12/15/13	Added EMT scope of practice statement.

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Citizens Memorial Hospital
Pre-Hospital Protocols
Part 2 - Medications

Table of Contents

7-10 Acetaminophen (Tylenol)

Advanced Life Support

CLASS:

✱ Analgesic. Antipyretic.

ACTION:

✱ Analgesic mechanism unknown. Antipyretic is through direct action on hypothalmus.

HALFLIFE:

✱ 1-4 hours.

ROUTE:

✱ PO.

INDICATIONS:

✱ Fever > 102 F. Pediaprofen has been ineffective or administered within 6 hrs.

CONTRAINDICATIONS:

✱ Hypersensitivity.

ADULT DOSAGE:

✱ 325-650 mg every 4-6 hrs.

PEDIATRIC DOSAGE:

✱ 15 mg/kg every 4-6 hrs.

PRECAUTIONS:

✱ Impaired liver function. Chronic alcohol use. Impaired renal function. PKU.

SIDE EFFECTS:

✱ Rash, uticaria, nausea.

ANTIDOTE:

✱ Acetylcysteine or mucomyst.

REFERENCED PROTOCOL(S):

✱ 4-100 Fever

Citation(s):

7-20 Activated Charcoal - CALL FOR ORDERS

Advanced Life Support

CLASS:

- Adsorbent.

ACTION:

- Adsorbs toxins by chemical binding and prevents gastrointestinal absorption.

ROUTE:

- Oral.

INDICATIONS:

- Poisoning following emesis or when emesis is contraindicated.

CONTRAINDICATIONS:

- No gag reflex. Unconsciousness. Ingestion of acids, alkalis, ethanol, methanol, cyanide, iron salts, lithium, pesticides, petroleum products. Acetaminophen overdose unless the receiving hospital has IV antidote. GI Obstruction.

ADULT DOSAGE:

- 50-100 g mixed with glass of water to form slurry.

PEDIATRIC DOSAGE:

- 0.5-1 g/kg mixed with glass of water to form slurry.

PRECAUTIONS:

- Aspiration may cause pneumonitis.

SIDE EFFECTS:

- Nausea, vomiting, constipation, diarrhea.

REFERENCED PROTOCOL(S):

- 4-140 Poisoning / Overdose

Citation(s):

7-30 Adenosine (Adenocard)

Advanced Life Support

CLASS:

✱ Antiarrhythmic.

ACTION:

✱ Slows AV conduction.

HALFLIFE:

✱ <10 seconds.

ROUTE:

✱ IV/IO slam followed by rapid flush.

INDICATIONS:

✱ Symptomatic PSVT.

CONTRAINDICATIONS:

✱ 2nd or 3rd degree heart block. Sick sinus syndrome. Drug-induced tachycardia.

ADULT DOSAGE (>50 kg):

✱ 6 mg.
✱ If ineffective, second and/or third dose at 12 mg.

PEDIATRIC DOSAGE (<50 kg):

✱ 0.1 mg/kg (max 6 mg/dose).
✱ If ineffective, second and/or third dose at 0.2 mg/kg (max 12 mg/dose).

PRECAUTIONS:

✱ Arrhythmias, including blocks, are common at the time of cardioversion. Use caution in patients with asthma.

SIDE EFFECTS:

✱ Flushing, headache, shortness of breath, dizziness, nausea, sense of impending doom, chest pressure, numbness. May be a brief episode of asystole after administration.

REFERENCED PROTOCOL(S):

✱ 2-20 Atrial Fibrillation (A-Fib) / Atrial Flutter - CALL FOR ORDERS
✱ 2-80 Tachycardia, Narrow Stable
✱ 2-90 Tachycardia, Narrow Unstable

Citation(s):

7-40 Albuterol (Proventil, Ventolin)

Advanced Life Support

CLASS:

✱ Beta-2 selective sympathomimetic.

ACTION:

✱ Binds and stimulates beta-2 receptors, resulting in relaxation of bronchial smooth muscle.

HALFLIFE:

✱ 1.6 hours.

ROUTE:

✱ Nebulizer.

INDICATIONS:

✱ Asthma. Reversible bronchospasm associated with COPD.

CONTRAINDICATIONS:

✱ Angioedema.

ADULT DOSAGE:

✱ 2.5 mg in 2.5 ml normal saline over 5-15 min nebulized.

PEDIATRIC DOSAGE:

✱ 2.5 mg in 2.5 ml normal saline over 5-15 min nebulized.

PRECAUTIONS:

✱ Blood pressure, pulse, and EKG should be monitored. Use caution in patients with known heart disease.

SIDE EFFECTS:

✱ Palpitations, anxiety, headache, dizziness, sweating, hyperglycemia, hypokalemia, insomnia, tachycardia, nausea, vomiting, throat irritation, dry mouth, epistaxis, hypertension, dyspepsia, and paradoxical bronchospasm.

REFERENCED PROTOCOL(S):

✱ 4-20 Anaphylaxis / Allergic Reaction
✱ 4-30 Asthma
✱ 4-60 Chronic Obstructive Pulmonary Disease (COPD)
✱ 4-70 Congestive Heart Failure (CHF)

Citation(s):

7-50 Amiodarone (Cordarone)

Advanced Life Support

CLASS:

✱ Class III antiarrhythmic.

ACTION:

✱ Sodium, calcium, and potassium channel blocker. Prolongs intranodal conduction. Prolongs refractoriness of the AV node.

HALFLIFE:

✱ 58 days.

ROUTE:

✱ IV/IO

INDICATIONS:

✱ V-Fib, V-Tach, narrow complex tachycardia. Second-line agent for atrial arrhythmias.

CONTRAINDICATIONS:

✱ Cardiogenic shock. Sinus bradycardia. 2nd or 3rd degree AV block. Sick sinus syndrome. Sensitivity to benzyl alcohol and iodine.

ADULT DOSAGE:

✱ V-Fib/Pulseless V-Tach: 300 mg initial, 150 mg recurrent.
✱ Narrow complex tachycardia: 150 mg in 100 ml D5W over 10 min.

PEDIATRIC DOSAGE:

✱ 5 mg/kg up (max 300 mg/dose) may repeat to a total of 15 mg/kg max.

PRECAUTIONS:

✱ Proarrhythmic with concurrent antiarrhythmic meds. Consider slower administration on patients with hepatic or renal dysfunction. May prolong QT interval.

SIDE EFFECTS:

✱ Hypotension, bradycardia (slow down the rate of infusion).

ANTIDOTE:

✱ Calcium chloride, glucagon.

REFERENCED PROTOCOL(S):

✱ 2-20 Atrial Fibrillation (A-Fib) / Atrial Flutter
✱ 2-80 Tachycardia, Narrow Stable
✱ 2-100 Tachycardia, Wide Stable
✱ 2-110 Tachycardia, Wide Unstable - CALL FOR ORDERS
✱ 2-130 Ventricular Ectopy - CALL FOR ORDERS
✱ 2-140 Ventricular Fibrillation (V-Fib / V-Tach)

Citation(s):

7-60 Aspirin

Basic Life Support

19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

CLASS:

- Platelet inhibitor. Anti-inflammatory. Analgesic.

ACTION:

- Prevents formation of thromboxane A2. Blocks platelet aggregation.

HALFLIFE:

- 3.1-3.2 hours.

ROUTE:

- PO.

INDICATIONS:

- New chest pain suggestive of AMI. Fever, inflammation, angina, acute MI.

CONTRAINDICATIONS:

- Asthma, GI bleeding, active ulcer disease, hemorrhagic stroke, bleeding disorders, children with chickenpox or flu-like symptoms.

ADULT DOSAGE:

- Chew 324 mg (four 81 mg "baby aspirin").

PEDIATRIC DOSAGE:

- Not indicated.

PRECAUTIONS:

- GI bleeding and upset stomach, trauma, decreased LOC of unknown origin.

SIDE EFFECTS:

- Heartburn, nausea, vomiting, wheezing, anaphylaxis, angioedema, bronchospasm, bleeding, stomach irritation.

REFERENCED PROTOCOL(S):

- 2-50 Chest Discomfort (Cardiac)

Citation(s): (Carnahan, 2012)

7-70 Ativan (Lorazapam)

Advanced Life Support

CLASS:

✱ Benzodiazepine.

ACTION:

✱ Anticonvulsant. Skeletal muscle relaxant. Sedative. Binds to benzodiazepine receptor and enhances effects of GABA.

HALFLIFE:

✱ 9-16 hours.

ROUTE:

✱ IV/IM/PR/SL.

INDICATIONS:

✱ Where Valium is indicated and not available. Generalized seizures. Status epilepticus. Premedication before cardioversion. Acute anxiety.

CONTRAINDICATIONS:

✱ Pregnancy and nursing. Sensitivity to benzodiazepines, polyethylene glycol, benzyl alcohol. COPD. Shock. Coma. Closed angle glaucoma.

ADULT DOSAGE:

✱ Status epilepticus: 4 mg may be repeated once in 10 min.
✱ Acute anxiety: 2-4 mg.
✱ Premedication before cardioversion: 2 mg.

PEDIATRIC DOSAGE:

✱ Status epilepticus: 0.1 mg/kg (max 2 mg/dose).
✱ Cardioversion: 0.05 mg/kg (max 2 mg).

PRECAUTIONS:

✱ Depressive disorders. Psychosis. Acute alcohol intoxication. Renal or hepatic impairment. Organic brain syndrome. Myasthenia gravis. Suicidal tendencies. GI disorders. Elderly or debilitated. Limited pulmonary reserve.

SIDE EFFECTS:

✱ Apnea, nausea, vomiting, drowsiness, restlessness, delirium, anterior grade amnesia, weakness, unsteadiness, depression, sleep disturbances, confusion, hallucinations, hypertension, hypotension, blurred vision, abdominal discomfort.

ANTIDOTE:

✱ Flumazenil (Romazicon).

REFERENCED PROTOCOL(S):

✱ 2-20 Atrial Fibrillation (A-Fib) / Atrial Flutter - CALL FOR ORDERS
✱ 2-40 Bradycardia
2-60 Post Resuscitative Care
✱ 2-80 Tachycardia, Narrow Stable - CALL FOR ORDERS
✱ 2-90 Tachycardia, Narrow Unstable
✱ 2-100 Tachycardia, Wide Stable - CALL FOR ORDERS
✱ 2-110 Tachycardia, Wide Unstable
2-120 Torsades de Pointes
✱ 3-20 Heat Exhaustion / Heat Stroke
✱ 4-10 Abdominal Pain / Nausea - CALL FOR ORDERS
✱ 4-40 Behavioral / Psychiatric
4-170 Seizures
✱ 6-50 Control of Pain - CALL FOR ORDERS
✱ 6-110 Rapid Sequence Intubation (RSI) - CALL FOR ORDERS

Citation(s): (Silbergleit, et al., 2012)

7-80 Atropine

Advanced Life Support

CLASS:

- Parasympatholytic (anticholinergic).

ACTION:

- Competes with acetylcholine at the site of muscarinic receptor. Increases heart rate. Decreases gastrointestinal secretions.

HALFLIFE:

- 2 hours.

ROUTE:

- IV/IO. ET at twice the dose.

INDICATIONS:

- Asystole or PEA. Bradycardia. Hypotension secondary to bradycardia. Organophosphate poisoning. RSI of pediatrics under 10 or any bradycardic patients. Nerve agent exposure.

CONTRAINDICATIONS:

- None when used in emergency situations.

ADULT DOSAGE:

- Asystole/PEA: 1 mg every 3-5 min (max 3 mg).
- Bradycardia: 0.5 mg every 5 min (max 3 mg).
- Organophosphate poisoning: 2-5 mg.

PEDIATRIC DOSAGE:

- Asystole/PEA: 1 mg every 3-5 min (max 3 mg).
- Bradycardia: 0.02 mg/kg (min 0.1 mg, max 0.5 mg per dose) (max 1 mg).
- Organophosphate poisoning: 0.05 mg/kg.
- Head trauma: 0.02 mg/kg (min 0.1 mg).

PRECAUTIONS:

- Tachycardia. Hypertension. May cause paradoxical bradycardia if dose is too low or administered too slowly.

SIDE EFFECTS:

- Palpitations and tachycardia. Headache, dizziness, and anxiety. Dry mouth, pupillary dilation, and blurred vision. Urinary retention (especially older males). Hot skin temperature. Intense facial flushing. Restlessness.

REFERENCED PROTOCOL(S):

- 2-10 Asystole
- 2-70 Pulseless Electrical Activity (PEA)
- 5-70 Head Trauma
- 6-110 Rapid Sequence Intubation (RSI) - CALL FOR ORDERS
- 2-40 Bradycardia
- 4-140 Poisoning / Overdose

Citation(s):

7-90 Benadryl (Diphenhydramine)

Advanced Life Support

CLASS:

✱ Antihistamine.

ACTION:

✱ Blocks H1 histamine receptors. Has some sedative effects.

HALFLIFE:

✱ 8-17 hours.

ROUTE:

✱ IV/IO/IM.

INDICATIONS:

✱ Anaphylaxis. Allergic reactions. Dystonic reactions due to phenothiazines. Extra Pyramidal Symptoms (EPS) (see Compazine).

CONTRAINDICATIONS:

✱ Asthma. Nursing mothers.

ADULT DOSAGE:

✱ 25-50 mg.

PEDIATRIC DOSAGE:

✱ 1.25 mg/kg.

PRECAUTIONS:

✱ Hypotension.

SIDE EFFECTS:

✱ Sedation. Dries bronchial secretions. Blurred vision. Headache. Palpitations. Dizziness, excitability, wheezing, thickening of bronchial secretions, chest tightness, hypotension, dry mouth, nausea, vomiting, diarrhea.

REFERENCED PROTOCOL(S):

✱ 4-20 Anaphylaxis / Allergic Reaction

4-40 Behavioral / Psychiatric

Citation(s):

7-100 Calcium Chloride - CALL FOR ORDERS

Advanced Life Support

CLASS:

✱ Electrolyte.

ACTION:

✱ Increases cardiac contractility.

ROUTE:

✱ IV/IO.

INDICATIONS:

✱ Hyperkalemia, hypocalcemia. Calcium channel blocker overdose (Verapamil, Nifedipine). Abdominal muscle cramping associated with spider bite. Antidote for magnesium sulfate.

CONTRAINDICATIONS:

✱ Patients on digitalis.

ADULT DOSAGE:

✱ Contact medical control.

PEDIATRIC DOSAGE:

✱ Contact medical control.

PRECAUTIONS:

✱ IV line should be flushed between calcium chloride and sodium bicarbonate administration.

SIDE EFFECTS:

✱ Arrhythmias (bradycardia and asystole), and hypotension.

REFERENCED PROTOCOL(S):

✱ 4-140 Poisoning / Overdose - CALL FOR ORDERS

Citation(s):

7-110 Captopril (Capoten) - CALL FOR ORDERS

Advanced Life Support

CLASS:

- ACE inhibitor.

ACTION:

- Competitive inhibitor of Angiotension Converting Enzyme (ACE).

HALFLIFE:

- 1.9 hours.

ROUTE:

- SL

INDICATIONS:

- Heart failure, left ventricular dysfunction after MI, hypertension.

CONTRAINDICATIONS:

- Hypersensitivity to any ACE inhibitor.

ADULT DOSAGE:

- SBP >110: 25 mg.
- SBP 90-110: 12.5 mg.

PEDIATRIC DOSAGE:

- Not indicated.

PRECAUTIONS:

- May cause hyperkalemia, especially in patients with renal deficiency. Aortic stenosis, bilateral renal artery stenosis, hypertrophic obstructive cardiomyopathy, pericardial tamponade, elevated serum potassium levels, acute kidney failure.

SIDE EFFECTS:

- Hypotension, angioedema, headache, dizziness, fatigue, depression, chest pain, palpitations, cough, dyspnea, nausea, vomiting, rash, pruritus, renal failure.

REFERENCED PROTOCOL(S):

- Not in current protocols.

Citation(s):

7-120 Cardizem (Diltiazem)

Advanced Life Support

CLASS:

✱ Calcium channel blocker.

ACTION:

✱ Slows conduction through the AV node.

HALFLIFE:

✱ 3-4.5 hours.

ROUTE:

✱ IV/IO.

INDICATIONS:

✱ PSVT. Atrial fibrillation with rapid ventricular response. Atrial flutter with rapid response.

CONTRAINDICATIONS:

✱ Heart blocks. Conduction disturbances. WPW. Congestive heart failure (pulmonary edema). Hypotension.

ADULT DOSAGE:

✱ 0.25 mg/kg (max 20 mg) over 2 min.
✱ May repeat at 0.35 mg/kg (max 25 mg) after 15 min.
✱ Infusion at 5-15 mg/hr.

PEDIATRIC DOSAGE:

✱ CALL FOR ORDERS

PRECAUTIONS:

✱ Hypotension. Should not be used in patients receiving IV beta-blockers.

SIDE EFFECTS:

✱ Nausea, vomiting, hypotension, dizziness, bradycardia, flushing, headache, heart block, cardiac arrest.

ANTIDOTE:

✱ Calcium chloride, glucagon.

REFERENCED PROTOCOL(S):

✱ 2-20 Atrial Fibrillation (A-Fib) / Atrial Flutter 2-80 Tachycardia, Narrow Stable

Citation(s):

7-130 Compazine (Prochlorperazine) - CALL FOR ORDERS

Advanced Life Support

CLASS:

- Phenothyazine antiemetic.

ACTION:

- Antiemetic.

HALFLIFE:

- 4-8 hours.

ROUTE:

- IV/IO.

INDICATIONS:

- Nausea and vomiting.

CONTRAINDICATIONS:

- Comatose patients who have received a large amount of depressants (including alcohol).

ADULT DOSAGE:

- 5-10 mg over 2 min. Each 5 mg must be diluted in 10 ml of NS.

PEDIATRIC DOSAGE:

- Not indicated.

PRECAUTIONS:

- Possible EPS (dystonic reactions). Have benadryl ready in cases of EPS.

SIDE EFFECTS:

- May impair mental and physical ability, drowsiness, hypotension.

EXTRA-PYRAMIDAL SYMPTOMS (EPS):

- Movement disorder such as inability to move or restlessness may be a side effect. Treat with BENADRYL 25mg IV/IO.

REFERENCED PROTOCOL(S):

- Not in current protocols.

Citation(s):

7-135 Cyanokit (Hydroxocobalamin)

Advanced Life Support

CLASS:

✱ Antidote.

ACTION:

✱ Cyanide ion binder.

HALFLIFE:

✱ 6 days.

ROUTE:

✱ IV/IO.

INDICATIONS:

✱ Known or suspected cyanide poisoning. Altered mental status following exposure to smoke in confined space.

CONTRAINDICATIONS:

✱ None.

ADULT DOSAGE:

✱ 5 g IV/IO over 15 min.

PEDIATRIC DOSAGE:

✱ 70 mg/kg IV/IO over 15 min (max 5 g total).

PRECAUTIONS:

✱ Substantial increases in blood pressure may occur following cyanokit therapy. Based on animal studies, may cause fetal harm, however, treatment may be lifesaving.

SIDE EFFECTS:

✱ Transient chromaturia, erythema, rash, increased blood pressure, nausea, headache.

REFERENCED PROTOCOL(S):

✱ 4-140 Poisoning / Overdose

Citation(s): (Cyanokit, 2012)

7-140 Decadron (Dexamethasone)

Advanced Life Support

CLASS:

✱ Steroid.

ACTION:

✱ Anti-inflammatory. Reduces inflammation and immune response.

HALFLIFE:

✱ 190 minutes.

ROUTE:

✱ IV/IO/IM/PO.
✱ Inhalation via nebulizer as last resort.

INDICATIONS:

✱ Asthma. Adrenal insufficiency.

CONTRAINDICATIONS:

✱ Fungal infections.

ADULT DOSAGE:

✱ 12-16 mg (once).

PEDIATRIC DOSAGE:

✱ 0.6 mg/kg (max 12 mg).

PRECAUTIONS:

✱ None in emergency setting.

SIDE EFFECTS:

✱ Nausea, vomiting, headache, vertigo, anxiety, hypokalemia, hyperglycemia, tremors, hypertension, immunosuppression.

REFERENCED PROTOCOL(S):

✱ 4-30 Asthma
4-80 Croup

Citation(s):

7-150 Dextrose

Advanced Life Support

CLASS:

✱ Carbohydrate.

ACTION:

✱ Elevates blood glucose level rapidly.

ROUTE:

✱ IV/IO.

INDICATIONS:

✱ Hypoglycemia as indicated by glucometry.

CONTRAINDICATIONS:

✱ Intracranial hemorrhage.

ADULT DOSAGE:

✱ **D50W**, **D25W**, or **D10W** 25 g.

PEDIATRIC DOSAGE:

✱ **D25W** 0.5-1 g/kg.
  ✱ 5 ml **D50W** + 5 ml **NS** = 2.5 g **D25W**.

NEONATE DOSAGE:

✱ **D10W** 0.5-1 g/kg.
  ✱ 2 ml **D50W** + 8 ml **NS** = 1 g **D10W**.

PRECAUTIONS:

✱ Blood sample should be drawn before administering D50W.

SIDE EFFECTS:

✱ Local venous irritation. Hyperglycemia, warmth, thrombosis.

REFERENCED PROTOCOL(S):

✱ 2-100 Tachycardia, Wide Stable
✱ 2-120 Torsades de Pointes
✱ 4-120 Hypoglycemia
✱ 7-490 Procainamide (Pronestyl)
2-110 Tachycardia, Wide Unstable
2-150 Wolff-Parkinson-White (WPW)
7-50 Amiodarone (Cordarone)

Citation(s):

7-160 Dilaudid (Hydromorphone) - CALL FOR ORDERS

Advanced Life Support

CLASS:

✱ Narcotic analgesic.

ACTION:

✱ Analgesia and sedation. CNS depressant. Decreased sensitivity to pain.

HALFLIFE:

✱ 2-3 hours.

ROUTE:

✱ IV/IM/IO.

INDICATIONS:

✱ Severe pain.

CONTRAINDICATIONS:

✱ Hypersensitivity.

ADULT DOSAGE:

✱ 1-2 mg (max 2 mg) in 0.5 mg increments.

PEDIATRIC DOSAGE:

✱ Not indicated.

PRECAUTIONS:

✱ Respiratory depression may last longer than analgesia.

SIDE EFFECTS:

✱ Bradycardia, respiratory depression, euphoria.

ANTIDOTE:

✱ Narcan.

REFERENCED PROTOCOL(S):

✱ Not in current protocols.

Citation(s):

7-170 Dopamine (Intropin)

Advanced Life Support

CLASS:

✱ Sympathomimetic.

ACTION:

✱ Stimulates alpha and beta adrenergic receptors. Increases cardiac contractility. Causes peripheral vasoconstriction.

HALFLIFE:

✱ 2 minutes.

ROUTE:

✱ IV/IO.

INDICATIONS:

✱ Cardiogenic shock. Hypovolemic shock (only after complete fluid resuscitation). Bradycardia unresponsive to atropine.

CONTRAINDICATIONS:

✱ Hypovolemic shock where complete fluid resuscitation has not occurred. Severe tachyarrhythmias. Ventricular fibrillation or ventricular arrhythmias.

ADULT DOSAGE:

✱ Beta effects (increased rate, contractility): 5-10 mcg/kg/min.
✱ Alpha effects (vasoconstriction): 10-20 mcg/kg/min.
✱ COLORADO DOWN AND DIRTY DOPAMINE DOSE: With 1600mg/ml mixture only.
[(patient's weight in pounds) / (10)] - (2) = (ml/hr for 5mcg/kg/min)

PEDIATRIC DOSAGE:

✱ 5-20 mcg/kg/min. Mix 6 mg/kg with enough D5W to make 100 ml - CALL FOR ORDERS.

PRECAUTIONS:

✱ Ventricular irritability.

SIDE EFFECTS:

✱ Ventricular tachyarrhythmias. Hypertension. Angina, dyspnea, headache, nausea, vomiting.

ANTIDOTE:

✱ Rigitine.

REFERENCED PROTOCOL(S):

✱ 2-40 Bradycardia
✱ 4-70 Congestive Heart Failure (CHF)
2-60 Post Resuscitative Care

Citation(s):

7-180 Duoneb (Ipratropium + Albuterol, Combivent)

Advanced Life Support

CLASS:

- Beta adrenergic. Anticholinergic.

ACTION:

- Binds and stimulates beta-2 receptors, resulting in relaxation of bronchial smooth muscle, and antagonizes the acetylcholine receptor, producing bronchodilation.

ROUTE:

- Nebulized.

INDICATIONS:

- Bronchoconstriction refractory to albuterol.

CONTRAINDICATIONS:

- Hypersensitivity to Ipratropium, Albuterol, or Atropine. Allergy to soybeans or peanuts. Closed angle glaucoma, bladder neck obstruction, and prostatic hypertrophy.

ADULT DOSAGE:

- 3 ml = 0.5 mg Ipratropium + 2.5 mg Albuterol (max 1 dose).

PEDIATRIC DOSAGE:

- 3 ml = 0.25 mg Ipratropium + 2.5 mg Albuterol (max 1 dose).

PRECAUTIONS:

- Blood pressure, pulse, and EKG should be monitored. Use caution in patients with known heart disease. May cause paradoxical acute bronchospasm.

SIDE EFFECTS:

- Palpitations, anxiety, headache, dizziness, sweating, tachycardia, cough, nausea, arrhythmias, paradoxical acute bronchospasm.

ANTIDOTE:

- Physostigmine.

REFERENCED PROTOCOL(S):

- 4-20 Anaphylaxis / Allergic Reaction
- 4-30 Asthma
- 4-60 Chronic Obstructive Pulmonary Disease (COPD)
- 4-70 Congestive Heart Failure (CHF)

Citation(s):

7-190 Epinephrine 1:1,000

Basic Life Support

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✱ Auto-injector pen indicated if paramedic unavailable.

Advanced Life Support

CLASS:

✱ Sympathomimetic.

ACTION:

✱ Binds with both alpha and beta receptors. Bronchodilation.

HALFLIFE:

✱ 2 minutes.

ROUTE:

✱ SQ/IM/ET.

INDICATIONS:

✱ Bronchial asthma. Exacerbation of COPD. Allergic reactions.

CONTRAINDICATIONS:

✱ Cardiovascular disease. Hypertension. Pregnancy. Patients with tachyarrhythmias. CerebroVascular disease. Diabetes.

ADULT DOSAGE:

✱ 0.3-0.5 mg (max 1 mg).

PEDIATRIC DOSAGE:

✱ 0.01 mg/kg (max 0.5 mg).
✱ ET dose where IV access for 1:10,000 concentration unavailable: 0.1 mg/kg.

PRECAUTIONS:

✱ Medication should be protected from light. Blood pressure, pulse and EKG must be constantly monitored.

SIDE EFFECTS:

✱ Palpitations, tachycardia, anxiousness, headache, tremor, myocardial ischemia in older patients. Anxiety, chest pain, cardiac arrhythmias, hypertension, nausea, vomiting.

REFERENCED PROTOCOL(S):

✱ 2-10 Asystole
✱ 2-70 Pulseless Electrical Activity (PEA)
✱ 2-140 Ventricular Fibrillation (V-Fib / V-Tach)
✱ 4-20 Anaphylaxis / Allergic Reaction
✱ 4-30 Asthma
✱ 4-80 Croup
✱ 4-130 Neonatal Resuscitation

Citation(s): (Carnahan, 2012)

7-200 Epinephrine 1:10,000

Advanced Life Support

CLASS:

✱ Sympathomimetic.

ACTION:

✱ Binds with both alpha and beta receptors. Increases heart rate. Increases cardiac contractility. Causes bronchodilation.

HALFLIFE:

✱ 2 minutes.

ROUTE:

✱ IV/IO. ET: see 1:1,000 concentration.

INDICATIONS:

✱ Cardiac arrest. Anaphylactic shock.

CONTRAINDICATIONS:

✱ None when used in emergency setting.

ADULT DOSAGE:

✱ Cardiac arrest: 1 mg every 3-5 min.
✱ Bradycardia: 2-10 mcg/min.
  ✱ Mix 1 mg in 250 ml NS. 2 mcg/min = 30 ml/hr. 10 mcg/min = 150 ml/hr.
✱ Severe anaphylaxis: 0.3 mg. Consider 05-15 mcg/min.

PEDIATRIC DOSAGE:

✱ Cardiac arrest: 0.01 mg/kg every 3-5 min.
✱ Bradycardia: 0.01 mg/kg every 3-5 min.
✱ Severe anaphylaxis: 0.1-1 mcg/kg/min.

PRECAUTIONS:

✱ Medication should be protected from light. Can be deactivated by alkaline solutions.

SIDE EFFECTS:

✱ Tachyarrhythmias. Palpitations. Anxiety, chest pain, hypertension, nausea, vomiting, headache.

REFERENCED PROTOCOL(S):

✱ 2-10 Asystole
✱ 2-70 Pulseless Electrical Activity (PEA)
✱ 4-20 Anaphylaxis / Allergic Reaction
2-40 Bradycardia
2-140 Ventricular Fibrillation (V-Fib / V-Tach)
4-130 Neonatal Resuscitation

Citation(s):

7-210 Epinephrine, Racemic

Advanced Life Support

CLASS:

✱ Nonselective alpha and beta agonist.

ACTION:

✱ Arteriole constriction. Positive inotrope. Positive chronotrope. Bronchial smooth muscle relaxant. Blocks histamine release. Inhibits insulin secretion. Relaxes GI smooth muscle.

HALFLIFE:

✱ 2 minutes.

ROUTE:

✱ Nebulizer.

INDICATIONS:

✱ Croup with moderate to severe respiratory distress.

CONTRAINDICATIONS:

✱ Glaucoma, elderly, cardiac disease, hypertension, thyroid disease, diabetes, sensitivity to sulfites.

ADULT DOSAGE:

✱ 0.5 ml mixed with 3 ml NS.

PEDIATRIC DOSAGE:

✱ 0.5 ml mixed with 3 ml NS.

PRECAUTIONS:

✱ Observe 2-4hrs after administration.

SIDE EFFECTS:

✱ Palpitations, anxiety, headache, hypertension, nausea, vomiting, arrhythmias, rebound edema. Dizziness, tremor, tachycardia.

REFERENCED PROTOCOL(S):

✱ 4-80 Croup

Citation(s):

7-220 Etomidate (Amidate) - CALL FOR ORDERS

Advanced Life Support

CLASS:

✱ Sedative, non-barbiturate hypnotic.

ACTION:

✱ Unknown GABA-like effects. No analgesic effects. Has few cardiovascular or respiratory effects. Cerebro-protective decreases ICP, IOP.

HALFLIFE:

✱ 75 minutes.

ROUTE:

✱ IV/IO.

INDICATIONS:

✱ Sedation prior to intubation (RSI).

CONTRAINDICATIONS:

✱ Hypersensitivity, sepsis.

ADULT DOSAGE:

✱ 0.3 mg/kg.

PEDIATRIC DOSAGE:

✱ 0.3 mg/kg.

PRECAUTIONS:

✱ Single dose only. Marked hypotension. Severe asthma.

SIDE EFFECTS:

✱ Myoclonic skeletal muscle movements. Apnea. Hypertension, hypotension, dysrhythmias. Nausea, vomiting, hiccups, snoring. Adrenal insufficiency, laryngospasm, cardiac arrhythmias.

REFERENCED PROTOCOL(S):

✱ 6-110 Rapid Sequence Intubation (RSI) - CALL FOR ORDERS

Citation(s):

7-230 Fentanyl (Sublimaze)

Advanced Life Support

CLASS:

✱ Narcotic analgesic.

ACTION:

✱ Binds to opiate receptors. Analgesia and sedation. Central nervous system depressant. Decreased sensitivity to pain.

HALFLIFE:

✱ IV: 10-20 minutes
✱ IN: 6.5 minutes.

ROUTE:

✱ IV/IN/IM/IO.

INDICATIONS:

✱ Severe pain.

CONTRAINDICATIONS:

✱ Hypersensitivity.

ADULT DOSAGE:

✱ 50-100 mcg every 5-20 min PRN for pain (max 300 mcg).

PEDIATRIC DOSAGE:

✱ 0.5-2 mcg/kg.

PRECAUTIONS:

✱ Respiratory depression may last longer than the analgesic effects. Narcan should be available. Give slowly, rapid injection could cause rigid chest syndrome. Use with caution in traumatic brain injury.

SIDE EFFECTS:

✱ Bradycardia, respiratory depression, euphoria. Hypotension, nausea, vomiting, dizziness, sedation, bradycardia, tachycardia, palpitations, hypertension, diaphoresis, syncope.

ANTIDOTE:

✱ Narcan.

REFERENCED PROTOCOL(S):

✱ 2-20 Atrial Fibrillation (A-Fib) / Atrial Flutter - CALL FOR ORDERS
✱ 2-40 Bradycardia
2-60 Post Resuscitative Care
✱ 2-80 Tachycardia, Narrow Stable - CALL FOR ORDERS
✱ 2-90 Tachycardia, Narrow Unstable
✱ 2-100 Tachycardia, Wide Stable - CALL FOR ORDERS
✱ 2-110 Tachycardia, Wide Unstable
2-120 Torsades de Pointes
✱ 3-30 Hypothermia / Frostbite
4-10 Abdominal Pain / Nausea
✱ 5-20 Abdominal Trauma
5-30 Burns
✱ 5-40 Chest Trauma
5-50 Extremity Trauma
✱ 5-60 Eye Injuries
5-70 Head Trauma
✱ 5-80 Spinal Trauma
6-50 Control of Pain
✱ 6-110 Rapid Sequence Intubation (RSI) - CALL FOR ORDERS

Citation(s): (Borland, Bergesio, Pascoe, Turner, & Woodger, 2005), (Citizens Memorial Hospital, 2013), (Finn, et al., 2004), (O'Donnell, Schafer, Stevens, Weinstein, Miramonti, & Kozak, 2013)

7-240 Glucagon

Advanced Life Support

CLASS:

✱ Other endocrine/metabolism.

ACTION:

✱ Converts hepatic glycogen to glucose.

ROUTE:

✱ IM/SQ/IV/IO.

INDICATIONS:

✱ Severe hypoglycemia when unable to establish vascular access. Beta blocker overdose.

CONTRAINDICATIONS:

✱ Pheochromocytoma. Insulinoma.

ADULT DOSAGE:

✱ Hypoglycemia: 1 mg. May repeat once after 20 min.
✱ Beta blocker overdose: 2-5 mg. May repeat at 10 mg if bradycardia and hypotension recur.

PEDIATRIC DOSAGE:

✱ Hypoglycemia: 0.5 mg. May repeat once after 20 min.
✱ Beta blocker overdose: 30-150 mcg/kg (max 5 mg).

PRECAUTIONS:

✱ May cause severe rebound hyperglycemia.

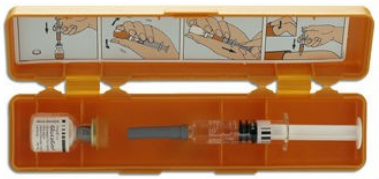
SIDE EFFECTS:

✱ Hypotension. Nausea/vomiting. Uticaria. Respiratory distress. Tachycardia.

REFERENCED PROTOCOL(S):

✱ 4-120 Hypoglycemia
✱ 4-140 Poisoning / Overdose - CALL FOR ORDERS

Citation(s):



7-250 Glucose, Oral

Basic Life Support

19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

CLASS:

✱ Carbohydrate.

ACTION:

✱ Elevates blood sugar levels.

ROUTE:

✱ PO.

INDICATIONS:

✱ Hypoglycemia as indicated by glucometry.

CONTRAINDICATIONS:

✱ Patients with altered level of consciousness that cannot protect airway.

ADULT DOSAGE:

✱ 15 g.

PEDIATRIC DOSAGE:

✱ 15 g.

PRECAUTIONS:

✱ If alcohol abuse is suspected, then glucose should be given after 100mg of Thiamine is administered.

SIDE EFFECTS:

✱ None.

REFERENCED PROTOCOL(S):

✱ 4-120 Hypoglycemia

Citation(s): (Carnahan, 2012)

7-260 Haldol (Haloperidol)

Advanced Life Support

CLASS:

✱ Antipsychotic.

ACTION:

✱ Competitive postsynaptic dopamine receptor blocker.

HALFLIFE:

✱ 10-30 hours.

ROUTE:

✱ IV/IM/IO.

INDICATIONS:

✱ Agitation, aggressive behavior.

CONTRAINDICATIONS:

✱ Parkinson's disease, severe CNS depression, or comatose states.

ADULT DOSAGE:

✱ Mild agitation: 2-5 mg.
✱ Moderate to severe agitation: 5 mg.

PEDIATRIC DOSAGE:

✱ Not recommended.

PRECAUTIONS:

✱ Severe cardiovascular disorders due to possible hypotension. If vasopressor is needed, use norepinephrine. Perform 12-lead EKG after administration to check for prolonged QT.

SIDE EFFECTS:

✱ EPS syndrome, prolongation of QT. Drowsiness, tardive dyskinesia, hypotension, hypertension, tachycardia, Torsades, de Pointes.

REFERENCED PROTOCOL(S):

✱ 4-40 Behavioral / Psychiatric

Citation(s):

7-270 Heparin - CALL FOR ORDERS

Advanced Life Support

CLASS:

✱ Anticoagulant.

ACTION:

✱ Inhibition of Thrombin. Acts on antithrombin III to reduce ability to clot.

HALFLIFE:

✱ 1.5 hours.

ROUTE:

✱ IV.

INDICATIONS:

✱ New chest pain suggestive of an acute myocardial infarction. Acute pulmonary embolism. Deep venous thrombosis.

CONTRAINDICATIONS:

✱ Previously given low molecular weight heparin. Dissecting thoracic aortic aneurysm. Peptic ulceration.

ADULT DOSAGE:

✱ 60 u/kg followed by 12 u/kg/hr (max 4,000 u bolus and 1,000 u/hr).

PEDIATRIC DOSAGE:

✱ Not indicated.

PRECAUTIONS:

✱ Oral anticoagulants.

SIDE EFFECTS:

✱ Bleeding.

ANTIDOTE:

✱ Protamine sulfate.

REFERENCED PROTOCOL(S):

✱ 2-50 Chest Discomfort (Cardiac) - CALL FOR ORDERS

Citation(s):

7-280 Hydralazine (Apresoline) - CALL FOR ORDERS

Advanced Life Support

CLASS:

- Vasodilator.

ACTION:

- Directly dilates peripheral blood vessels.

HALFLIFE:

- 2-8 hours.

ROUTE:

- IV/IO/IM.

INDICATIONS:

- Hypertension associated with preeclampsia and eclampsia. Hypertensive crisis.

CONTRAINDICATIONS:

- Taking diazoxide or MAOIs, coronary artery disease, stroke, angina, aortic aneurysm, and heart disease.

ADULT DOSAGE:

- Preeclampsia and eclampsia: 5-10 mg. Repeat every 20-30 min until SBP <105.
- Hypertension: 10-20 mg.

PEDIATRIC DOSAGE:

- Hypertension: 0.1-0.2 mg/kg (max 20 mg).

PRECAUTIONS:

- May cause reflex tachycardia.

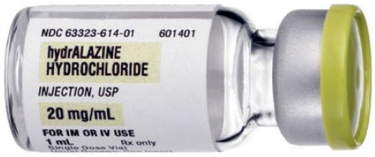
SIDE EFFECTS:

- Headache, angina, flushing, palpitations, tachycardia, anorexia, nausea, vomiting, diarrhea, hypotension, syncope, vasodilation, edema, paresthesias.

REFERENCED PROTOCOL(S):

- 4-110 Hypertensive Crisis - CALL FOR ORDERS

Citation(s):



7-290 Hydrogen Peroxide - CALL FOR ORDERS

Basic Life Support CLASS: ✱ Disinfectant. ACTION: ✱ NA. ROUTE: ✱ Topical.	INDICATIONS: ✱ NA. CONTRAINDICATIONS: ✱ NA.
ADULT DOSAGE: ✱ NA. PEDIATRIC DOSAGE: ✱ NA.	PRECAUTIONS: ✱ NA. SIDE EFFECTS: ✱ NA.
REFERENCED PROTOCOL(S): ✱ Not in current protocols.	

Citation(s):

7-300 Ibuprofen (Pediaprofen)

Advanced Life Support

CLASS:

✱ NSAID.

ACTION:

✱ Inhibits cyclooxygenase and lipoxygenase and reduces prostaglandin synthesis.

HALFLIFE:

✱ 1.8-2 hours.

ROUTE:

✱ PO.

INDICATIONS:

✱ Fever >102F. Tylenol has been ineffective and/or administered within last 4hrs.

CONTRAINDICATIONS:

✱ ASA/NSAID induced asthma. History of GI bleeds.

ADULT DOSAGE:

✱ 200-400 mg every 4-6 hrs.

PEDIATRIC DOSAGE:

✱ 10 mg/kg.

PRECAUTIONS:

✱ Caution in hypertension, CHF.

SIDE EFFECTS:

✱ Anaphylaxis, abdominal pain, nausea, headache, dizziness, rash.

REFERENCED PROTOCOL(S):

✱ 4-100 Fever

Citation(s):

7-310 Iodine - CALL FOR ORDERS

Basic Life Support CLASS: ✱ Disinfectant. ACTION: ✱ NA. ROUTE: ✱ Topical.	INDICATIONS: ✱ NA. CONTRAINDICATIONS: ✱ NA.
ADULT DOSAGE: ✱ NA. PEDIATRIC DOSAGE: ✱ NA.	PRECAUTIONS: ✱ NA. SIDE EFFECTS: ✱ NA.
REFERENCED PROTOCOL(S): ✱ Not in current protocols.	

Citation(s):

7-320 Ipratropium

Advanced Life Support

CLASS:

✱ Beta adrenergic.

ACTION:

✱ Binds and stimulates beta-2 receptors, resulting in relaxation of bronchial smooth muscle, producing bronchodilation.

HALFLIFE:

✱ 2 hours.

ROUTE:

✱ Nebulized.

INDICATIONS:

✱ Broncho-constriction refractory to albuterol.

CONTRAINDICATIONS:

✱ Hypersensitivity to Ipratropium, Albuterol, or Atropine. Allergy to soybeans or peanuts. Closed angle glaucoma, bladder neck obstruction, and prostatic hypertrophy.

ADULT DOSAGE:

✱ 0.5 mg (max 1 dose).

PEDIATRIC DOSAGE:

✱ 0.25 mg (max 1 dose).

PRECAUTIONS:

✱ Blood pressure, pulse, and EKG should be monitored. Use caution in patients with known heart disease. May cause paradoxical acute bronchospasm.

SIDE EFFECTS:

✱ Palpitations, anxiety, headache, dizziness, sweating, tachycardia, cough, nausea, arrhythmias, paradoxical acute bronchospasm.

ANTIDOTE:

✱ Physostigmine.

REFERENCED PROTOCOL(S):

✱ 4-20 Anaphylaxis / Allergic Reaction
✱ 4-30 Asthma
✱ 4-60 Chronic Obstructive Pulmonary Disease (COPD)
✱ 4-70 Congestive Heart Failure (CHF)

Citation(s):

7-330 Ketamine (Ketalar) - CALL FOR ORDERS

Advanced Life Support

CLASS:

- Anesthetic.

ACTION:

- Produces state of anesthesia while maintaining airway reflexes, heart rate, and blood pressure.

HALFLIFE:

- 2.5-3 hours.

ROUTE:

- IV/IO/IM.

INDICATIONS:

- Pain and anesthesia for procedures of short duration.

CONTRAINDICATIONS:

- Significant hypertension would be hazardous (stroke, head trauma, ICP, MI).

ADULT DOSAGE:

- IV/IO: 1-4.5 mg/kg. Produces anesthesia within 30 sec lasting 5-10 min.
- IM: 6.5-13 mg/kg. Produces anesthesia within 3-4 min lasting 12-25 min.

PEDIATRIC DOSAGE:

- IV/IO: 0.5-2 mg. Produces anesthesia within 30 sec lasting 5-10 min.
- IM: 3-7 mg. Produces anesthesia within 3-4 min lasting 12-25 min.

PRECAUTIONS:

- Glaucoma, hypovolemia, dehydration, cardiac disease.

SIDE EFFECTS:

- Emergence phenomena, hypertension, tachycardia, hypotension, bradycardia, arrhythmias, respiratory depression, apnea, laryngospasms, tonic/clonic movements, vomiting.

REFERENCED PROTOCOL(S):

- 4-40 Behavioral / Psychiatric - CALL FOR ORDERS
- 6-50 Control of Pain - CALL FOR ORDERS
- 6-110 Rapid Sequence Intubation (RSI) - CALL FOR ORDERS

Citation(s): (Filanovsky, Miller, & Kao, 2010), (Flower & Hellings, 2012)

7-340 Labetalol (Normadyne) - CALL FOR ORDERS

Advanced Life Support

CLASS:

✱ Antihypertensive.

ACTION:

✱ Alpha and beta blockade. Binds with alpha-1, beta-1, and beta-2 receptors in vascular smooth muscle. Inhibits strength of heart's contractions and rate.

HALFLIFE:

✱ 5.5 hours.

ROUTE:

✱ IV/IO.

INDICATIONS:

✱ Severe hypertension.

CONTRAINDICATIONS:

✱ Bronchial asthma, heart block, cardiogenic shock, bradycardia, hypotension. Pulmonary edema, heart failure, sick sinus syndrome.

ADULT DOSAGE:

✱ 20 mg over 2 min while patient is supine.

PEDIATRIC DOSAGE:

✱ 0.4-1 mg/kg/hr (max 3 mg/kg/hr).

PRECAUTIONS:

✱ Blood pressure should be constantly monitored. Cannot give at the same time with Lasix.

SIDE EFFECTS:

✱ Dizziness, flushing, nausea, headaches, weakness, postural hypotension. Hypotension, vomiting, bronchospasm, arrhythmia, bradycardia, AV block.

ANTIDOTE:

✱ Glucagon, epinephrine.

REFERENCED PROTOCOL(S):

✱ 4-110 Hypertensive Crisis - CALL FOR ORDERS

Citation(s):

7-350 Lactated Ringers

Advanced Life Support CLASS: ✱ Crystalloid solution ACTION: ✱ NA. ROUTE: ✱ IV/IO.	INDICATIONS: ✱ Trauma CONTRAINDICATIONS: ✱ None.
ADULT DOSAGE: ✱ 500-1,000 ml for volume replacement. PEDIATRIC DOSAGE: ✱ 20 ml/kg for volume replacement (max x3).	PRECAUTIONS: ✱ NA. SIDE EFFECTS: ✱ Pulmonary Edema

REFERENCED PROTOCOL(S):

✱ 3-20 Heat Exhaustion / Heat Stroke	5-20 Abdominal Trauma
✱ 5-30 Burns	5-40 Chest Trauma
✱ 5-50 Extremity Trauma	5-70 Head Trauma
✱ 5-80 Spinal Trauma	5-90 Trauma Arrest

Citation(s): (Laszlo, et al., 2006), (Phillips, et al., 2009), (Schott, 2010), (Todd & Malinoski, 2007)

7-360 Lasix (Furosemide)

Advanced Life Support

CLASS:

✱ Potent diuretic.

ACTION:

✱ Inhibits reabsorption of sodium chloride. Promotes prompt diureses. Vasodilation. Decreases absorption of water and increased production of urine.

HALFLIFE:

✱ 100 minutes.

ROUTE:

✱ IV/IO/IM.

INDICATIONS:

✱ Congestive heart failure. Pulmonary edema.

CONTRAINDICATIONS:

✱ Pregnancy. Dehydration.

ADULT DOSAGE:

✱ 40 mg.
✱ If on oral diuretics: Double that prescribed dose and give IV.

PEDIATRIC DOSAGE:

✱ 1-2 mg/kg.

PRECAUTIONS:

✱ Should be protected from light. Dehydration.

SIDE EFFECTS:

✱ Hypotension.

REFERENCED PROTOCOL(S):

✱ 4-70 Congestive Heart Failure (CHF)

Citation(s):

7-370 Lidocaine (Xylocaine)

Advanced Life Support

CLASS:

- Antiarrhythmic.

ACTION:

- Blocks sodium channels, increasing recovery period after repolarization. Suppresses automaticity in the His-Purkinje system and depolarization in the ventricles.

HALFLIFE:

- 1.5-2 hours.

ROUTE:

- IV/IO/ET/topical.

INDICATIONS:

- Premedication for intubation to help prevent increased ICP. Laryngotracheal anesthesia. RSI of patient with suspected increased ICP. Ventricular arrhythmias when amiodarone is not available. Cardiac arrest from VF/VT.

CONTRAINDICATIONS:

- High degree heart blocks. PVCs in conjunction with bradycardia. Bleeding.

ADULT DOSAGE:

- Pulseless VT/VF: 1-1.5 mg/kg repeat at 0.5-0.75 mg/kg every 5-10 min (max 3 mg/kg).
- Post-code: 1-4 mg/min (max 300 mg/hr).
- Arrhythmias: 0.5-0.75 mg/kg. Maintain at 1-4 mg/min.
- Intubation prophylaxis: 1.5 mg/kg.

PEDIATRIC DOSAGE:

- Pulseless VT/VF: 1 mg/kg (max 100 mg).
- Post-code: 20-50 mcg/kg/min.
- Arrhythmias: 1 mg/kg. Maintain at 20-50 mcg/min.
- Intubation prophylaxis: 1 mg/kg.

PRECAUTIONS:

- Monitor for CNS toxicity. Liver disease or >70yrs old: reduce dosage by 50%. Use with caution in bradycardia, hypovolemia, shock, Adams-Stokes, Wolff-Parkinson-White.

SIDE EFFECTS:

- Anxiety, drowsiness, dizziness, confusion, nausea, vomiting, convulsions, widening of QRS. Arrhythmias, hypotension.

REFERENCED PROTOCOL(S):

- 2-100 Tachycardia, Wide Stable
- 2-130 Ventricular Ectopy - CALL FOR ORDERS
- 2-140 Ventricular Fibrillation (V-Fib / V-Tach)
- 5-70 Head Trauma

Citation(s):

7-380 Magnesium Sulfate

Advanced Life Support

CLASS:

- Anticonvulsant. Smooth muscle relaxer.

ACTION:

- CNS depressant. Cofactor in neurochemical transmission and muscular excitability. Controls seizures by blocking peripheral neuromuscular transmission. Peripheral vasodilator and platelet inhibitor.

ROUTE:

- IV/IO/IM.

INDICATIONS:

- Eclampsia. Refractory V-Fib. Refractory Pulseless V-Tach. Hypomagnesemic. Chronic alcoholism. Torsades de pointes. Asthma refractory to albuterol.

CONTRAINDICATIONS:

- Heart block. Recent MI. Renal insufficiency or renal failure. GI obstruction.

ADULT DOSAGE:

- Torsades de Pointes: 1-2 g over 15 min. Followed with 0.5-1 g/hr.
- Eclampsia: 4-6 g over 30 min. Followed by 1-2 g/hr.
- Status asthmaticus: 2 g over 20 min.

PEDIATRIC DOSAGE:

- Torsades de Pointes: 25-50 mg/kg over 15 min (max 2 g).
- Status asthmaticus: 25-50 mg/kg over 20 min (max 2 g).

PRECAUTIONS:

- Digitalis. Hypotension. Magnesium toxicity.

SIDE EFFECTS:

- Respiratory depression. Drowsiness.

ANTIDOTE:

- Calcium chloride, glucagon.

REFERENCED PROTOCOL(S):

- 2-100 Tachycardia, Wide Stable
- 2-110 Tachycardia, Wide Unstable
- 2-120 Torsades de Pointes
- 2-140 Ventricular Fibrillation (V-Fib / V-Tach)
- 4-30 Asthma - CALL FOR ORDERS
- 4-60 Chronic Obstructive Pulmonary Disease (COPD) - CALL FOR ORDERS
- 4-110 Hypertensive Crisis

Citation(s):

7-390 Morphine Sulfate

Advanced Life Support

CLASS:

✱ Opiate.

ACTION:

✱ CNS depressant. Causes peripheral vasodilation. Decreases sensitivity to pain. Binds with opiod receptors. Depresses vasomotor centers of brain. Releases histamine. Reduces stimulation of sympathetic nervous system.

HALFLIFE:

✱ 2-3 hours.

ROUTE:

✱ IV/IO/IM/SQ.

INDICATIONS:

✱ Severe pain.

CONTRAINDICATIONS:

✱ Head injury. Volume depletion. Undiagnosed abdominal pain.

ADULT DOSAGE:

✱ 2-5 mg (max 10 mg).

PEDIATRIC DOSAGE:

✱ 0.1-0.2 mg/kg.

PRECAUTIONS:

✱ May worsen bradycardia and heart block in patients with acute inferior wall MI. Acute asthma

SIDE EFFECTS:

✱ Dizziness. ALOC. Respiratory depression. Hypotension. Nausea. Vomiting, lightheadedness, sedation, diaphoresis, euphoria, dysphoria.

ANTIDOTE:

✱ Narcan.

REFERENCED PROTOCOL(S):

✱ 2-50 Chest Discomfort (Cardiac)
✱ 4-10 Abdominal Pain / Nausea
✱ 5-30 Burns
✱ 5-50 Extremity Trauma
✱ 5-80 Spinal Trauma
3-30 Hypothermia / Frostbite
5-20 Abdominal Trauma
5-40 Chest Trauma
5-60 Eye Injuries
6-50 Control of Pain

Citation(s): (Citizens Memorial Hospital, 2013)

7-400 Narcan (Naloxone)

Advanced Life Support

CLASS:

✱ Narcotic antagonist.

ACTION:

✱ Binds to opiod receptor and blocks the effect of narcotics.

HALFLIFE:

✱ 1-1.5 hours.

ROUTE:

✱ IV/IO/IN/IM/SQ/ET.

INDICATIONS:

✱ Alcoholic coma. Narcotic overdoses of the following: morphine, methadone, dilaudid, heroin, fentanyl, percodan, demerol, tylox, paregoric, tylenol 3, nubain, talwin, stadol, darvon.

CONTRAINDICATIONS:

✱ Hypersensitivity.

ADULT DOSAGE:

✱ 0.4 mg (max 2 mg).

PEDIATRIC DOSAGE:

✱ 0.1 mg/kg.

PRECAUTIONS:

✱ May cause withdrawal effects. Short acting, should be augmented every 5min. Monitor airway and ventilatory status. Patients who have gone from a state of somnolence from a narcotic overdose may become wide awake and combative.

SIDE EFFECTS:

✱ Nausea, vomiting, restlessness, diaphoresis, tachycardia, hypertension, tremulousness, seizures, cardiac arrest, withdrawal.

REFERENCED PROTOCOL(S):

✱ 4-130 Neonatal Resuscitation

4-140 Poisoning / Overdose

Citation(s):

7-410 Neo-Synephrine (Phenylephrine)

Advanced Life Support

CLASS:

✱ Vasoconstrictor (alpha).

ACTION:

✱ Topical vasoconstriction.

HALFLIFE:

✱ 2.1-3.4 hours.

ROUTE:

✱ Topical.

INDICATIONS:

✱ Premedication for nasal intubation to prevent epistaxis.

CONTRAINDICATIONS:

✱ Hypertension. Thyroid disease.

ADULT DOSAGE:

✱ 2 sprays in each nare 1-2 min prior to intubation.

PEDIATRIC DOSAGE:

✱ 2 sprays in each nare 1-2 min prior to intubation.

PRECAUTIONS:

✱ Enlarged prostate with dysuria.

SIDE EFFECTS:

✱ Nasal burning, stinging, sneezing, or increased nasal discharge.

REFERENCED PROTOCOL(S):

✱ None.

Citation(s):

7-420 Nitroglycerin (Nitrostat, Nitrolingual)

Advanced Life Support

CLASS:

✱ Nitrate vasodilator.

ACTION:

✱ Smooth muscle relaxant. Dilates coronary and systemic arteries.

HALFLIFE:

✱ 3 minutes.

ROUTE:

✱ SL.

INDICATIONS:

✱ Unstable angina. Acute CHF secondary to AMI. Hypertension.

CONTRAINDICATIONS:

✱ Age less than 12yrs. Hypotension. Severe bradycardia or tachycardia. ICP. Patients taking erectile dysfunction medications.

ADULT DOSAGE:

✱ 0.4 mg - 1 tablet or 1 spray every 5 min (max 1.2 mg).

PEDIATRIC DOSAGE:

✱ Not indicated.

PRECAUTIONS:

✱ Patients with inferior wall MI and right ventricular involvement may have more pronounced hemodynamic response. Must have IV access prior to administration. Monitor blood pressure. Syncope. Drug must be protected from light. Expires quickly once bottle is opened.

SIDE EFFECTS:

✱ Headache, dizziness, hypotension. Bradycardia, lightheadedness, flushing.

REFERENCED PROTOCOL(S):

✱ 2-50 Chest Discomfort (Cardiac)
✱ 4-70 Congestive Heart Failure (CHF)
✱ 4-110 Hypertensive Crisis - CALL FOR ORDERS

Citation(s): (Clemency, Thompson, Tundo, & Lindstrom, 2013)

7-430 Nitroglycerin Infusion (Tridil)

Advanced Life Support

CLASS:

✱ Nitrate vasodilator.

ACTION:

✱ Smooth muscle relaxant. Dilates coronary and systemic arteries.

HALFLIFE:

✱ 3 minutes.

ROUTE:

✱ IV. Delivery by infusion pump only. Must have glass bottle and non-PVC tubing.

INDICATIONS:

✱ Unstable angina. Acute CHF secondary to AMI. Hypertension.

CONTRAINDICATIONS:

✱ Age less than 12yrs. Hypotension. Severe bradycardia or tachycardia. ICP. Patients taking erectile dysfunction medications.

ADULT DOSAGE:

✱ Desired dose with 200 mcg/ml concentration:
  - ✱ 5mcg/min = 1.5ml/hr
  - ✱ 10mcg/min = 3ml/hr
  - ✱ 15mcg/min = 4.5ml/hr
  - ✱ 20mcg/min = 6ml/hr
  - ✱ 25mcg/min = 7.5ml/hr
  - ✱ 30mcg/min = 9ml/hr
  - ✱ 35mcg/min = 10.5ml/hr
  - ✱ 40mcg/min = 12ml/hr
  - ✱ 45mcg/min = 13.5ml/hr
  - ✱ 50mcg/min = 15ml/hr

PEDIATRIC DOSAGE:

✱ Not indicated.

PRECAUTIONS:

✱ Patients with inferior wall MI and right ventricular involvement may have more pronounced hemodynamic response. Monitor blood pressure. Syncope.

SIDE EFFECTS:

✱ Headache, dizziness, hypotension. Bradycardia, lightheadedness, flushing.

REFERENCED PROTOCOL(S):

✱ 2-50 Chest Discomfort (Cardiac)
4-70 Congestive Heart Failure (CHF)
✱ 4-110 Hypertensive Crisis - CALL FOR ORDERS

Citation(s):

7-440 Normal Saline (Sodium Chloride)

Advanced Life Support CLASS: ✱ Crystalloid solution ACTION: ✱ NA. ROUTE: ✱ IV/IO.	INDICATIONS: ✱ IV access for medical emergencies. CONTRAINDICATIONS: ✱ NA.
ADULT DOSAGE: ✱ 250-500 ml PEDIATRIC DOSAGE: ✱ 20 ml/kg (max x3)	PRECAUTIONS: ✱ NA. SIDE EFFECTS: ✱ Pulmonary edema.
REFERENCED PROTOCOL(S): ✱ Virtually all medical protocols.	

Citation(s): (Laszlo, et al., 2006), (Phillips, et al., 2009), (Schott, 2010), (Todd & Malinoski, 2007)

7-450 Normal Saline Irrigation

Basic Life Support 19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…" CLASS: ✱ Sterile irrigation. ACTION: ✱ NA. ROUTE: ✱ Topical.	INDICATIONS: ✱ Open wound, burns. CONTRAINDICATIONS: ✱ NA.
ADULT DOSAGE: ✱ 1,000 ml PEDIATRIC DOSAGE: ✱ 500-1,000 ml	PRECAUTIONS: ✱ NA. SIDE EFFECTS: ✱ NA.
REFERENCED PROTOCOL(S): ✱ 5-60 Eye Injuries	

Citation(s): (Carnahan, 2012)

7-460 Oxygen

Basic Life Support

19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

CLASS:

- Gas.

ACTION:

- Necessary for aerobic cellular metabolism.

ROUTE:

- Inhalation.

INDICATIONS:

- SpO_2 <88%. The overall goal of oxygen therapy is to avoid tissue hypoxia.
- Arterial hypoxemia or a failure of the oxygen-hemoglobin transport system.
  - Arterial hypoxemia = oxygen saturation of less than 88% and may result from impaired gas exchange in the lung, inadequate alveolar ventilation or a shunt that allows venous blood into the arterial circulation.
  - A failure of the oxygen-hemoglobin transport system can result from a reduced oxygen carrying capacity in blood (i.e. anemia, carbon monoxide poisoning) or reduced tissue perfusion (i.e. shock).

CONTRAINDICATIONS:

- Known paraquat poisoning unless SpO_2 is less than 88%.

DOSAGE:

- Titrate administration to SpO_2:

SpO_2		
100%	Anaphylaxis, Anemia, CO, Toxin, Trauma (100%)	
99%	Cardiac, CVA (94%-99%)	
98%		
97%		
96%		ROSC conscious (92%-96%)
95%		
94%		
93%		
92%	Dyspnea, ROSC unconscious (88%-92%)	
91%		
90%		
89%		
88%		

PRECAUTIONS:

- Use cautiously in patients with COPD. Humidify when providing high-flow rates over extended periods of time.
- Hyperoxia resulting from high FiO_2 administration producing saturations higher than 94-96% can cause structural damage to the lungs and post reperfusion tissue damage.
- Patients who are chronically hypoxic (i.e. COPD, ALS, MS) have shifted their oxygen dissociation curve and require lower oxygen saturations. Prolonged oxygen therapy may depress ventilator drive.
- High blood oxygen levels may disrupt the ventilation / perfusion balance and cause an increase in dead space to tidal volume ratio and increase PCO_2.

SIDE EFFECTS:

- Drying of mucous membranes.

REFERENCED PROTOCOL(S):

- Virtually all protocols.

Citation(s): (Carnahan, 2012), (Citizens Memorial Hospital, 2013), (Sheppard, 2013)

7-470 Oxytocin (Pitocin) - CALL FOR ORDERS

Advanced Life Support

CLASS:

✱ Hormone.

ACTION:

✱ Causes uterine contraction. Causes lactation. Slows postpartum vaginal bleeding.

HALFLIFE:

✱ 1-6 minutes.

ROUTE:

✱ IV.

INDICATIONS:

✱ Postpartum vaginal bleeding.

CONTRAINDICATIONS:

✱ Any condition other than postpartum bleeding. Cesarean section.

ADULT DOSAGE:

✱ 10-20 u in 1000 ml LR.

PEDIATRIC DOSAGE:

✱ Not indicated.

PRECAUTIONS:

✱ Essential to assure that the placenta has delivered and that there is not another fetus present before administering. Overdosage can cause uterine rupture. Hypertension.

SIDE EFFECTS:

✱ Anaphylaxis. Cardiac arrhythmias.

REFERENCED PROTOCOL(S):

✱ 4-150 Post Partum Hemorrhage - CALL FOR ORDERS

Citation(s):

7-480 Phenergan (Promethazine)

Advanced Life Support

CLASS:

✱ Anti-emetic.

ACTION:

✱ Decreases nausea and vomiting by antagonizing H1 receptors.

HALFLIFE:

✱ 16-19 hours.

ROUTE:

✱ IM or IV/IO if infused in **NS** over 15-30 min.

INDICATIONS:

✱ Nausea, vomiting.

CONTRAINDICATIONS:

✱ ALOC, jaundice.

ADULT DOSAGE:

✱ 12.5-25 mg.

PEDIATRIC DOSAGE:

✱ 0.25-1 mg/kg.

PRECAUTIONS:

✱ Seizure disorder.

SIDE EFFECTS:

✱ Excitation.

REFERENCED PROTOCOL(S):

✱ 2-50 Chest Discomfort (Cardiac)
✱ 4-10 Abdominal Pain / Nausea
✱ 5-30 Burns
✱ 5-50 Extremity Trauma
✱ 5-80 Spinal Trauma
3-30 Hypothermia / Frostbite
5-20 Abdominal Trauma
5-40 Chest Trauma
5-60 Eye Injuries
6-40 Control of Nausea

Citation(s):

7-490 Procainamide (Pronestyl)

Advanced Life Support

CLASS:

- Antiarrhythmic.

ACTION:

- Slows conduction through myocardium. Elevates ventricular fibrillation threshold. Suppresses ventricular ectopy.

HALFLIFE:

- 2.5-4.5 hours.

ROUTE:

- IV/IO.

INDICATIONS:

- Wide complex tachycardia, V-Tach, V-Fib, WPW.

CONTRAINDICATIONS:

- High degree heart blocks. PVCs in conjunction with bradycardia.

ADULT DOSAGE:

- WPW initial: 20 mg/min until:
  - Arrhythmia abolished, hypotension, QRS widens 50%, max 17 mg/kg.
  - Mix 1 g in 250 ml D5W = 4 mg/ml.
  - 300 ml/hr = 20 mg/min.
- WPW maintenance: 1-4 mg/min.
  - 60 ml/hr at 4 mg/ml = 4 mg/min.
- Tachycardia: 15 mg/kg over 30-60 min.

PEDIATRIC DOSAGE:

- Same as adult.

PRECAUTIONS:

- Dosage should not exceed 17mg/kg. Monitor for CNS toxicity.

SIDE EFFECTS:

- Anxiety, nausea, convulsions, widening QRS.

REFERENCED PROTOCOL(S):

- 2-100 Tachycardia, Wide Stable - CALL FOR ORDERS
- 2-110 Tachycardia, Wide Unstable - CALL FOR ORDERS
- 2-150 Wolff-Parkinson-White (WPW)

Citation(s):

7-500 Propofol (Diprivan) - CALL FOR ORDERS

Advanced Life Support

CLASS:

✱ Anesthetic.

ACTION:

✱ Produces rapid and brief stat of general anesthesia.

HALFLIFE:

✱ 30-60 minutes.

ROUTE:

✱ IV/IO

INDICATIONS:

✱ Induction agent.

CONTRAINDICATIONS:

✱ Hypovolemia, sensitivity to soybean oil or eggs.

ADULT DOSAGE:

✱ 1.5-3 mg/kg followed by 25-75 mcg/kg/min.

PEDIATRIC DOSAGE:

✱ 1.5-3 mg/kg followed by 125-300 mcg/kg/min.

PRECAUTIONS:

✱

SIDE EFFECTS:

✱ Apnea, arrhythmias, asystole, hypotension, hypertension.

REFERENCED PROTOCOL(S):

✱ Not in current protocols.

Citation(s):

7-510 Retavase (Reteplase) - CALL FOR ORDERS

Advanced Life Support

CLASS:

- Anticoagulant / thrombolytic.

ACTION:

- Converts plasminogen to plasmin promoting fibrinolysis. Dissolves thrombi plugs in coronary arteries and reestablishes blood flow.

HALFLIFE:

- 13-16 minutes.

ROUTE:

- IV.

INDICATIONS:

- Acute MI. ST segment elevation greater than 1 block in 2 or more contiguous leads with reciprocal changes. New or presumed new left bundle branch block.

CONTRAINDICATIONS:

- Active internal bleeding. CVA or brain surgery within last 2mo. Brain tumor. Aneurysm. AV malformation. Known bleeding disorder. Coumadin or warfarin within 3days. Severe uncontrolled hypertension (>180/110). Known pericarditis or endocarditis. Pregnant. Shock. Major surgery within 10 days. Recent trauma.

ADULT DOSAGE:

- 10 u over 2 min.
- Repeat once at 30 min.

PEDIATRIC DOSAGE:

- Not indicated.

PRECAUTIONS:

- Surgery within 10days. CPR. Recent trauma. History of hypertension. GI/GU bleeding within 10days. CVA within 6mo. Intracranial surgery or trauma within 6mo.

SIDE EFFECTS:

- Intracranial hemorrhage, arrhythmias, cholesterol embolism, hemorrhage, pulmonary edema, nausea, vomiting. Stroke, hypotension, bruising.

REFERENCED PROTOCOL(S):

- Not in current protocols.

Citation(s):

7-520 Rocuronium (Zemuron) - CALL FOR ORDERS

Advanced Life Support

CLASS:

✱ Non-depolarizing neuromuscular blockade.

ACTION:

✱ Binds to post-synaptic muscle receptor sites. Antagonizes acetylcholine at the motor end plate, producing skeletal muscle paralysis.

HALFLIFE:

✱ 66-80 minutes.

ROUTE:

✱ IV/IO.

INDICATIONS:

✱ RSI. Induced hypothermia.

CONTRAINDICATIONS:

✱ Unable to ventilate the patient. Sensitivity to bromides.

ADULT DOSAGE:

✱ 1 mg/kg.

PEDIATRIC DOSAGE:

✱ 0.6 mg/kg.

PRECAUTIONS:

✱ Patient will be paralyzed for up to 30min. Heart disease. Liver disease.

SIDE EFFECTS:

✱ Muscle paralysis, apnea, dyspnea, respiratory depression, tachycardia, uticaria.

REFERENCED PROTOCOL(S):

✱ 6-110 Rapid Sequence Intubation (RSI) - CALL FOR ORDERS

Citation(s):

7-530 Sodium Bicarbonate

Advanced Life Support

CLASS:

✱ Alkalinizing agent.

ACTION:

✱ Combines with excessive acids to form a weak volatile acid. Increases pH.

ROUTE:

✱ IV/IO.

INDICATIONS:

✱ Late in management of cardiac arrest. Tricyclic antidepressant overdose. Severe acidosis refractory to hyperventilation.

CONTRAINDICATIONS:

✱ Alkalotic states.

ADULT DOSAGE:

✱ 1 mEq/kg followed by 0.5 mEq/kg every 10 min as indicated.

PEDIATRIC DOSAGE:

✱ 1 mEq/kg followed by 0.5 mEq/kg every 10 min as indicated.

PRECAUTIONS:

✱ Correct dosage is essential. Can deactivate catecholamines. Can precipitate with calcium. Delivers large sodium load. Can worsen acidosis if not intubated and adequately ventilated.

SIDE EFFECTS:

✱ Alkalosis. Hypernatremia, fluid retention, peripheral edema.

REFERENCED PROTOCOL(S):

✱ 2-10 Asystole
✱ 2-70 Pulseless Electrical Activity (PEA)
✱ 2-140 Ventricular Fibrillation (V-Fib / V-Tach)

Citation(s):

7-540 Solu-Medrol (Methylprednisolone)

Advanced Life Support

CLASS:

✱ Corticosteriod.

ACTION:

✱ Anti-inflammatory. Immune suppressant.

HALFLIFE:

✱ 18-26 hours.

ROUTE:

✱ IV/IO/IM.

INDICATIONS:

✱ Severe anaphylaxis, asthma, COPD.

CONTRAINDICATIONS:

✱ None in emergency setting. Cushing's syndrome, fungal infection. Measles. Varicella.

ADULT DOSAGE:

✱ 125-250 mg.

PEDIATRIC DOSAGE:

✱ 1-2 mg/kg.

PRECAUTIONS:

✱ Must be reconstituted and used properly. Onset of action may be 2-5hrs. Active infections, renal disease, penetrating spinal cord injury, hypertension, seizures, CHF.

SIDE EFFECTS:

✱ GI bleeding. Prolonged wound healing. Suppression of natural steroids. Depression, euphoria, headache, restlessness, hypertension, bradycardia, nausea, vomiting, swelling, diarrhea, weakness.

REFERENCED PROTOCOL(S):

✱ 4-20 Anaphylaxis / Allergic Reaction 4-30 Asthma
✱ 4-60 Chronic Obstructive Pulmonary Disease (COPD)

Citation(s):

7-550 Succinylcholine (Anectine) - CALL FOR ORDERS

Advanced Life Support

CLASS:

✱ Depolarizing neuromuscular blocker. Ultra-short acting.

ACTION:

✱ Competes with the acetylcholine receptor of the motor end plate on the muscle cell, resulting in muscle paralysis.

HALFLIFE:

✱ 24-70 seconds.

ROUTE:

✱ IV/IO.

INDICATIONS:

✱ To achieve paralysis for endotracheal intubation.

CONTRAINDICATIONS:

✱ Family history of malignant hyperthermia. Penetrating eye injuries. Narrow angle glaucoma. Severe burns or crush injuries more than 48hrs old. CVA more than 3days old. Rhabdomyolysis. Pseudo cholinesterase deficiency. Hyperkalemia.

ADULT DOSAGE:

✱ 1.5 mg/kg.

PEDIATRIC DOSAGE:

✱ 2.0 mg/kg.

PRECAUTIONS:

✱ Electrolyte imbalances. Renal, hepatic, pulmonary, metabolic, or cardiovascular disorders. Fractures, spinal cord injuries, severe anemia, dehydration, collagen disorders, porphyria. Causes initial transient contractions and fasciculations followed by sustained flaccid skeletal muscle paralysis. May increase vagal tone especially in children.

SIDE EFFECTS:

✱ Apnea, hypertension, hypotension, dysrhythmias, nausea, vomiting, hiccups, snoring. Malignant hyperthermia.

REFERENCED PROTOCOL(S):

✱ 6-110 Rapid Sequence Intubation (RSI) - CALL FOR ORDERS

Citation(s):

7-560 Tetracaine

Advanced Life Support CLASS: ✱ Anesthetic. ACTION: ✱ Local anesthesia. ROUTE: ✱ Topical.	INDICATIONS: ✱ Need for eye irrigation. CONTRAINDICATIONS: ✱ Hypersensitivity.
ADULT DOSAGE: ✱ 1-2 drops per eye (max 2 drops). PEDIATRIC DOSAGE: ✱ 1-2 drops per eye (max 2 drops).	PRECAUTIONS: ✱ Patient will be unaware of objects touching their eye. Be careful to protect the eye from foreign debris and from the patient rubbing eyes. SIDE EFFECTS: ✱ Burning, conjunctival redness, photophobia, lacrimation.
REFERENCED PROTOCOL(S): ✱ 5-60 Eye Injuries	

Citation(s):

7-570 Thiamine (Vitamin B1)

Advanced Life Support

CLASS:

✱ Vitamin.

ACTION:

✱ Allows normal breakdown of glucose. Thiamine combines with adenosine triphosphate to produce thiamine diphosphate, which acts as a coenzyme in carbohydrate metabolism.

ROUTE:

✱ IV/IO/IM.

INDICATIONS:

✱ Coma of unknown origin. Alcoholism. Delirium tremens. Precedes D50W administration in patient with suspected alcohol abuse or malnutrition. Wernicke-Korsakoff syndrome, beriberi.

CONTRAINDICATIONS:

✱ Known sensitivity.

ADULT DOSAGE:

✱ 100 mg IM or 100 mg IV in **NS** over 15-30 min.

PEDIATRIC DOSAGE:

✱ Not recommended.

PRECAUTIONS:

✱ Rare anaphylactic reactions.

SIDE EFFECTS:

✱ Itching, rash.

REFERENCED PROTOCOL(S):

✱ 4-120 Hypoglycemia

Citation(s):

7-580 Valium (Diazepam)

Advanced Life Support

CLASS:

✱ Tranquilizer. Anticonvulsant. Skeletal muscle relaxant. Sedative.

ACTION:

✱ Binds to benzodiazepine receptor and enhances effects of GABA.

HALFLIFE:

✱ 20-100 hours.

ROUTE:

✱ IV/IO/IM. PR at twice IV dose.

INDICATIONS:

✱ Generalized seizures. Status epilepticus. Acute anxiety stress.

CONTRAINDICATIONS:

✱ Age less than 6 months, acute-angle glaucoma, CNS depression, alcohol intoxication.

ADULT DOSAGE:

✱ Status epilepticus: 5-10 mg (max 30 mg).
✱ Acute anxiety: 2-5 mg.
✱ Premedication before cardioversion: 5-15 mg.

PEDIATRIC DOSAGE:

✱ Status epilepticus (5-18 yr old): 1 mg (max 10 mg).
✱ Status epilepticus (6 mo-5 yr old): 0.2 mg/kg (max 5 mg).

PRECAUTIONS:

✱ Local venous irritation. Short duration of effect. May precipitate with other drugs.

SIDE EFFECTS:

✱ Drowsiness. Hypotension. Respiratory depression. Fatigue, headache, confusion, nausea, sedation.

ANTIDOTE:

✱ Flumazenil (Romazicon).

REFERENCED PROTOCOL(S):

✱ 4-170 Seizures

Citation(s): (Citizens Memorial Hospital, 2013)

7-590 Vecuronium (Norcuron) - CALL FOR ORDERS

Advanced Life Support

CLASS:

✱ Non-depolarizing neuromuscular blocker.

ACTION:

✱ Does not have any analgesic or sedative effects, sedation must accompany paralysis.
  ✱ 1/10th dose: Blocks fasciculations caused by use of succinylcholine.
  ✱ Full dose: Causes total paralysis of skeletal muscles.

HALFLIFE:

✱ 51-80 minutes.

ROUTE:

✱ IV/IO.

INDICATIONS:

✱ To achieve paralysis for endotracheal intubation. To maintain paralysis after intubation. Induced hypothermia.

CONTRAINDICATIONS:

✱ Sensitivity to bromides.

ADULT DOSAGE:

✱ 0.1 mg/kg.

PEDIATRIC DOSAGE:

✱ 0.1 mg/kg.

PRECAUTIONS:

✱ Impaired liver function. Severe obesity. Impaired respiratory function.

SIDE EFFECTS:

✱ Arrhythmias, bronchospasm, hypertension, hypotension. Apnea, dyspnea, tachycardia, uticaria.

REFERENCED PROTOCOL(S):

✱ 6-110 Rapid Sequence Intubation (RSI) - CALL FOR ORDERS

Citation(s):

7-600 Versed (Midazolam)

Advanced Life Support

CLASS:

- Benzodiazepine.

ACTION:

- Sedative, anxiolytic, amnesic (2-3x more potent than valium). Binds to benzodiazepine receptor and enhances effects of GABA.

HALFLIFE:

- 1.8-6.4 hours.

ROUTE:

- IV/IN/IO.

INDICATIONS:

- Premedication prior to cardioversion or pacing. Endotracheal tube tolerance. Acute anxiety. RSI. Seizures.

CONTRAINDICATIONS:

- Hypotension. Pregnancy. Acute-angle glaucoma.

ADULT DOSAGE:

- 2.5-5 mg. Can be repeated once (max 10 mg).

PEDIATRIC DOSAGE:

- Over 12 yrs: Same as adult.
- Between 6 yrs and 12 yrs: 0.05 mg/kg.
- Under 6 yrs: 0.05-0.1 mg/kg.

PRECAUTIONS:

- COPD, acute alcohol intoxication, narcotics, barbiturates, elderly, neonates.

SIDE EFFECTS:

- Hypoventilation, respiratory depression, respiratory arrest, hypotension, laryngospasm. Nausea, vomiting, headache, hiccups, cardiac arrest.

ANTIDOTE:

- Flumazenil (Romazicon).

REFERENCED PROTOCOL(S):

- 2-20 Atrial Fibrillation (A-Fib) / Atrial Flutter - CALL FOR ORDERS
- 2-40 Bradycardia
- 2-60 Post Resuscitative Care
- 2-80 Tachycardia, Narrow Stable - CALL FOR ORDERS
- 2-90 Tachycardia, Narrow Unstable
- 2-100 Tachycardia, Wide Stable - CALL FOR ORDERS
- 2-110 Tachycardia, Wide Unstable
- 2-120 Torsades de Pointes
- 4-10 Abdominal Pain / Nausea - CALL FOR ORDERS
- 4-40 Behavioral / Psychiatric
- 4-170 Seizures
- 6-50 Control of Pain - CALL FOR ORDERS
- 6-110 Rapid Sequence Intubation (RSI) - CALL FOR ORDERS

Citation(s): (Citizens Memorial Hospital, 2013), (Holsti, Sill, Firth, Filloux, Joyce, & Furnival, 2007), (Silbergleit, et al., 2012)

7-610 Xopenex (Levalbuterol)

Advanced Life Support

CLASS:

✱ Beta-2 Agonist

ACTION:

✱ Beta-2 receptor agonist with some beta-1 activity.

HALFLIFE:

✱ 1.6 hours.

ROUTE:

✱ Nebulized

INDICATIONS:

✱ Treatment and prevention of bronchospasms.

CONTRAINDICATIONS:

✱ Hypersensitivity to levalbuterol or racemic albuterol.

ADULT DOSAGE:

✱ 0.63-1.25 mg.

PEDIATRIC DOSAGE:

✱ <6 yr old: not recommended.
✱ 6-12 yr old: 0.31 mg (max 0.63 mg).
✱ 12-18 yr old: 0.63-1.25 mg.

PRECAUTIONS:

✱ Arrhythmias, hypertension, paradoxical bronchospasm.

SIDE EFFECTS:

✱ Rhinitis, headache, tremor, sinusitis, tachycardia, nervousness, edema, hyperglycemia, hypokalemia.

REFERENCED PROTOCOL(S):

✱ 4-20 Anaphylaxis / Allergic Reaction
✱ 4-30 Asthma
✱ 4-60 Chronic Obstructive Pulmonary Disease (COPD)
✱ 4-70 Congestive Heart Failure (CHF)

Citation(s):

7-620 Zofran (Oldansetron)

Advanced Life Support CLASS: ✱ Antiemetic. ACTION: ✱ Selective 5-HT receptor antagonist. HALFLIFE: ✱ 5.7 hours. ROUTE: ✱ IV/IM/IN.	INDICATIONS: ✱ Prevention of nausea and vomiting. CONTRAINDICATIONS: ✱ Hypersensitivity.
ADULT DOSAGE: ✱ 4 mg (max 8 mg). PEDIATRIC DOSAGE: ✱ 0.15 mg/kg.	PRECAUTIONS: ✱ None. SIDE EFFECTS: ✱ None.
REFERENCED PROTOCOL(S): ✱ 2-50 Chest Discomfort (Cardiac) ✱ 4-10 Abdominal Pain / Nausea ✱ 5-30 Burns ✱ 5-50 Extremity Trauma ✱ 5-70 Head Trauma ✱ 6-40 Control of Nausea	3-30 Hypothermia / Frostbite 5-20 Abdominal Trauma 5-40 Chest Trauma 5-60 Eye Injuries 5-80 Spinal Trauma

Citation(s):

Citizens Memorial Hospital
Pre-Hospital Protocols
Part 3 - Equipment

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8-10 Automated External Defibrillator (AED)

*NOTE: When using LifePak in AED mode, use LifePak protocol. **Basic Life Support** INDICATIONS: ✱ Cardiopulmonary arrest. CONTRAINDICATIONS: ✱ Pulse. PRECAUTIONS: ✱ Wet skin or patients in water. Do not apply directly over internal pacemaker or medication patch. ✱ Manual defibrillator is preferred to AED for children less than 8 yrs old. If manual defibrillator is not available, pediatric dose attenuator is preferred. If neither is available, use AED as you would on an adult. Pads may be placed anterior/posterior if chest is too small to allow pads to be at least 1 in separated.	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

PROCEDURE:

✱ Confirm unresponsiveness and breathlessness.
✱ Request ALS support.
✱ Confirm pulselessness.
✱ Unwitnessed: CPR for 2 min.
  ✱ Push hard and fast at 100 /min.
  ✱ Give 2 breaths with 30 compressions.
  ✱ Rotate compressors every 2 minutes at rhythm check.
  ✱ Compressions : Ventilations ratio = 30:2 unless intubated, then 8-10 breaths per min.
✱ Power on AED.
✱ Place pads and connect to AED.
✱ Clear patient and press "analyze" (if present).
✱ If shock indicated, continue CPR while charging. Compressor is last to clear.
  ✱ Clear patient. Deliver shock.
✱ CPR for 2 min immediately following shock.
✱ Repeat as necessary and follow AED voice prompts.

Citation(s):

8-20 Blood Draw Kit

Advanced Life Support

INDICATIONS:

✱ All medical and trauma patients where time and resources allow.

CONTRAINDICATIONS:

✱ None.

PRECAUTIONS:

✱ Avoid venipuncure in arms with dialysis shunts or injuries proximal to insertion site.

PROCEDURE:

✱ After IV access but prior to saline administration.
✱ Either directly draw blood from patient into blood tubes using Vacutainer Direct Draw Adapter or into syringe and transfer to tubes using Vacutainer Blood Transfer Device. To avoid needle sticks, do not use syringe and needle to fill blood tubes.
✱ Fill tubes in the following order:
  ✱ Medical patient (5 tubes): BLUE, RED, GREEN (no gel), GREEN (gel), LAVENDER.
  ✱ Trauma patient (4 tubes): BLUE, GREEN (no gel), GREEN (gel), LAVENDER.
✱ Label each tube with blue arm bands.
  ✱ Place number sticker on each tube.
  ✱ Write your initials and time blood was drawn in white area of wrist band.
  ✱ Once at the destination, a patient identification sticker should be placed on the removable end of the wrist band. The patient sticker should contain your initials and time of blood draw.
  ✱ Stickered blood tubes and the removable end with patient sticker will be sent to the lab.

BLOOD DRAW FOR ALCOHOL ANALYSIS:

✱ Paramedics may draw blood in the field as requested by law enforcement officials on the scene where requested for medical assistance. We will not respond to jail, police dept, etc. for the sole purpose of drawing blood.
✱ If patient is alert and oriented, his/her consent is necessary before the procedure is performed.
✱ If patient is unable to give consent (unresponsive, dead, etc.), consent is implied.

Citation(s): (Citizens Memorial Hospital, 2013)

8-30 Bougie

Advanced Life Support

INDICATIONS:

✱ Unable to fully visualize vocal cords during an intubation. Visualization of the cords but unable to pass the ETT. Predicted difficult intubation.

CONTRAINDICATIONS:

✱ Age less than 8 years. Use of a 6.0 or smaller ETT.

PRECAUTIONS:

✱ None

PROCEDURE:

✱ Lubricate Bougie.
✱ Using a laryngoscope and standard ETT intubation techniques, attempt to visualize the vocal cords. If vocal cords are not fully visible, pass Bougie behind the epiglottis, guiding the tip of the Bougie anteriorly towards the trachea. Tracheal placement will yield the ability to feel cricoids rings and resistance at the carina. Esophageal placement will yield the ability to advance Bougie completely without resistance.
✱ While maintaining the laryngoscope and Bougie in position, an assistant threads an ETT over the end of the Bougie. The assistant then holds the Bougie.
✱ Rotate ETT 1/4 turn and advance through cords. Inflate cuff, remove Bougie and laryngoscope.
✱ Confirm placement with auscultation and capnography.

Citation(s):

8-40 CombiTube

Basic Life Support INDICATIONS: ✱ Respiratory arrest. Cardiac arrest. Unresponsive patients without gag reflex. CONTRAINDICATIONS: ✱ Under age 16. Under 5 ft tall. Known esophageal disease. Caustic substance ingestion. Gag reflex. ✱ PRECAUTIONS:	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform… non-invasive airway devices not intended to be placed in the trachea…"

PROCEDURE:

✱ Preoxygenate with BVM, OPA, and 100% **OXYGEN**.
✱ Assemble and check equipment.
✱ Place head in neutral position. Maintain c-spine control on trauma patients.
✱ Grasp tongue and jaw and lift up.
✱ Insert tube into hypo-pharynx until teeth are between black lines.
✱ Inflate #1 cuff (hypo-pharynx) with 100 ml air.
✱ Inflate #2 cuff (esophageal) with 15 ml air.
✱ Attach BVM and capnograph to #1 tube (blue) and ventilate.
✱ No lung sounds or absent capnometry: Attach BVM and capnograph to #2 tube (clear) and ventilate.
✱ Confirm bilateral lung sounds, no epigastric sounds, and capnometry.

Advanced Life Support

✱ Continued sedation:
  ✱ Consider **VERSED** 2.5-5 mg IV every 5 min.
  ✱ Consider **FENTANYL** 5-100 mcg IV (max 300 mcg).

Citation(s):

8-50 Continuous Positive Airway Pressure (CPAP)

Advanced Life Support

INDICATIONS:

- Short-term management of acute respiratory failure in an awake, cooperative patient. CHF. Pulmonary edema. Near drowning (awake and alert). COPD. Pulmonary contusion. Flail chest. Consider trial prior to intubation of severe asthma patient.

CONTRAINDICATIONS:

- <18 yrs old. Patient unable to protect airway. Need for immediate intubation. Ventilatory failure. Gastric distention (GI bleeding). Trauma (pneumothorax). Tracheostomy. Altered LOC. Do not secure straps if nausea/vomiting. Increasing $ETCO_2$.

PRECAUTIONS:

- CPAP is not mechanical ventilation. BP may drop due to increased intrathoracic pressure. Patients may not improve (must reassess). Patients may not accept mask (claustrophobia). Risk of pneumothorax. Risk of corneal drying. Large oxygen demand.

PROCEDURE:

- Inform and calm patient. Consider Ativan for anxiety.
- Connect and turn on oxygen to "flush." Set PEEP to 10 cm H2O (may titrate to 15 as needed).
- Flip head-strap forward.
- Hand to or place mask on patient. Hold mask firmly against face to eliminate air leaks.
- Flip head-strap over head after patient is comfortable. Remove straps if nausea develops.
- Clip bottom straps.
- Adjust fit.
- Monitor patient. May raise intrathoracic pressures, reducing preload, therefore reducing blood pressure.
- Anxiety:
  - Consider **ATIVAN** 2 mg IV/IO.
  - OR consider **VERSED** 2.5 mg IV/IO/IM.
- An in-line bronchodilator nebulizer may be placed in circuit if needed.

Citation(s):

8-60 Cot

Basic Life Support

INDICATIONS:

✱ Need to move non-ambulatory patient.

CONTRAINDICATIONS:

✱ None

PRECAUTIONS:

✱ Always secure the patient using all restraint straps and keep side rails up.
✱ Utilize 4 or more lifting persons if possible over rough terrain or overweight patients. Utilize a minimum of 2 lifting persons when a patient is on the cot.
✱ Do not allow the x-frame to drop unassisted.

19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

PROCEDURE:

✱ To raise or lower cot, both ends must be lifted prior to squeezing handle.
✱ If patient 0-200 pounds, use two or more people to lift.
✱ If patient 200-400 pounds, use four or more people to lift.
✱ If patient 400-600 pounds, use eight or more people to lift.
✱ If patient greater than 600 pounds, special lifting and transport should be considered.

X-FRAME (APPLIES TO STRYKER AND FERNO COTS):

✱ Loading with a patient:
  ✱ Place loading wheels in ambulance and safety bar past the safety hook.
  ✱ Operator at foot lifts cot and squeezes and holds handle.
  ✱ Assistant at side raises undercarriage.
  ✱ Push cot into ambulance and secure it.
✱ Unloading with a patient:
  ✱ Disengage cot from fastener. Pull cot out of ambulance.
  ✱ Assistant grasps the undercarriage and lifts slightly.
  ✱ Operator at foot squeezes handle.
  ✱ Assistant lowers undercarriage to the ground.
  ✱ Operator at foot releases handle to lock undercarriage down.
  ✱ Assistant releases safety bar from safety hook.
✱ Loading empty cot (one operator):
  ✱ Place loading wheels in ambulance and safety bar past the safety hook.
  ✱ Lift bumper to raised position.
  ✱ Operator at foot lifts cot and squeezes and holds handle.
  ✱ Operator lowers foot end of cot to the floor to collapse undercarriage.
  ✱ Release handle to lock in lowered position.
  ✱ Raise, push into ambulance, and secure cot.
✱ Unloading empty cot (one operator):
  ✱ Disengage cot from fastener.
  ✱ Pull cot out of ambulance.
  ✱ Lower cot to the ground, squeeze handle, raise cot, and release handle.
  ✱ Release safety bar from safety hook.

H-FRAME (APPLIES TO STRYKER AND FERNO COTS):

- Loading with a patient:
  - Place cot in loading position.
  - Place both loading wheels are on the patient compartment floor.
  - Assistant unlocks frame.
  - Operator lifts foot end of cot and squeezes control handle.
  - Assistant lifts undercarriage.
  - Operator pushes cot into patient compartment, releases handle, and secures it.
- Unloading with a patient:
  - Disengage cot from fastener. Pull cot out of ambulance.
  - Assistant lowers undercarriage to the ground and ensures it locks down.
  - Place cot in rolling position.
- Loading empty cot (one operator):
  - Place cot in loading position.
  - Place both loading wheels are on the patient compartment floor.
  - Unlock frame.
  - Operator lifts foot end of cot and squeezes control handle.
  - Operator pushes cot into patient compartment, releases handle, and secures it.
- Unloading empty cot (one operator):
  - Disengage cot from fastener. Pull cot out of ambulance.
  - Place cot in rolling position.

PEDI-MATE:

- Use for all patients smaller than 40 lbs.
- Raise cot backrest to full upright position.
- Wrap pedi-mate straps around mattress and frame.

Citation(s): (Citizens Memorial Hospital, 2013)

8-70 Cricothyrotomy Kit - CALL FOR ORDERS

Advanced Life Support

INDICATIONS:

- Patients needing emergency airway access and control when they are unable to be adequately ventilated or intubated due to trauma or other causes. THIS PROCEDURE IS A LAST RESORT WHEN ALL ATTEMPTS AT VENTILATING THE PATIENT HAVE FAILED.

CONTRAINDICATIONS:

PRECAUTIONS:

- Complications include hemorrhage from great vessel lacerations and damage to surrounding structures.

PROCEDURE:

- Have suction equipment ready.
- Clean neck with antiseptic solution.
- Stabilize larynx with thumb and index finger of one hand.
- Palpate cricothyroid membrane.
- Pull skin taut.
- Make 2 cm VERTICAL incision at the cricothyroid membrane.
- Puncture through the cricothyroid membrane horizontally.
- Place Bougie with coude tip into trachea with a back-and-forth motion to feel tracheal clicking or carina.
- Place ET tube or Shiley over Bougie just enough for cuff to be inside trachea.
- Inflate cuff and secure tube.
- Ventilate at 100% **OXYGEN**.
- Observe and auscultate for correct placement.
- Confirm with capnography.
- Cover incision site with occlusive dressing.

Citation(s):

8-80 EndoTracheal (ET) Tube

Advanced Life Support

INDICATIONS:

✱ Cardiopulmonary arrest. Need for definitive airway.

CONTRAINDICATIONS:

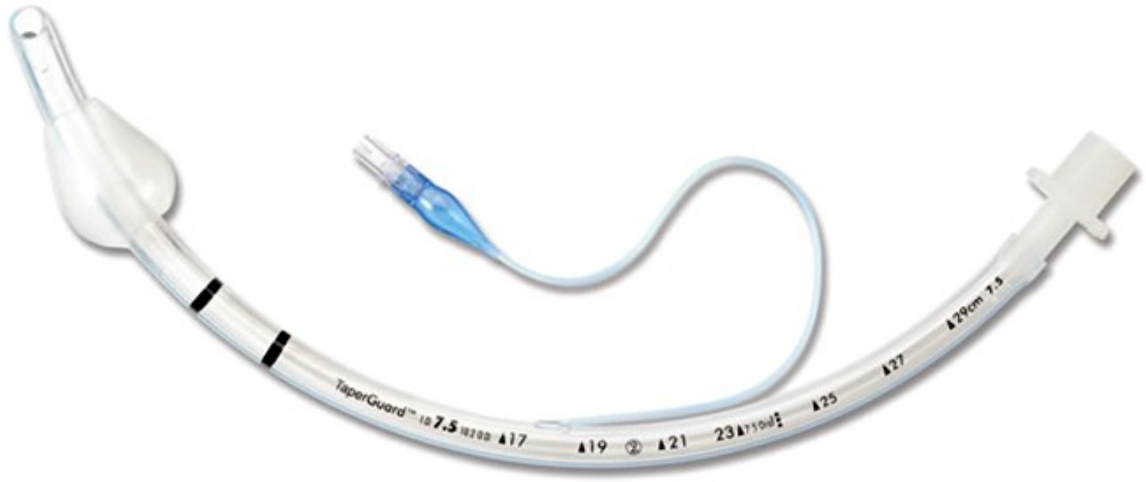
PRECAUTIONS:

✱ Can induce hypertension and increase ICP in head injured patients. Can induce vagal response and bradycardia. Can induce hypoxia-related arrhythmias.

PROCEDURE:

✱ Hyperventilate with BVM and basic adjunct.
✱ Assemble, check, and prepare equipment.
✱ Place head in sniffing position (maintain c-spine in trauma).
✱ Insert laryngoscope blade.
✱ Sweep tongue to the left.
✱ Lift forward to displace jaw.
✱ Advance tube past vocal cords until the cuff disappears.
✱ Inflate cuff with 7-10 ml of air.
✱ Ventilate and confirm placement with auscultation and capnography.
✱ Secure tube, noting marking on tube.
✱ Consider: Insert OPA as a bite block.
✱ Ventilate with 100% **OXYGEN**.
✱ Reassess tube placement often.
✱ Continued sedation:
  ✱ Consider **VERSED** 2.5-5 mg every 5 min. Repeat as needed maintaining SBP>100.
  ✱ Consider **FENTANYL** 50-100 mcg. Max 300 mcg.

Citation(s):



8-90 Evac-U-Splint

Basic Life Support INDICATIONS: ✱ Need to provide full body stabilization. Provides alternative to the full spine board with sufficient rigidity to immobilize and protect a patient with suspected spinal injury. CONTRAINDICATIONS: PRECAUTIONS: ✱ Lift the mattress using hands, do not lift from the ends. Place mattress on a backboard if lifting from the ends is required. ✱ Mattress is transparent to x-rays and MRI compatible.	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

PROCEDURE:

✱ Preparation:
- ✱ Lay mattress on flat surface near patient. Head and Shoulder logo indicates the head end.
- ✱ Remove valve cap. Release vacuum by pushing red valve stem. Keep valve pushed in until mattress is pliable.
- ✱ Disconnect strap from patient side of mattress and position top strap at level of armpit.
- ✱ Smooth out beads to form level surface.
- ✱ Connect pump to mattress at either foot or head end. Foot end is preferred. Pediatric mattress only has valve on foot end.

✱ Application:
- ✱ Assess patient's respiratory and neurovascular status.
- ✱ Log roll patient onto mattress with manual c-spine control.
- ✱ Secure patient using straps. Remove excess strap slack working head to feet.
- ✱ Repeat strap tightening if needed working head to feet.
- ✱ Shape mattress and fill voids.
- ✱ Evacuate air from mattress. Pump may require up to 35 strokes to achieve rigid immobilization.
- ✱ Disconnect pump. Replace cap on valve.
- ✱ Secure head using adhesive tape.
- ✱ Assess patient's respiratory and neurovascular status.

Citation(s):

8-100 EZ - IO

Advanced Life Support

INDICATIONS:

- Any patient who needs IV access, 2 attempts at IV access have failed, and at least one of the following:
  - ALOC or GCS<8,
  - Hemodynamic instability,
  - Extreme respiratory compromise, OR
  - Full arrest.

CONTRAINDICATIONS:

- Fracture of target bone. Previous orthopedic procedure. Infection at insertion site. Inability to locate landmark due to edema or obesity.

PRECAUTIONS:

- Shelf life for the EZ-IO G3 Power Driver is 10 years.

PROCEDURE:

- Prepare equipment.
- Identify landmark.
  - May use proximal tibia, distal tibia, or proximal humerus.
- Cleanse site.
- Stabilize site.
- Insert needle at 90 degree angle.
  - Insert needle without drilling until against bone.
  - If at least one black mark is visible on needle above skin, drill to appropriate depth.
  - If no black mark is visible on needle above skin, remove needle and re-attempt with longer needle. Re-attempts may be made at the same site only if bone was not drilled.
- Conscious: 2% **LIDOCAINE** 20-50 mg slow over 1-2 min. May repeat half dose after 30 min if pain returns.
- Flush with **NS** 5-10 ml bolus.
- Connect tubing and apply pressure bag.
- Apply dressing.

Citation(s): (Vidacare Corporation, 2009)

8-110 Gastric Tube

Advanced Life Support

INDICATIONS:

✱ Evacuation of air or fluids in stomach. Dilution of ingested poisons. Intubated patients.

CONTRAINDICATIONS:

✱ Epiglottitis or croup.
✱ Use orogastric route when: facial trauma or basilar skull fracture.

PRECAUTIONS:

PROCEDURE:

✱ Assemble equipment.
✱ Explain procedure to patient.
✱ If possible, have patient sitting up.
✱ Use towel to protect patient's clothing.
✱ Measure tube from nose, around ear, and down to xiphoid process.
✱ Mark point at xiphoid process with tape.
✱ Lubricate distal end of tube 6-8 in with water-soluble lubricant.
✱ Insert tube in nostril and gently advance it towards posterior nasopharynx along nasal floor.
✱ When you feel tube at nasopharyngeal junction, rotate inward towards the other nostril.
✱ As tube enters oropharynx, instruct patient to swallow.
✱ Pass tube to pre-measured point.
✱ If resistance is met, back tube up and try again. Do not force tube.
✱ Check placement of tube by aspirating gastric contents or auscultating air over epigastric region while injecting 20-30 ml of air.
✱ Tape tube in place and connect to low suction if needed.

Citation(s):

8-120 Glucometer

Basic Life Support INDICATIONS: ✱ Any patient that presents with ALOC. Any diabetic patient with signs and symptoms of hypoglycemia. CONTRAINDICATIONS: ✱ None PRECAUTIONS: Do not rely on readings of other entities or patient's own glucometer.	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform blood glucose analysis…"

PROCEDURE:

✱ Turn on and log into glucometer.
✱ Obtain blood sample from IV start or finger stick.
  ✱ Avoid "milking" finger.
  ✱ Ensure skin is dry of alcohol wipe.
✱ Follow on-screen instructions.
✱ Dispose of sharp(s).

Citation(s):

8-130 Intranasal Device

Advanced Life Support

INDICATIONS:

✱ Medication administration without IV access: **FENTANYL**, **NARCAN**, **VERSED**, **ZOFRAN**.

CONTRAINDICATIONS:

✱ If IV access can be obtained, IV is preferred medication route.

PRECAUTIONS:

✱ Mucous, blood, and vasoconstrictors reduce absorption.
✱ Minimize volume, maximum concentration (1/3 ml per nostril is ideal, 1 ml is max).
✱ Use both nostrils to double surface area.

PROCEDURE:

✱ Select correct medication at a high of a concentration as possible. Divide the dose between the two nares.
✱ Confirm orders, dosage, and expiration.
✱ Check patient allergies.
✱ Remove and discard the green vial adapter cap.
✱ Pierce the medication vial with the syringe vial adapter.
✱ Aspirate the proper volume of medication required to treat the patient (an extra 0.1ml of medication should be drawn up to account for the dead space in the device).
✱ Remove (twist off) the syringe from the vial adapter.
✱ Attach the MAD device to the syringe via the luer-lock connector.
✱ Using the free hand to hold the crown of the head stable, place the tip of the MAD snugly against the nostril aiming slightly up and outward (toward the top of the ear).
✱ Briskly compress the syringe plunger to deliver half of the medication into the nostril.
✱ Move the device over to the opposite nostril and administer the remaining medication into that nostril.
✱ Observe patient for effects.
✱ Applicable drugs: **FENTANYL** (will burn for 30-45 sec), **NARCAN**, **VERSED**, **ZOFRAN**.

Citation(s): (Borland, Bergesio, Pascoe, Turner, & Woodger, 2005), (Finn, et al., 2004), (Holsti, Sill, Firth, Filloux, Joyce, & Furnival, 2007), (O'Donnell, Schafer, Stevens, Weinstein, Miramonti, & Kozak, 2013), (Teleflex Incorporated, 2013)

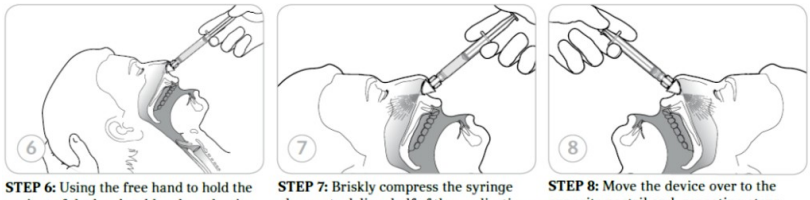
STEP 1: Remove and discard the green vial adapter cap.

STEP 2: Pierce the medication vial with the syringe vial adapter.

STEP 3: Aspirate the proper volume of medication required to treat the patient (an extra 0.1 mL of medication should be drawn up to account for the dead space in the device).

STEP 4: Remove (twist off) the syringe from the vial adapter.

STEP 5: Attach the MAD Nasal™ Device to the syringe via the luer lock connector.



STEP 6: Using the free hand to hold the occiput of the head stable, place the tip of the MAD Nasal™ Device snugly against the nostril aiming slightly up and outward (toward the top of the ear).

STEP 7: Briskly compress the syringe plunger to deliver half of the medication into the nostril.

STEP 8: Move the device over to the opposite nostril and, repeating steps 6 and 7, administer the remaining medication into the nostril if indicated.

8-140 IV Catheter

Advanced Life Support

INDICATIONS:

✱ Cardiac, suspected stroke, or any patient requiring IV medications.

CONTRAINDICATIONS:

✱ None.

PRECAUTIONS:

✱ Avoid venipuncuture in arms with dialysis shunts or distal to injuries.

PROCEDURE (see NUR 11.13):

✱ Inform patient of procedure.
✱ Apply tourniquet.
✱ Select and clean site.
✱ Stabilize vein.
✱ Pass needle into vein with bevel up, noting blood “flash.”
✱ Advance needle 2 mm more.
✱ Slide catheter over needle into vein.
✱ Remove needle.
✱ Hold pressure over distal tip of catheter to prevent blood loss.
✱ Perform blood draw if indicated.
✱ Remove tourniquet.
✱ Flush with saline to ensure placement.
✱ Secure with dressing.

Citation(s):

8-150 Kendrick Extrication Device (KED)

Basic Life Support INDICATIONS: ✱ Patients that are seated and meet criteria for spinal motion restriction but do not meet criteria for rapid extrication. CONTRAINDICATIONS: ✱ Patients with easy access requiring rapid extrication. PRECAUTIONS:	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

PROCEDURE:

✱ Maintain c-spine.
✱ Assess distal pulses, motor function, and sensation.
✱ Apply c-collar.
✱ Position device behind patient.
✱ Pull device up until it fits snugly in armpits.
✱ Apply chest straps and tighten. Avoid restricting breathing.
✱ Apply leg straps and tighten. Avoid pinching or injuring genitals.
✱ Apply padding behind head.
✱ Secure head to device.
✱ Remove patient from entrapment (if applicable) and lay down on backboard.
✱ Release leg straps and secure patient and device to backboard.
✱ KED chest straps may be loosened for comfort.
✱ Reassess distal pulses, motor function, and sensation.

Citation(s):

8-160 King LTSD Airway

Basic Life Support INDICATIONS: ✱ Airway management in the adult (>5 ft tall) cardiac arrest, respiratory arrest, or unresponsive patient. Considered alternate airway to endotracheal tube. CONTRAINDICATIONS: ✱ Responsive patient with intact gag reflex. Known esophageal disease. Caustic substance ingestion. PRECAUTIONS:	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform… non-invasive airway devices not intended to be placed in the trachea…"

PROCEDURE:

✱ Choose size:
  ✱ Size 3 [yellow]: 4-5 ft tall,
  ✱ Size 4 [red]: 5-6 ft tall,
  ✱ Size 5 [purple]: >6 ft tall.
✱ Test cuff inflation by injecting maximum recommended volume of air into cuffs. Remove all air from cuffs.
✱ Apply lubricant to beveled distal tip and posterior aspect of tube.
✱ Pre-oxygenate.
✱ Position head in "sniffing position" or neutral position.
✱ Hold King in dominant hand. Hold open mouth and lift chin with non-dominant hand.
✱ Rotate King 45-90 degrees to touch the corner of the mouth with the blue orientation line.
✱ Advance King behind base of tongue. Never force into position.
✱ As tip passes under tongue, rotate back to midline (blue orientation line faces chin).
✱ Advance King until base of connector aligns with teeth or gums.
✱ Inflate cuffs with minimum volume necessary to seal the airway at peak ventilatory pressure.
✱ Attach resuscitation bag. While bagging, withdraw King until ventilation is easy and free flowing.
✱ Confirm proper position by auscultation, chest movement, and $ETCO_2$.
✱ Secure King with tape or other device.

Advanced Life Support:

✱ Continued sedation: Consider **VERSED** 2.5-5 mg every 5min or **FENTANYL** 50-100 mcg (max 300 mcg).
✱ Up to 18 fr gastric tube may be used in suction lumen.

Citation(s):

8-170 Laryngeal Mask Airway (LMA)

Basic Life Support INDICATIONS: ✱ Clear airway needed during resuscitation in a patient with absent glossopharyngeal and laryngeal reflexes. LMA should only be used if tracheal intubation is not possible. CONTRAINDICATIONS: ✱ Swallow or gag reflex. PRECAUTIONS:	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform… non-invasive airway devices not intended to be placed in the trachea…"

PROCEDURE:

✱ Examine LMA for damage, leaks, and blockages.
✱ Inflate cuff with 150% that listed. Fully deflate.
✱ Lubricate posterior surface of cuff.
✱ Hold LMA with index finger at cuff-tube junction.
✱ Press mask against hard palate.
✱ Slide mask inward, extending index finger.
✱ Advance LMA into hypopharynx until resistance is felt.
✱ Hold outer end of LMA while removing index finger.
✱ Inflate cuff.
✱ Secure LMA.

Advanced Life Support:

✱ Continued sedation:
  ✱ Consider **VERSED** 2.5-5 mg every 5 min. Repeat as needed maintaining SBP > 100.
  ✱ Consider **FENTANYL** 50-100 mcg. Max 300 mcg.

Citation(s):

8-180 Laryngo-Tracheal Anesthesia (LTA)

Advanced Life Support

INDICATIONS:

✱ Facilitate intubations in patients with laryngospasm. Reduce risk of laryngospasm in breathing patient.

CONTRAINDICATIONS:

✱ Heart blocks.

PRECAUTIONS:

✱ Should be done under direct visualization. Cricoid pressure should be applied until ET is secured in place. Dosage of lidocaine shall not exceed 3 mg/kg.

PROCEDURE:

✱ Hyperventilate for 2min.
✱ Assemble LTA.
✱ Under direct visualization, advance LTA through vocal cords until black line on catheter is at the glottis opening.
✱ Administer **LIDOCAINE** 4% TOPICAL SOLUTION through catheter to spray entire glottis and subglottic area.
✱ Apply cricoid pressure while patient is hyperventilated for 2min.
✱ Perform intubation.
✱ Assess tube placement and secure tube.
✱ Release cricoid pressure and continue ventilation.

Citation(s):

8-190 LifePak 12/15

AED Mode

Basic Life Support INDICATIONS: ✱ Cardiac arrest without ALS assistance. If ALS is available, manual mode is preferred. CONTRAINDICATIONS: ✱ None in cardiac arrest. PRECAUTIONS: ✱ Exercise safety precautions.	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"
PROCEDURE: ✱ Confirm patient is in cardiac arrest. ✱ Apply and connect combo-pads. ✱ Press "ANALYZE." ✱ Follow on-screen messages and voice prompts.	

DEFIBRILLATION

Advanced Life Support INDICATIONS: ✱ Ventricular fibrillation, ventricular tachycardia. CONTRAINDICATIONS: ✱ None in cardiac arrest. PRECAUTIONS: ✱ Exercise safety precautions.

PROCEDURE:
✱ Verify patient is in cardio-pulmonary arrest.
✱ Record baseline rhythm.
✱ Apply combo-pads (anterior-posterior is preferred)
✱ Select appropriate energy.
  ✱ ADULT: 360 J.
  ✱ PEDIATRIC: 2 J/kg (first shock), 4 J/kg (subsequent shocks).
✱ Charge and clear patient.
✱ Call "CLEAR" and ensure patient is clear.
✱ Press "SHOCK."
✱ Reassess patient.

DOWNLOAD TO HEALTHEMS

Basic Life Support

INDICATIONS:

- Any time cardiac monitoring is required and/or documented in HealthEMS, the EKG and all 12-leads shall be downloaded and attached to the ePCR.

CONTRAINDICATIONS:

PRECAUTIONS:

PROCEDURE:

- Click paperclip icon in the HealthEMS ePCR. Select "EKG." Click down-arrow. Click "Next." Select "LifePak 12/15." Click "Next."
- Press "TRANSMIT" on LifePak.
- Click "Finish." Select the correct file. Click plus icon. Click "OK." Click "Yes."

ECG

Basic Life Support

INDICATIONS:

- Suspected myocardial infarction, unexplained dyspnea, non-specific complaints, syncope.

CONTRAINDICATIONS:

PRECAUTIONS:

19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform… twelve (12) lead EKG acquisition and transmission…"

PROCEDURE:

- Attach limb leads.
  - Preferred locations for 12-lead acquisition are wrists and ankles.
  - Preferred locations for 4-lead monitoring are shoulders and abdomen.
- Attach precordial leads.
- Perform 12-lead.
- Perform 15-lead on the following patients:
  - Non-diagnostic 12-lead OR
  - Evidence of acute inferior wall injury.

SYNCRONIZED CARDIOVERSION

Advanced Life Support

INDICATIONS:

✱ Unstable tachydysrhythmias.

CONTRAINDICATIONS:

PRECAUTIONS:

✱ Exercise safety precautions. Cardiovert with extreme caution in patients on digitalis, beta-blockers, and calcium channel blockers.

PROCEDURE:

✱ Explain procedure to patient.
✱ If time permits, consider VERSED.
✱ Record baseline rhythm.
✱ Select lead with tallest R-wave.
✱ Apply combo-pads (anterior-posterior is preferred).
✱ Select appropriate energy.
  ✱ ADULT: 120 J.
  ✱ PEDIATRIC: 0.5-1 J/kg.
✱ Synchronize ("SYNC") and observe markers on screen. If sense markers
✱ Charge ("CHARGE") and clear patient. To cancel charge, press speed dial. If "SHOCK" is not pressed within 60 sec, charge is cancelled.
✱ Call "CLEAR" and ensure patient is clear.
✱ Press "SHOCK."
✱ Reassess patient.

Citation(s):

TRANSCUTANEOUS PACING (TCP)

Advanced Life Support

INDICATIONS:

✱ Symptomatic bradydysrhythmias, heart blocks.

CONTRAINDICATIONS:

✱ None in emergency setting.

PRECAUTIONS:

✱ Exercise safety precautions. Do not place pacer electrodes directly over implanted pacemaker or AICD.

PROCEDURE:

✱ Explain procedure to patient.
✱ Connect 4-leads and record rhythm strip prior to pacing.
✱ Select lead with tallest R-wave.
✱ Apply combo-pads (anterior-posterior is preferred).
✱ Turn pacer on and set rate to 80 bpm.
✱ Gradually increase energy until electrical capture is observed (usually wide, bizarre QRS).
✱ Check pulse for mechanical capture. If no mechanical capture, continue to increase energy until mechanical capture. If CPR is being conducted and no mechanical capture is detected at maximum energy, continue pacing.
✱ Once mechanical capture is obtained, increase energy another 10%, assess blood pressure, and record rhythm strip.
✱ If CPR is being conducted, continue for another 2 minutes before discontinuing.
✱ Conscious: Consider **VERSED** 2.5-5 mg for sedation if discomfort is intolerable.

VITALS

Basic Life Support

INDICATIONS:

✱ All patient contacts. Minimum of 2 sets of vitals required for all transported patients. Before and after medication administration. Every 5-10min in critical patients.

CONTRAINDICATIONS:

✱ Do not attempt blood pressures on injured extremities, side of previous mastectomies, or dialysis shunts.

PRECAUTIONS:

19 CSR 30-40.342(2)(B) states “the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…”

PROCEDURE:

✱ Choose and apply appropriately sized cuff. Auscultated blood pressure is required as a baseline to verify LifePak before medication administration.
✱ Attach pulse-ox probe.
✱ If patient is being transported ALS: Connect 4-lead cardiac monitor.

8-200 Meconium Aspirator

Advanced Life Support

INDICATIONS:

CONTRAINDICATIONS:

PRECAUTIONS:

PROCEDURE:

Citation(s):

8-210 Morgan Lens

Advanced Life Support

INDICATIONS:

✱ Chemical burns to face. Foreign object in eye.

CONTRAINDICATIONS:

PRECAUTIONS:

PROCEDURE:

✱ Pain: Consider topical anesthetic (**TETRACAINE** 1-2 drops).
✱ Attach **NS** to IV set.
✱ Begin flow.
✱ Have patient look down. Insert lens under upper lid.
✱ Have patient look up, retract lower lid. Drop lens into place.
✱ Deliver at least 1/2 liter per eye.
✱ If chemical is unknown or an alkali (base), flush for at least 20 min.
✱ To remove, have patient look up, retract lower lid, and slide lens out.

Citation(s):

Start minimal flow BEFORE* inserting Lens

- **Have patient look down**
- **Insert Lens under upper lid**
- **Have patient look up, retract lower lid, drop Lens in place**

8-230 NasoPharengeal Airway (NPA)

Basic Life Support INDICATIONS: ✱ Conscious or semiconscious patients unable to control their airway. Clinched jaws. Altered LOC with gag reflex. CONTRAINDICATIONS: ✱ Fluid or blood from ears or nose indicating basilar skull fracture. PRECAUTIONS:	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"
PROCEDURE: ✱ Pre-oxygenate if possible. ✱ Measure tube from tip of nose to the earlobe. ✱ Lube airway with water-soluble jelly. ✱ Insert tube (right nare first) with bevel towards the septum. ✱ Reassess airway.	

Citation(s):

8-240 Nebulizer

Advanced Life Support

INDICATIONS:

✱ Bronchospasms.

CONTRAINDICATIONS:

PRECAUTIONS:

PROCEDURE:

✱ Select correct medication.
✱ Confirm orders, dosage, and expiration.
✱ Check patient allergies.
✱ Add medication to reservoir of nebulizer. Add saline if necessary to equal 3 ml total volume.
✱ Connect oxygen tubing and set flow rate to 6-8 lpm.
✱ Have patient take deep breaths, holding for a second, and exhale through tube.
✱ If patient is unable to hold nebulizer, attach to mask.
✱ Medication is delivered in 5-10 min.
✱ Observe patient for effects.

Citation(s):

8-250 Nellcor Capnograph / Pulseoximeter

Advanced Life Support

INDICATIONS:

✱ All ALS patients. Respiratory distress. Chest discomfort.

CONTRAINDICATIONS:

✱ None

PRECAUTIONS:

✱ Accuracy is dependent upon adequate perfusion at probe site, bright ambient lighting, carbon monoxide poisoning, cyanide poisoning, nail polish, and polycythemia.

CAPNOGRAPH PROCEDURE:

✱ Turn monitor on.
✱ Attach capnograph probe (nasal cannula or ET tube) to patient and capnograph.
✱ Observe readings. May need to instruct patient on nasal cannula to breathe out through their mouth.

PULSEOXIMETER PROCEDURE:

✱ Find suitable location for probe.
✱ Attach and record readings.
✱ If erratic reading, move probe to different site.

Citation(s):

8-260 OroPharengeal Airway (OPA)

Basic Life Support INDICATIONS: ✱ Unconscious, unresponsive. CONTRAINDICATIONS: ✱ Gag reflex. PRECAUTIONS:	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"
PROCEDURE: ✱ Pre-oxygenate if possible. ✱ Measure airway from corner of mouth to earlobe. ✱ Grasp tongue and jaw, lifting anterior. ✱ Insert airway inverted and rotate 180 degrees into place. ✱ Reassess airway.	

Citation(s):

8-270 ParaPac 200D Ventilator

Advanced Life Support

INDICATIONS:

✱ Need for ventilation of intubated patient.

CONTRAINDICATIONS:

✱ None.

PRECAUTIONS:

✱ Demand setting requires constant patient monitoring. If patient condition deteriorates, consider extubation and BVM.

PROCEDURE:

✱ Adjust settings (may be based on existing ventilator settings or anticipated patient needs):
  ✱ Relief pressure is maximum delivered pressure.
  ✱ Air mix is set at either “No Air Mix (100% Oxygen)” or “Air Mix (45% Oxygen).”
  ✱ Frequency is the breaths per minute.
  ✱ Tidal volume is the volume of air per breath.
✱ Connect supply hose to Oxygen, turn on Oxygen, and check visual alarm.
✱ Connect patient hose and patient valve to ETT.
✱ Confirm ventilation with auscultation and capnography. Confirm oxygenation with pulsoximeter.
✱ Constant patient monitoring is made more critical if ventilator is in demand mode.
✱ Consider NG and/or OG suction.

BAG INVENTORY:

✱ 1 - ParaPac 200D Ventilator
✱ 1 - Disposable Pneupac Ventilator Patient Circuit Kit (hose, patient valve, PEEP valve)
✱ 1 - Green Oxygen Supply Hose
✱ 1 - High Pressure Oxygen Quick Connector
✱ 1 - Reusable Green Patient Delivery Hose
✱ 1 - Reusable Green Patient Valve

Citation(s):

8-280 Percutaneous Transtracheal Jet Insuflation - CALL FOR ORDERS

Advanced Life Support

INDICATIONS:

- Can't intubate, can't ventilate last ditch airway effort specifically with the pediatric patient in which surgical cricothyrotomy would be contraindicated. THIS IS A TEMPORARY MEASURE.

CONTRAINDICATIONS:

- Any other airway is indicated.

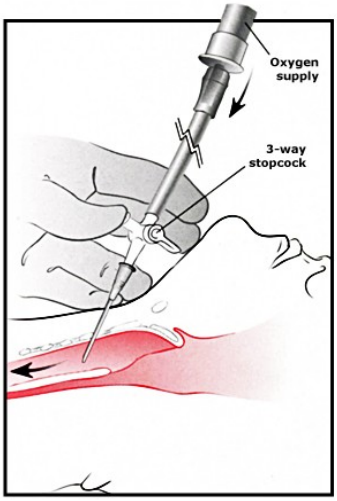
PRECAUTIONS:

- None. This is a last resort airway. Without it, your patient will expire.

PROCEDURE:

- Procedure tolerance:
  - Consider **VERSED** 2.5-5 mg slow IVP every 5 min. Repeat as needed maintaining a systolic BP above 100.
  - Consider adding **FENTANYL** 50-100 mcg slow IVP. May repeat to a total of 300 mcg.
- Assemble, check, and prepare all equipment.
- Place head in sniffing position (elevate head 2-4"). Maintain c-spine stabilization on trauma patients.
- Hyperextend the neck slightly.
- Perform needle aspiration into the trachea with syringe on needle, aspirating as you advance for the confirmation of air presence.
- When air is drawn into syringe, stop the advancement of the needle and thread catheter over needle into trachea.
- Remove needle leaving only the catheter in neck at a depth that is appropriate for size of child. Avoid insertion depths that would put catheter tip below the carina.
- With ENK device attached to oxygen source, turn to highest possible liter flow.
- Occlude all 5 holes on modulator for 1 to 2 seconds for oxygenation, then uncover for 3-5 seconds for ventilation if passive ventilation is not possible.
- It may be beneficial to push down on chest on exhalation to expedite exit of gas volume.
- Continue until other airway is established or arrival at a medical facility or transfer of care.
- ET medications can be administered through syringe port if needed.

Citation(s):



8-290 Physical Restraint - CALL FOR ORDERS

Advanced Life Support

INDICATIONS:

- Medical or behavioral emergency endangering patient and/or EMS personnel or prohibiting appropriate medical evaluation and transport.

CONTRAINDICATIONS:

PRECAUTIONS:

PROCEDURE:

- Maintain scene, crew, and personal safety.
- Attempt verbal de-escalation.
- Utilize family and friends to calm patient if they are helpful.
- Utilize law enforcement presence to calm patient.
- Managing the patient's pain may assist in calming patient.
- Utilize the least restrictive device that achieves desired result.
- Monitor patient for physical response, extremity circulation, respiratory compromise, and aspiration risk.
- Proper body alignment and patient comfort will be addressed.

- If restrained by law enforcement (i.e. hand-cuffs), an officer from the arresting agency must be present throughout EMS transport.

MEDICAL CONTROL must be contacted prior to or immediately following patient restraint.

Citation(s):

8-295 PICC & Central Line Access Kit

Advanced Life Support

INDICATIONS:

- Any patient who needs IV access, 2 attempts at IV access have failed, IO contraindicated or conscious patient, and at least one of the following:
  - ALOC or GCS<8,
  - Hemodynamic instability,
  - Extreme respiratory compromise, OR
  - Full arrest.

CONTRAINDICATIONS:

- Inability to obtain/maintain sterile field.

PRECAUTIONS:

- Sterile technique must be utilized.

PROCEDURE (see NUR 07.18):

- Cleanse the needless infusion cap. May use any catheter present.
- Aseptically attach flush.
- Open clamp on catheter lumen.
- Aspirate fluid from catheter slowly until blood return. If unable to aspirate blood, catheter is clotted and will need to be declotted in a hospital setting.
- Flush with **NS**. Remove flush while maintain pressure on syringe plunger.
- Attach appropriate IV fluids.

Citation(s):

8-300 Plum XL Infusion System

Advanced Life Support

INDICATIONS:

✱ Patient requiring drip medications.

CONTRAINDICATIONS:

PRECAUTIONS:

CASSETTE PRIMING AND LOADING PROCEDURE:

✱ Make sure flow regulator is closed (white screw pushed in).
✱ Insert piercing pin with a twisting motion into medication.
✱ Fill drip chamber.
✱ Invert cassette.
✱ Turn flow regulator counterclockwise until a drop of fluid is seen in pumping chamber.
✱ Turn cassette upright and prime remainder of administration set.
✱ Push flow regulator closed.
✱ Make sure proximal clamp (above cassette) is open.
✱ Open cassette door and insert cassette.
✱ Close door.

INFUSION PROCEDURE:

✱ Turn knob to “SET RATE.”
✱ Use up, down, and/or “QUICKSET” buttons to select infusion rate.
✱ Turn knob to “SET VTBI.”
✱ Use up, down, and/or “QUICKSET” buttons to select volume to be infused.
✱ Turn knob to “RUN.”

Citation(s):

8-310 Pneumatic Anti-Shock Garment (MAST) - CALL FOR ORDERS

Basic Life Support

INDICATIONS:

✱ Splint for pelvic fracture or lower extremity splint.

CONTRAINDICATIONS:

✱ Pulmonary edema, uncontrolled bleeding above abdomen, late term pregnancy (legs only may be inflated), impaled objects, evisceration of bowel (legs only may be inflated).

PRECAUTIONS:

19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

PROCEDURE:

✱ **CONTACT MEDICAL CONTROL**:

- ✱ Remove clothing from lower extremities and abdomen.
- ✱ Perform rapid inspection/palpation of abdomen, pelvis, and legs.
- ✱ Assess vitals and lung sounds.
- ✱ Apply garment using log-roll, trouser, or scoop method.
- ✱ Secure straps making sure top of abdominal section is below the last rib.
- ✱ Connect inflation tubing to all compartments.
- ✱ Open valves to both leg compartments.
- ✱ Inflate legs simultaneously to 90 mm/hg.
- ✱ Close valves to leg compartments.
- ✱ Reassess vitals and lung sounds.
- ✱ If SBP<80, inflate abdominal compartment. If lung sounds indicate pulmonary edema or SBP>80, do not inflate abdominal compartment.
- ✱ Open valves to abdominal compartment.
- ✱ Inflate to 90 mm/hg.
- ✱ Close valves to abdominal compartment.
- ✱ Reassess vitals and lung sounds.
- ✱ Sudden changes in temperature and elevation may cause increases or decreases in garment pressure.

Citation(s):

8-320 Port-A-Cath Access Kit

Advanced Life Support

INDICATIONS:

- Any patient who needs IV access, 2 attempts at IV access have failed, IO contraindicated or conscious patient, and at least one of the following:
  - ALOC or GCS<8,
  - Hemodynamic instability,
  - Extreme respiratory compromise, OR
  - Full arrest.

CONTRAINDICATIONS:

- Inability to obtain/maintain sterile field.

PRECAUTIONS:

- Sterile technique must be utilized.

PROCEDURE (see NUR 11.34):

- Gather equipment and don mask.
- Palpate subcutaneous tissue to determine borders of the access device. Palpate the implanted infusion port borders and locate the septum and center of the septum. Determine if the patient has a single or double lumen implanted infusion port. Choose the smallest gauge non-coring needle that accommodates the therapy. Select a length that allows the length of the needle to sit flush to the skin and securely within the port.
- Assess the site for symptoms of infection.
- Open the implanted infusion port access kit using the sterile inner surface to create sterile field.
- Using sterile technique, remove wrapper from 10 ml syringe and place on sterile field. Remove packaging and place the needle with extension tubing, needleless injection cap, adhesive skin closures, and dressing on sterile field.
- Using sterile technique, prime tubing with **NS** syringe. Attach needleless injection cap to extension to needle.
- Cleanse insertion site with antiseptic for 30 seconds and allow to air dry.
- Stabilize borders of implanted port and insert needle firmly into center of port septum using 90 degree angle perpendicular to the skin. Advance needle until reaching base of portal reservoir.
- Aspirate blood and then flush with **NS**.
- Stabilize needle with dressing, occlusive dressing, and/or tape. Document date, time, and your initials on external dressing.

Citation(s):

8-330 QuickTrach II Cricothyrotomy Kit

Advanced Life Support

INDICATIONS:

✱ Patients needing emergency airway access and control when they are unable to be adequately ventilated or intubated due to trauma or other causes. THIS PROCEDURE IS A LAST RESORT WHEN ALL ATTEMPTS AT VENTILATING THE PATIENT HAVE FAILED.

CONTRAINDICATIONS:

✱ None in emergency setting.

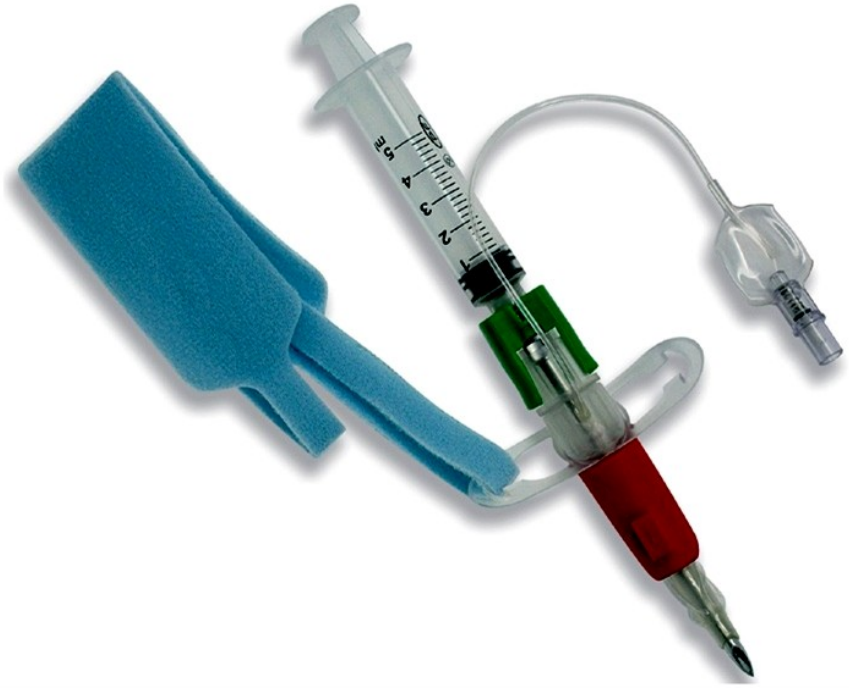
PRECAUTIONS:

✱ Complications include hemorrhage from great vessel lacerations and damage to surrounding structures. Constantly check ventilation by standard techniques.

PROCEDURE:

✱ Prepare the device: Remove valve opener and completely evacuate the cuff with the included 10 ml syringe. Remove and fill syringe for inflating the cuff with 10 ml of air.
✱ Prepare the patient: Hyperextend the head of the patient. Locate the cricothyroid membrane by palpation of the depression between the thyroid and cricoids cartilage. Stabilize this point with forefinger and thumb for puncture.
✱ Puncture the cricothyroid membrane and insert QuickTrach II until red stopper touches skin. An incision is not necessary.
✱ Aspirate syringe to determine position of cannula. Aspiration of air indicates proper placement in trachea. If no air is aspirated, remove red stopper and advance slowly until air can be aspirated.
✱ Remove red stopper.
✱ Push cannula forward into the trachea and remove metal needle.
✱ Inflate cuff with 10 ml of air.
✱ Secure with foam neck tape.
✱ Attach BVM with connector and verify placement with auscultation and capnography.

Citation(s):



8-340 Sager Splint

Basic Life Support INDICATIONS: CONTRAINDICATIONS: PRECAUTIONS:	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"
PROCEDURE:	

Citation(s):

8-350 Spinal Motion Restriction (SMR)

Basic Life Support	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

INDICATIONS:

- High-energy mechanism of injury and any of the following:
  - Drug or alcohol intoxication,
  - Inability to communicate,
  - Altered mental status, OR
  - Distracting injury.
- Unconscious with unknown history of event.
- Spinal pain, tenderness, or deformity.
- Neurologic complaint (i.e. numbness or motor weakness).
- Penetrating trauma and NO evidence of spinal injury should only be immobilized with a c-collar, if indicated (no backboard).
- Patients "cleared" by transferring physician being taken to trauma center meeting requirements for SMR must have SMR.

CONTRAINDICATIONS:

- SMR is not necessary if ALL of the following apply:
  - Normal level of consciousness,
  - No spine tenderness or anatomic abnormality,
  - No neurologic deficits or complaints,
  - No distracting injury, AND
  - No intoxication.
- Elderly fall from standing with isolated extremity fracture (i.e. hip fracture) without mechanism for spinal injury do not need SMR.
- Spinal precautions can be maintained by application of a rigid cervical collar and securing the patient firmly to the EMS stretcher (no backboard), and may be most appropriate for:
  - Patients found to be ambulatory at the scene,
  - Extended transport time,
  - Severe epistaxis or facial bleeding,
  - Respiratory distress when supine, OR
  - Airway compromise when supine.

PRECAUTIONS:

- Utilization of backboards for spinal immobilization during transport should be judicious, so that the potential benefits outweigh the risks.
- Properly sized c-collar must be used.
- Appropriate amount of padding is needed to provide correct stabilization.
- Unless it is necessary to change a patient's position to maintain an open airway or there is some other compelling reason, it is best to splint the neck or back in the original position of the deformity.
- C-collars should only be removed as directed by ER physician or trauma surgeon.

PROCEDURE:

- Assess distal pulse, motor, and sensation.
- Bring patient's head to eyes-forward inline position.
- Maintain manual stabilization.
- Measure and size collar (trapezius muscle at base of neck to bottom of chin).
- Pre-form collar to estimated shape.
- Supine patient: Slide loop fastener end under neck.
- Position chin piece and secure collar around neck.
- Multi-person lift a few inches and slide board underneath.
  - OR Log-roll patient onto his/her side. Assess posterior and position backboard.
- Secure thorax and legs to backboard. Pad. Ensure breathing is not restricted.
- Secure head and c-collar to backboard. Pad as needed. Tape should stick to all areas of forehead, eyebrows, collar, etc.
- Reassess distal pulse, motor, and sensation.

Citation(s): (Bledsoe, 2013), (Boland, Satterlee, & Jansen, 2014), (Citizens Memorial Hospital, 2013), (Foerster, 2013), (Mercy EMS, 2013), (National Association of EMS Physicians and American College of Surgeons Committee on Trauma, 2013), (Niven & Castle, 2010)

8-360 Splint

Basic Life Support INDICATIONS: ✱ Isolated extremity fracture, sprain, strain, snakebite, or bleeding control. CONTRAINDICATIONS: PRECAUTIONS: ✱ May be time consuming, should not take priority over life threatening conditions. Bone fracture splints should immobilize joints above and below. Joint fractures should immobilize bones above and below.	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

PROCEDURE:

✱ Following splints are recommended for the following situations. Every situation is different, so splints may have to be improvised to achieve the desired effect of immobilization:
- ✱ Clavicle: Sling and swath.
- ✱ Radius/ulna: Ladder, board, or SAM.
- ✱ Tibia/fibula: Ladder, board, or SAM.
- ✱ Ankle: Pillow.
- ✱ Joints: In position found.
- ✱ Pelvis: Scoop, pillow, inverted KED, LSB, MAST.
- ✱ Hand: In position of function.

✱ Assess distal pulse, motor, and senses before and after splinting.

Citation(s):

8-370 S-Scort Suction Pump

Basic Life Support INDICATIONS: CONTRAINDICATIONS: PRECAUTIONS: ✱ Be sure to switch off as soon as possible to avoid shorting batteries.	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

PROCEDURE:

✱ Place 2 fully charged batteries.
✱ Attach patient connecting tube to patient port on the canister.
✱ Turn switch on.
✱ Occlude end of patient connecting tube and keep it occluded for 10sec. Release occlusion and check for negative pressure. If no negative pressure, check to ensure canister lid is tight and connections are secure.
✱ Dispose of canister after use.

Citation(s):

8-375 Tablet

Basic Life Support

INDICATIONS:

- Need to activate Cath Lab by transmitting STEMI EKG to CMH ER (see 2-10 Chest Pain for details).
- Other uses are also available, but not limited to:
  - Ambulance tracking, foreign language translation, MODOT road conditions reference, hazardous materials reference, protocol reference, mapping, calculator, and other medical and general reference.

CONTRAINDICATIONS:

- None.

PRECAUTIONS:

- Do not transmit any patient identifying information.
- **Do not delete or install any apps, contacts, etc.**
- **Do not alter any device settings.**
- Changes to one device may affect all other devices in the fleet.

PROCEDURE:

- Power on the device and enter the PIN, if requested. The PIN is the 4-digit number of the shift (i.e. “1770”).

- A menu option to send EKG will be presented.
  - If device is being used for something other than transmitting a STEMI EKG, press the “back” button on the bottom right.
  - To transmit an EKG, press “Send EKG.” Anew email will be generated and formatted.

- Press the paperclip in top-right corner to attach a picture.

- Press “Take picture” to open camera.

- Press the shutter button to take the picture with the EKG in the viewscreen.

- Press “Save” to attach the picture to the email.

- Press “OK” to keep the original image size.

- Press “Send” to send the email.

Citation(s):

8-380 Thoracentesis (14ga Jelco)

Advanced Life Support

INDICATIONS:

✱ Increased difficulty ventilating with open airway. Absent lung sounds on affected side. JVD. Hypotension. Increasing respiratory distress. Decreased SpO_2. Traumatic cardiac arrest with chest pathology.

CONTRAINDICATIONS:

✱ None in presence of tension pneumothorax.

PRECAUTIONS:

✱ Complications may include laceration of intercostal vessels, creation of pneumothorax, laceration of lung tissue, and risk of infection.

PROCEDURE:

✱ Identify second or third intercostal space, midclavicular line, on affected side.
✱ Clean area with antiseptic.
✱ Insert Jelco into skin over just over superior border of third rib.
✱ Insert catheter through paretal pleura until air escapes.
✱ Air should exit under pressure.
✱ Remove needle and leave plastic catheter in place.
✱ Reassess frequently for redevelopment of pneumothorax.
✱ If tension pneumothorax returns, repeat procedure.

Citation(s):

8-390 Tourniquet

Basic Life Support

INDICATIONS:

- ✱ Extreme life-threatening limb hemorrhage, limb amputation, or mutilated limb with multiple bleeding points to allow immediate management of airway and breathing problems.
- ✱ Life-threatening limb hemorrhage uncontrolled by simple methods.
- ✱ Point of significant hemorrhage from limb is not peripherally accessible due to entrapment.
- ✱ Major incident or multiple casualties with extremity hemorrhage and lack of resources.

CONTRAINDICATIONS:

PRECAUTIONS:

- ✱ Prolonged tourniquet application may result in nerve damage, rhabdomyolysis, compartment syndrome, ischemia, and re-profusion injury. Time of tourniquet application MUST be reported to accepting ER.
- ✱ Do not apply tourniquet over a joint.

19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

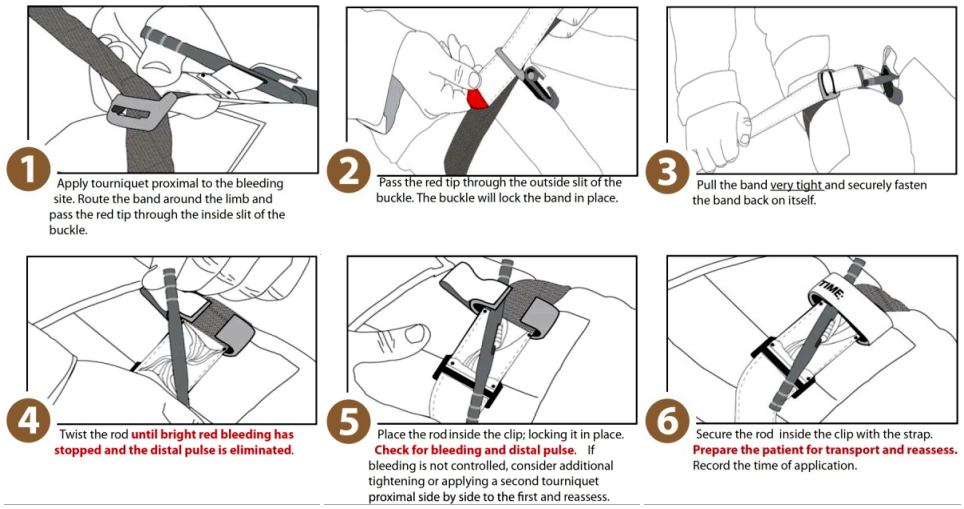
PROCEDURE:

- ✱ May use cloth, blood pressure cuff, or commercial device. Constricting band should be at least 1 inch wide.
- ✱ Apply tourniquet proximal to bleeding site.
- ✱ Tighten tourniquet until bright red bleeding has stopped.
- ✱ Secure tourniquet from loosening.
- ✱ Note the time of tourniquet application.

Advanced Life Support

- ✱ Application of tourniquets typically results in severe pain. Consider referring to **6-50 CONTROL OF PAIN** protocol after bleeding control and fluid administration.
- ✱ If prolonged transport time, consider tourniquet removal if all of the following are met:
  - ✱ Not in circulatory shock.
  - ✱ Stable vitals.
  - ✱ Enough personnel and resources.
  - ✱ Not an amputated extremity.
  - **✱ CONTACT MEDICAL CONTROL.**
    - ✚ Apply pressure dressing and loosen tourniquet (leave in place).
    - ✚ Re-tighten tourniquet if significant bleeding returns.

Citation(s): (Cain, 2008), (Composite Resources, Inc), (Doyle & Taillac, 2008), (Flores, 2012), (Kragh, et al., 2008), (Richey, 2007)



8-400 Traction Splint

Basic Life Support INDICATIONS: ✱ Open or closed femur fracture. CONTRAINDICATIONS: ✱ Proximal femur fracture. Pelvic fracture. Tibia/fibula fracture. PRECAUTIONS: ✱ In the case of open fracture with obvious contamination, loose debris should be brushed away and flushed with saline prior to reduction.	19 CSR 30-40.342(2)(B) states "the EMT-B in Missouri may be permitted to perform … all skills in the National Scope of Practice for Emergency Medical Technicians…"

PROCEDURE:

✱ Assess distal pulse, motor, and sensation. If pulses are absent, apply manual, inline traction. Pulseoximetry can help with distal pulse monitoring.

✱ Consider **MEDICAL CONTROL** for angulated or pulseless fractures.

✱ Stabilize limb manually.
✱ **ALS**: Consider sedation or analgesia prior to moving extremity.
✱ In general, if distal pulses and sensation are present, field reduction should not be attempted.
✱ Reassess distal pulse, motor, and sensation.
✱ Patient destination should be a trauma center.
✱ In the event of bilateral femur fractures, consider **MAST** pants.

Citation(s):

8-410 Turkel Needle

Advanced Life Support

INDICATIONS:

✱ Increased difficulty ventilating with open airway. Absent lung sounds on affected side. JVD. Hypotension. Increasing respiratory distress. Decreased SpO_2. Traumatic cardiac arrest with chest pathology.

CONTRAINDICATIONS:

✱ None in presence of tension pneumothorax.

PRECAUTIONS:

✱ Complications may include laceration of intercostals vessels, creation of pneumothorax, laceration of lung tissue, and risk of infection.

PROCEDURE:

✱ Identify second intercostal space, midclavicular line, on affected side.
✱ Clean area with antiseptic.
✱ Insert Turkel into skin over just over superior border of third rib.
✱ Insert catheter through paretal pleura until air escapes.
✱ During insertion, the color band will show RED until through paretal pleura, and then it turns GREEN.
✱ Advance catheter off device.
✱ Air should exit under pressure.
✱ Close 3-way valve.
✱ Reassess frequently for redevelopment of pneumothorax.
✱ If tension pneumothorax returns, open 3-way valve to release pressure.

Citation(s):