Citizens Memorial Hospital
EMS Protocols

CMH EMS & MIH Protocols

No protocol can account for every clinical scenario encountered, and it is recognized that in rare circumstances deviation from these protocols may be necessary and in a patient's best interest. Variance from protocol should always be done with the patient's best interest in mind and backed by documented clinical reasoning and judgement. Whenever possible. Prior approval by direct verbal order from a physician is preferred. Additionally, all variance from protocol should be documented and submitted for review by the agency's medical director in a timely fashion.

Protocols have certain limitations, and not every clinical scenario can be represented. Although these protocols imply a specific sequence of actions, it may often be necessary to provide care out of sequence from that described if dictated by clinical needs. These protocols provide decision-making support, but need not be rigidly adhered to and is no substitute for sound clinical judgement.

Refer to Guideline 1-400 - Communications for further details.

Protocol 2-022 - Abdominal Pain

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EMD:

- No specific protocol.

EMR:

- **Trauma cause**: Consider Oxygen 100%.
- **Medical cause**: Consider Oxygen if SpO2 is less than 88%.
- Apply Cardiac Monitor limb leads.
- **Identify possible causes**:
  - **Emesis present**: Inspect for blood.
  - **Female**: Determine last menstrual cycle.
- Monitor and treat for shock.
- **Evisceration**: Moist, sterile dressings.
- **Abdominal crush injury**: Immediate release and rapid transport.

EMT:

- Ensure completion of applicable items above.
- Transport in position of comfort.

AEMT:

- Ensure completion of applicable items above.
- Strongly assume abdominal discomfort may have cardiac causes. Consider 12-Lead ECG.
- Consider IV NS/LR in AC (left is preferred) with pigtail extension with 18 ga or greater.

Medic:

- Ensure completion of applicable items above.
- Consider IO LR.
- Refer to Protocol 2-660 - Pain Control.
  - **Severe pain**: Consider Phenergan 12.5 mg IV/IO to potentiate narcotics.
- **Nausea**: Refer to Protocol 2-990 - Vomiting.
- **Bowel obstruction**: Consider stomach decompression.

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- Ensure completion of all applicable items above.

Protocol 2-044 – Airway: RSI

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EMD:

- No specific protocol.

EMR:

- Maintain airway and ventilate with 100% Oxygen for 5 minutes, if possible.
    - Attempt to maintain SpO2 above 90% at all times.
    - Consider nasal cannula at 15 LPM after sedation.
    - Avoid BVM prior to Intubation if SpO2 above 90% to reduce gastric inflation.
- Attach Cardiac Monitor.

EMT:

- Ensure completion of applicable items above.
- Request a second ALS ambulance or supervisor, if possible.
- Assist ALS with Capnography.
- Ventilate rate and volume to maintain Capnography, if able:
    - Head Trauma: 35-45 mmHg
    - **No Head Trauma**: 35-40 mmHg
- **Review RSI CONTRAINDICATIONS**:
    - Unable to ventilate with BVM.
    - Severe facial or neck trauma.
    - Possibility of failure of backup airways.
    - Cricothyrotomy would be difficult or impossible.
    - Acute epiglottitis.
- Press "PRINT" on the Cardiac Monitor after Intubation and at transfer to ER or LZ to record Capnography waveform.
- Maintain warmth of the paralyzed patient.

AEMT:

- Ensure completion of applicable items above.
- IV NS/LR.
    - Consider LR 250 ml bolus.
    - Consider second vascular access.

Medic:

- Ensure completion of applicable items above.

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- RSI is not indicated in a patient who is unconscious and apneic. This situation is considered a "crash" airway, and immediate BVM ventilation and endotracheal intubation without pretreatment, induction, or paralysis is indicated.
- RSI should be approached with caution in a patient with a suspected difficult airway.
- In clinical situations where a patient is unresponsive but has persistent muscle tone, administration of sedative medications prior to paralytics remains a critical action.
- Consult BLS crew members to ensure absence of contraindications.
- Consider IO NS/LR 250 ml bolus.
- Assign duties.

- **PREMEDICATE**:
  - **Seizing**: Refer to Protocol 2-792 - Seizure. Remember, paralysis will mask seizure activity.
  - **Hypotension:** Consider Phenylephrine 50 mcg-100 mcg every 5 minutes to maintain SBP greater than 90 or MAP greater than 65 after or during fluid bolus

Adult:	Pediatric:
Bradycardic: Atropine 1 mg IV/IO. - Pain **and/or** Tachycardia: Consider Fentanyl 3 mcg/kg IV/IO/IN (max 300 mcg).	- Atropine 0.02 mg/kg IV/IO (min 0.1 mg) (max 0.5 mg). - Consider Fentanyl 1-2 mcg/kg IV/IO/IN (max 150 mcg).

- **SEDATE**:
  - Ketamine 1-2 mg/kg IV/IO (60 second onset and 10 minute duration).
    - OR Etomidate 0.3 mg/kg IV/IO (30 second onset and 3 minute duration).

- **PARALYZED**: Consider delayed paralysis to allow pre-oxygenation.
  - **Delayed**: Rocuronium 0.1 mg/kg *[ideal body weight]* IV/IO (2 minute onset and 10 minute duration).
  - **Rapid**: Rocuronium 1.2 mg/kg *[ideal body weight]* IV/IO (1 minute onset and 30 minute duration).

- **INTUBATE**:
  - Elevate head of Cot.
  - Consider Suction.
  - Consider Bougie.
  - Maximum of three attempts, then Supraglottic Airway should be used.
  - Confirm with Waveform Capnography.
  - Consider Ventilator.
  - Consider gastric tube.

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- May proceed to [cricothyrotomy](#) if patient's anatomy precludes oral tracheal intubation. Such as severe facial trauma that prevents other ventilation methods from being effective.

- **POST-INTUBATION HYPOTENSION:**
  - Consider Phenylephrine 50 mcg-100 mcg every 5 minutes to maintain SBP greater than 90 or MAP greater than 65 after or during fluid bolus

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- **CONTINUED SEDATION**:
  - Consider Ketamine 1 mg/kg IV/IO.
  -

Adult:	Pediatric:
▪ Consider Versed 2.5-5 mg IV/IO every 5 minutes as needed maintaining SBP greater than 100. ▪ Consider Fentanyl 5-100 mcg IV/IO/IN (max 300 mcg).	▪ **Over 12 years old**: Consider Versed same dose as adult. ▪ **2 months to 12 years old**: Consider Versed 0.15 mg/kg IV/IO. May repeat every 5 minutes. ▪ Consider Fentanyl 1-2 mcg/kg IV/IO/IN (max 150 mcg).

- **CONTINUED PARALYSIS**:
  - **Signs of patient movement AFTER fully sedated**: Rocuronium 0.1 mg/kg *ideal body weight* IV/IO.

CP:

- Ensure completion of applicable items above.

Protocol 2-044-33 – Airway: RSI Checklist

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Patient Preparation	Considerations	Setup	Post-Intubation
☐ Preoxygenate • NRB • CPAP • BVM ☐ Hemodynamics • IV fluids • Vasopressors ☐ Positioning • Ear to sternal notch • Ramp / 30 degrees • Open collar ☐ Apneic oxygenation • NC 15 lpm ☐ Monitoring • SpO2 on opposite side of BP • ECG • BP q 5 min • EtCO2	☐ Hemodynamics • Risk for hypotension • Shock severity ☐ Oxygenation • Risk for desaturation • Set SpO2 lower limit ☐ LEMON check • Look externally (feel cricothyroid membrane) • Evaluate 3-3-2 (3 fingers between upper and lower teeth, 3 fingers between mandible and neck, 2 fingers between mandible and thyroid) • Mallampati • Obstruction or Obese • Neck mobility ☐ pH • Metabolic considerations ☐ Verbalize airway plan ☐ Designate roles	☐ Laryngoscope(s) ☐ ETT(s) & syringe ☐ Bougie ☐ Stylette ☐ Suction(s) ☐ BVM with PEEP ☐ EtCO2 ☐ Supraglottic ☐ Surgical airway ☐ Medications • Premedication • Induction • Paralytic • Post-intubation • Fluids • Pressors	☐ Confirm placement • Waveform EtCO2 • Lung sounds • Epigastric sounds ☐ Secure ETT ☐ Analgesic ☐ Sedation ☐ Consider ventilator ☐ Consider paralysis ☐ OG/NG tube ☐ Consider sit patient up ☐ Reassess • DOPE • Vitals • Pain

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Protocol 2-0446 – Airway: RSI – Airway Equipment Sizes

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Refer to Equipment - Ventilator for Tidal Volume based on patient sizes.

Age	Weight	Broslow / Handtevy	Laryngoscope	ET Size (age/4 + 4)	ET Depth (weight/2 + 8) or (age/2 + 13)	King Size	LMA Size	I-Gel Size
Preemie	2 kg		1	3.0	9.0 cm	0	1	1 (pink)
Newborn	4 kg		1	3.5	10.0 cm	1 (white)	1	1 (pink)
4 mo	6 kg	Pink	1	3.5	11.0 cm	1 (white)	1.5	1.5 (light blue)
6 mo	8 kg	Red	1	3.5	12.0 cm	1 (white)	1.5	1.5 (light blue)
1 yr	10 kg	Purple	1	4.0	13.0 cm	1 (white)	2	1.5 (light blue)
2 yr	12 kg	Yellow	2	4.5	14.0 cm	2 (green)	2	
3 yr	15 kg	White	2	5.0	14.5 cm	2 (green)	2	
4 yr	17 kg	White	2	5.0	15.0 cm	2 (green)	2.5	
5 yr	20 kg	Blue	2	5.0	15.5 cm	2 (green)	2.5	
6 yr	22 kg	Blue	2	5.5	16.0 cm	2 (green)	2.5	
7 yr	25 kg	Orange	2	6.0	16.5 cm	2.5 (orange)	2.5	2.5 (white)
8 yr	27 kg	Orange	2	6.0	17.0 cm	2.5 (orange)	2.5	2.5 (white)

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9 yr	30 kg	Green	3	6.0	17.5 cm	2.5 (orange)	3	2.5 (white)
10 yr	35 kg	Green	3	6.5	18.0 cm	3 (yellow)	3	3 (yellow)
11 yr	40 kg	Green	3	7.0	18.5 cm	3 (yellow)	3	3 (yellow)
12 yr	50 kg	Green	3	7.0	19.0 cm	3 (yellow)	4	3 (yellow)
13 yr	60 kg	Green	3	7.0	19.5 cm	4 (red)	4	4 (green)
Small Adult	75 kg	Light Blue	4	7.5	20.0-21.5 cm	4 (red)	5	4 (green)
Large Adult	100 kg	Light Blue	4	8.0	21.5-23.0 cm	5 (purple)	5	5 (orange)

Protocol 2-066 - Allergic Reaction

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EMD:

- No specific protocol.

EMR:

- Identify and remove allergen, if possible.
- Oxygen to maintain SpO2 at 100%.
- Consider applying Cardiac Monitor limb leads.

EMT:

- Ensure completion of applicable items above.
- Assist ALS with Capnography.
- **If ALS unavailable and dyspnea, dysphagia, or hypotension**:
  - Consider Epinephrine Auto-Injector.
  - ALS unit should be en route and/or immediate transport to the closest ER.

AEMT:

- Ensure completion of applicable items above.
- Consider IV NS/LR.
-

Adult:	Pediatric:
o **Uncompensated shock**: Epinephrine 1:1,000 0.3-0.5 mg IM **Lateral thigh only.** Repeat every 15 minutes as needed.	o **Uncompensated shock**: Epinephrine 1:1,000 0.01 mg/kg IM **Lateral thigh only.** (max 0.3/dose). Repeat every 15 minutes as needed.

- Wheezing **or obstructed** ETCO2 **waveform**: Refer to Protocol 2-770 - Respiratory Distress.

Medic:

- Ensure completion of all applicable items above.
- Consider IO LR.
-

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Adult:	Pediatric:
• **Uncompensated shock**: Consider Epinephrine 1:10,000 0.1 mg IV/IO. Repeat every 15 minutes as needed. • Consider Benadryl 25-50 mg IV/IO/IM. • Consider Solu-Medrol 125 mg IV/IO.	o Consider Benadryl 1 mg/kg IV/IO/IM (max 50 mg). o Consider Solu-Medrol 1-2 mg/kg IV/IO (max 125 mg).

CP:

- Ensure completion of all applicable items above.

Protocol 2-077 - Altered Mental Status

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EMD:

- No specific protocol.

EMR:

- Consider and correct treatable causes:
- **Blood glucose symptoms**: Refer to Protocol 2-506 - Hyperglycemia or Protocol 2-572 - Hypoglycemia.
- **Cardiac symptoms**: Refer to Protocol 2-220 - Chest Pain / Suspected Cardiac Event.
- **Cold or heat symptoms**: Refer to Protocol 2-594 - Hypothermia or Protocol 2-550 - Hyperthermia.
- **Dizziness, headache, or stroke symptoms**: Refer to Protocol 2-880 - Suspected Stroke.
- **Hypoxia or respiratory symptoms**: Refer to Protocol 2-770 - Respiratory Distress,
- **Poisoning, overdose, or toxins symptoms**: Refer to Protocol 2-638 - Overdose / Toxic Ingestion,
- **Trauma or hypovolemia symptoms**: Refer to Protocol 2-451 - General Trauma Management.

EMT:

- Ensure completion of applicable items above.

AEMT:

- Ensure completion of applicable items above.

Medic:

- Ensure completion of all applicable items above.

CP:

- Ensure completion of all applicable items above.

Protocol 2-110 - Behavioral

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EMD:

- No specific protocol.

EMR:

- 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.
- Provide emotional support:
    - Help meet basic needs.
    - Provide simple, clear, and accurate information.
    - Listen with compassion.
    - Be friendly and calm.
    - Provide support and "presence."

EMT:

- Ensure completion of applicable items above.
- Consider performing Blood Glucometry Check.
- **Patient is in any form of restraints**:
    - Vitals shall be documented at least every 15 minutes.
    - Mandatory ALS patient.
    - If BLS only crew, then keep patient and crew safe while requesting and/or transporting to an ALS provider.

AEMT:

- Ensure completion of applicable items above.

Medic:

- Ensure completion of all applicable items above.

- **Mild behavioral emergency (responds to verbal de-escalation)**:
    - Consider Versed 1 mg IV/IM.
    - Transport in position of COMFORT.

- **Moderate to severe behavioral emergency (requires Restraint for crew and/or patient safety)**:
  - ○

Adult:	Pediatric:
- Physical Restraint: ○ Restraints include BOTH chemical AND Physical Restraints; not one or the other. ▪ **Utilize the least restrictive option appropriate for the situation**: Manual Restraint or Four-Point Soft Restraint ▪ **If handcuffed**: Law enforcement must be present throughout the entire transport. - Consider Versed 2.5-5 mg IV/IM/IN. - Consider Benadryl 50 mg IV/IM. - Consider Ketamine 1-2 mg/kg IV/IO. ○ **Greater than 65 years old**: Half the dose. - Consider Ketamine 4-5 mg/kg IM. ○ **Greater than 65 years old**: Half the dose.	- Consider Versed 0.05-0.1 mg/kg IV. - Consider Versed 0.1-0.15 mg/kg IM. - Consider Versed 0.3 mg/kg IN. - Consider Benadryl 1 mg/kg IV/IM. - Consider Ketamine 1 mg/kg IV. - Consider Ketamine 3 mg/kg IM.

- Monitor Waveform Capnography.
- Transport in position of SAFETY.

CP:

- Ensure completion of all applicable items above.

Protocol 2-132 - Bites and Envenomations

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Open and maintain the airway.
- **Systemic** Anaphylactic Reaction: Refer to **Protocol 2-066 - Allergic Reaction**.
- Remove clothing and jewelry from affected area.
- Consider applying Cardiac Monitor limb leads and/or combo pads.
- Mark leading edge of swelling and tenderness every 15 minutes.
- Immobilize (splint and compression wrap) and elevate extremity. Encourage patient not to move the extremity.
- **DO NOT attempt to capture the animal or insect**. If possible to do from a safe distance, take a photograph.

EMT:

- Ensure completion of applicable items above.
- Consider assisting ALS with Capnography.

Snakebite with systemic signs or symptoms (i.e. hypotension, GI problems, bleeding disorder, neurological problems): Transport to Level I Trauma Center if transport time is less than 45 minutes. Otherwise nearest highest level trauma center within 45 minute transport radius.

- . Refer to **Protocol 2-451 - TRAUMA destination matrix**.

AEMT:

- Ensure completion of applicable items above.
- Consider IV NS/LR.

Medic:

- Ensure completion of all applicable items above.
- Consider contacting Guideline 1-400-48 - Communications: Medical Control and/or *POISON CONTROL* at 888-268-4195.
- **Pain**: Refer to **Protocol 2-660 - Pain Control**.
- **Nausea**: Refer to **Protocol 2-990 - Vomiting**.

CP:

- Ensure completion of all applicable items above.

Protocol 2-154 - Bradycardia

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Calm and reassure patient. Ensure patient does not exert themselves.
- Oxygen to maintain SpO2 between 94-99%.
- Apply Cardiac Monitor limb leads.
-

Adult:	Pediatric:
o **HR less than 60**: Apply Combo Pads anterior/posterior.	• **HR less than 80**: Apply Combo Pads anterior/posterior. • **HR less than 50**: Ventilate, then initiate chest compressions if ventilation does not raise HR above 60.

EMT:

- Ensure completion of applicable items above.
- Consider assisting ALS with Capnography.

AEMT:

- Ensure completion of applicable items above.
- IV NS/LR.

Medic:

- Ensure completion of all applicable items above.
- Obtain 12-Lead ECG.
- Consider IO NS/LR. Do not delay for IV/IO if symptomatic.
- Contact MEDICAL CONTROL if Hypothermia patient.

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Adult: Rate less than 50 and symptomatic:	Pediatric: Rate less than 60 and symptomatic:
Unstable: - Consider Pacing - Consider Pain Control **Stable**: - Atropine 1 mg IV/IO. Repeat every 3-5 min (max 3 mg). - Consider Epinephrine 1:10,000 0.02-0.2 mcg/kg/min titrated to MAP greater than 65. - Consider Epinephrine 1:10,000 2-10 mcg/min IV/IO: - Mix 1 mg in 100 ml NS/LR. 2 mcg/min = 12 ml/hr. 10 mcg/min = 60 ml/hr.	- Consider Epinephrine 1:10,000 0.01 mg/kg IV/IO repeat every 3-5 min. - Consider Atropine 0.02 mg/kg IV/IO may repeat once (min 0.1 mg) (max 0.5 mg). **Consider Pacing at age appropriate rate**:

Pediatric pacing rates:

0-1 yr old:	2-3 yr old:	4-5 yr old:	6-9 yr old:	10-16 yr old:
135 BPM	130 BPM	105 BPM	90 BPM	80 BPM

- Consider Protocol 2-660 - Pain Control

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

CP:

- Ensure completion of all applicable items above.

Protocol 2-176 - Burns

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EMD:

- **Dispatch a non-dedicated standby ambulance to the following incident types**:
    - 1st alarm commercial structure fire,
    - 2nd alarm residential structure fire,
    - 2nd alarm natural cover fire, OR
    - 2nd alarm vehicle fire.
    - **Alarm definitions**:
        - 1st alarm = Initial dispatch.
        - 2nd alarm = Mutual aid dispatched.

EMR:

- **Hazardous atmosphere standby**.
- Stop the burning process.
- **Chemical burn**:
    - Decontaminate the patient according to Protocol 2-924 - Universal Patient Care.
    - Contact MEDICAL CONTROL and/or POISON CONTROL (888-268-4195).
    - **Fluorine or Hydrofluoric Acid contact**: Calcium Chloride and KY Jelly Mixture applied to exposed contact area.
- Assist Ventilations as needed.
- Consider Oxygen 100%.
- Consider Saran Wrap (or similar) to prevent heat loss.
- Consider applying Cardiac Monitor limb leads.
- Remove all jewelry.
- Keep patient warm.

EMT:

- Ensure completion of applicable items above.
- Consider assisting ALS with Capnography.
- Consider direct transport to a Burn Unit.

AEMT:

- Ensure completion of applicable items above.
- Refer to Protocol 2-176-50 - Burns - Rule of Nines.
- Consider IV LR fluid bolus:
    - **Greater than 20% BSA of 2nd° & 3rd°**:

- **Modified Parkland Formula (first 8 hours)**: (2 ml/kg) * (% BSA).
    - Goal is for the calculated volume to be administered within 8 hours of the burn.
- **Less than 20% BSA of 2nd° & 3rd°**:
    -

Adult:	Pediatric:
▪ 500 ml/hr.	▪ **7-13 yr old**: 250 ml/hr. ▪ **0-6 yr old**: 125 ml/hr.

Medic:

- Ensure completion of all applicable items above.
- Consider IO LR.
- **Smoke inhalation with altered mental status**: Refer to Protocol 2-352 - Exposure: Cyanide.
- **Pain**: Refer to Protocol 2-660 - Pain Control.
- **Consider** Protocol 2-044 - Airway: RSI **if any of the following:**
    - Brassy cough,
    - Carbonaceous sputum,
    - Deep facial burns,
    - Hoarse voice, OR
    - Rhonchi / rales / crackles.

CP:

- Ensure completion of all applicable items above.

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Entire head
19

Entire RUE
9.5

Entire LUE
9.5

35

Entire RLE
15

Entire LLE
15

1 to 4 YEARS

Entire head
15

Entire RUE
9.5

Entire LUE
9.5

32

Entire RLE
17

Entire LLE
17

5 to 9 YEARS

Entire head
13

Entire RUE
9.5

Entire LUE
9.5

32

Entire RLE
18

Entire LLE
18

10 to 14 YEARS
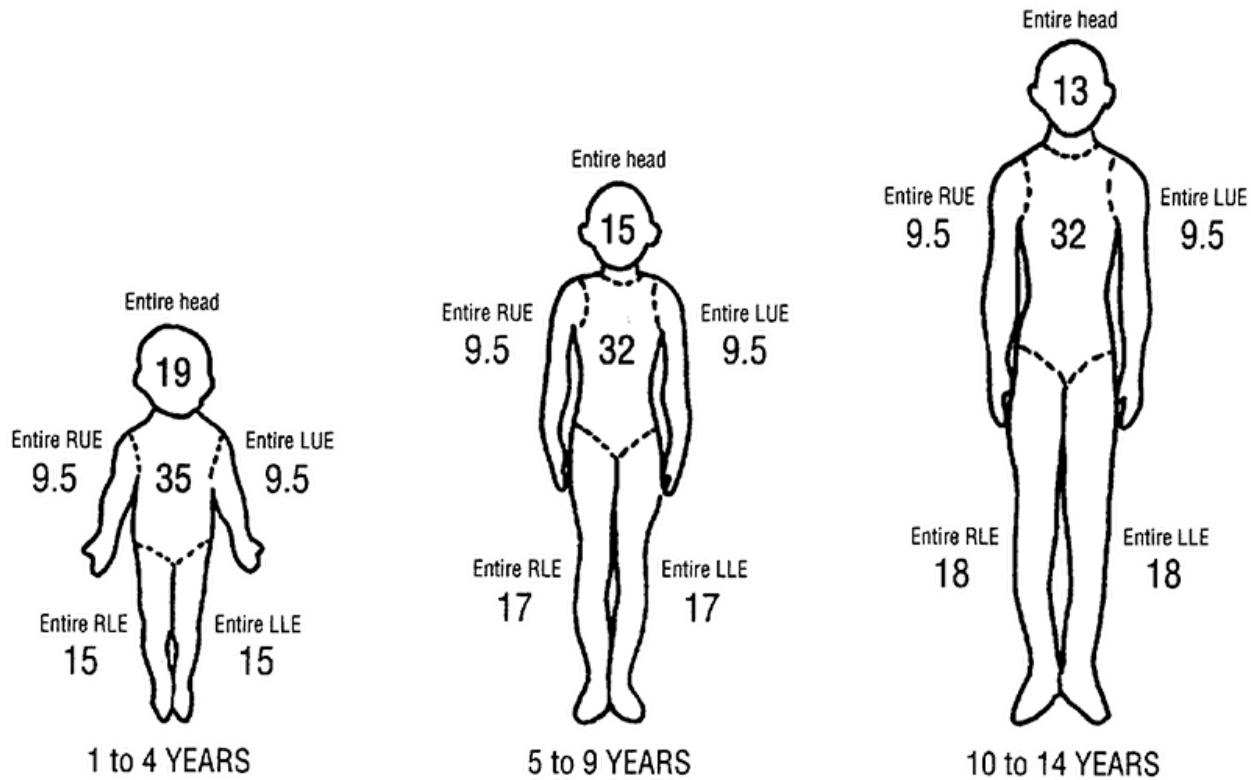
Protocol 2-198 - Cardiac Arrest

CMH EMS & MIH Protocols

COMMUNITY RESPONDER:

- Call or have someone call 9-1-1. Follow the instructions given by the dispatcher.
- Ensure the scene is safe and protect yourself from body substances.
- **If the patient is unresponsive and not breathing (or only gasping)**:
    - Get or have someone get the AED. Follow the instructions given by the AED once it arrives.
    - Lay the patient flat on his/her back on the ground and remove any pillows.
    - Place the heel of your hand on the breastbone and put your other hand on top of that hand.
    - Pump the chest hard and fast at a rate of about 110 compressions per minute. Compressions should be about 2 inches deep on an adult or 1/3 the depth of the chest on a child.
    - Rotate compressors (if possible) after 200 compressions (about 2 minutes).
    - Continue compressing at a rate of about 110 per minute until emergency responders relieve you.
- **As soon as the AED is available**:
    - Put the AED on the ground next to the patient's head on the side closest to you.
    - Undo or remove any clothing from his/her chest. If the chest is wet, dry it off.
    - Open the AED (if necessary) and press the "ON" button (if there is one).
    - Open the pads package and plug them into the machine.
    - Peel off the pad backing and apply them to his/her bare chest as shown on the pads.
    - Follow the AED's instructions.

EMD:

- **MPDS Protocol 9 (Cardiac Arrest) - Cardiac arrest pathway**: Continuous compressions instructions provided to callers until responder arrival is the treatment preference for adult arrest with suspected cardiac origin
- **MPDS Protocol 9 (Cardiac Arrest) - Obvious death**: The following conditions indicate obvious death:
    - Decapitation,
    - Decomposition,
    - Putrefaction, OR
    - Incineration.
- **MPDS Protocol 9 (Cardiac Arrest) - Expected death**: The following conditions indicate expected death:
    - DNR order, OR
    - Hospice care.

EMR:

- Ensure completion of applicable items above.
- Resuscitation should not be started if:
    - Decapitation,
    - Rigor mortis,

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- - Tissue decomposition,
  - Extreme dependent lividity,
  - Obvious mortal injury,
  - Properly documented DNR order, OR
  - Properly documented advance directive.
- Request ALS support if not already en route.
- Confirm pulselessness and apnea.
- Consider AED or Equipment – Cardiac Monitor in AED mode
- Perform Compressions.
  - Consider Chest Compressor.
  - Minimize interruptions.
  - Use CPR metronome set at 110/min, if available or count out loud.
  - Rotate human compressors every 2 minutes.
  - Continuous Compressions at 110/min with Oxygen 15 LPM via BVM or tube with one breath every 5-6 seconds.
- Attach Equipment – Cardiac Monitor combo pads then limb leads.
- Attempt to determine down-time, history, and DNR status.
  - The documented wishes of patients not wanting to be resuscitated shall be honored. DNR Documentation must contain both the patient's and physician's signature. 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.

EMT:

- Ensure completion of applicable items above.
- Prepare IV/IO supplies and any requested medications from ALS.
- Consider inserting an NPA, OPA or iGel airway.
- Attach Capnography even if only using BVM and no airway device.
  - When utilizing AED mode on the Lifepak15 the ETCO2 numbers are viewable and will give feedback on quality of compressions and help in confirming patency of airway.
  - Target compression at an ETCO2 of 20 mmHg or greater.
- Check blood sugar.
- **Pregnant**: Oxygenation and airway should be prioritized. Fetal monitoring should not be done during resuscitation.
- Prepare for termination or transport.
  - If ETCO2 spikes rapidly above 45 mm Hg or greater while performing compressions expect Return of Spontaneous Circulation (ROSC) at the next rhythm and pulse check. Refer to Post Resuscitation protocol for ROSC care.

AEMT:

- Ensure completion of applicable items above.
- Start IV with LR fluid bolus.

- Consider Narcan 2 mg IV/IN for possible [overdose](#).

Medic:

- Ensure completion of all applicable items above.
- Consider IO with LR fluid bolus. IV is preferred and should be attempted first.
- Epinephrine IV/IO every 3-5 min or drip over 5 min.
  -

Adult:	Pediatric:
1 mg.	0.01 mg/kg.

- **Pulseless Electrical Activity (PEA)**: Refer to [Protocol 2-748 - Pulseless Electrical Activity](#).
- **Ventricular fibrillation, ventricular tachycardia, ventricular ectopy, or Torsades de Pointes**: Refer to [Protocol 2-968 - V-Fib / Pulseless V-Tach](#).
- Consider Atropine 1 mg IV/IO for [Bradycardia](#) every 3-5 min.
- Consider Narcan 2 mg IV/IO/IN for possible [overdose](#).
- Consider Pacing.
- Consider Dextrose 25 g IV/IO for [Hypoglycemia](#).
- **Dialysis Patient or Known Hyperkalemia**: Consider contacting [Guideline 1-400 - EMS Communications](#) for Calcium Chloride 1 g IV/IO.
- Perform Physical Exam.
- **Consider and correct treatable causes**: Hypovolemia, hypoxia, hypo/hyperkalemia, [Protocol 2-594 - Hypothermia](#), [Protocol 2-572 - Hypoglycemia](#), acidosis, [tension pneumothorax](#), [Protocol 2-638 - Overdose / Toxic Ingestion](#), [Protocol 2-220 - Chest Pain / Suspected Cardiac Event](#), and cardiac tamponade.
  - **If abrupt jump in ETCO2 level during CPR great than 45.** Expect Return of Spontaneous Circulation finding at next pulse check and refer to Post Resuscitation protocol for further treatments.
- Begin termination/transportation conversation.
  - **Conditions for consideration of termination**:
    - Full ACLS efforts have been attempted for 20 minutes, AND
    - Patient is an adult, AND
    - Suspected cause of arrest is NOT [Poisonings](#), [overdose](#), [drowning](#), [Protocol 2-594 - Hypothermia](#), or pregnant with a fetus greater than 24 weeks gestation, AND
    - [Capnography](#) has been less than 10 for at least 10 minutes, AND
    - Cardiac rhythm is asystole.
    - In all cases where termination of resuscitation is considered, [Guideline 1-400 - EMS Communications](#) shall be consulted.
  - **Conditions where termination of resuscitation should NOT be considered**:
    - Patient is pediatric, OR
    - Suspected cause of arrest is [Poisonings](#), [overdose](#), [drowning](#), [MEDICAL CONTROL](#), or pregnant with a fetus greater than 24 weeks gestation OR
    - If airway cannot be maintained OR
    - IV/IO cannot be accessed.
- When considering termination, RN/Paramedic/CP 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. Always confirm asystole in two leads, such as lead II and Lead III or Lead II and Lead I, prior to stopping resuscitative efforts.

- 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 Guideline 1-400 - EMS Communications to withhold resuscitation.
- Field termination may be requested from Guideline 1-400 - EMS Communications for victims of trauma with no signs of life regardless of how long ACLS efforts have been underway.
- 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.
- **Peri-arrest patient requiring comfort measures (Hospice, TPOPP, MOLST, or POLST)**: Refer to Protocol 2-198-50 - Peri-Arrest Comfort Measures.
- Consider Intubation without interruption of Equipment – Chest Compressor to facilitate continuous Compressions.

CP:

- Ensure completion of all applicable items above.

Protocol 2-198-50 - Cardiac Arrest - Peri-Arrest Comfort Measures

CMH EMS & MIH Protocols

Medic:

- **Peri-arrest patient requiring comfort measures (Hospice, TPOPP, MOLST, or POLST)**: Use these guidelines for comfort interventions during transport or when providing interim comfort care on site. Medications contained within the patient's comfort kit may be used as indicated below. Do not give Narcan to comfort measures patients. If patient dies during transport, continue on to destination
  - If additional comfort measure orders are specified on the form, contact MEDICAL CONTROL.
  - Anxiety, agitated delirium, or hallucinations:
    - Consider Ativan 0.5-2 mg PO.
    - Consider Haldol 2-5 mg PO.
    - Consider trial of Versed 1-3 mg IV/IN in increasing doses (max 3 mg). Watch for worsening of agitation.
  - **Dehydration**: Consider LR 10-20 ml/kg IV.
  - Fever:
    - Consider Acetaminophen 325-650 mg PO/suppository.
    - Cool cloth to forehead, neck, and/or underarms.
  - Nausea:
    - Consider Zofran 4-8 mg PO/IV.
    - Consider Ativan 0.5-2 mg PO.
  - Pain management:
    - Consider Morphine 1-5 mg PO/IV every 10 minutes PRN.
    - Consider Fentanyl 25-50 mcg IV/IN every 10 minutes PRN.
  - Work of breathing: Tachypnea, accessory muscle use, or hypoxia with agitation (Low SpO2 alone does not indicate work of breathing).
    - Consider Oxygen NC max 10 LPM.
    - Alert patient with history of CPAP use: Consider CPAP. Do not BVM.
    - Consider Fentanyl 25 mcg with 2 ml NS Nebulized.
    - Consider Versed 2-5 mg IV.

CP:

- Ensure completion of all applicable items above.

Protocol 2-220 - Chest Pain / Suspected Cardiac Event

CMH EMS & MIH Protocols

EMD:

- **MPDS** Aspirin **Diagnostic**: EMDs are NOT authorized to suggest self-administration of Aspirin.

EMR:

- Calm and reassure patient. Ensure patient does not exert themselves.
- Oxygen to maintain SpO2 between 94-99%.
- Apply Cardiac Monitor limb leads.
- **STEMI** verified by ALS or physician:
  - Place Combo Pads: preferred placement anterior / posterior
  - Remove clothing and place patient in gown.

EMT:

- Ensure completion of applicable items above.
- Obtain 12-Lead ECG within 10 minutes of patient contact.
- If ALS is unavailable, transmit to closest ER or CMH ER and contact ER by phone to obtain interpretation.
-

Adult:	Pediatric:
o **No trauma**: Aspirin 324 mg (4 chewable tablets - 81 mg each) within 5 minutes of patient contact. Unless contraindicated, healthcare-provider Aspirin administration must be completed and documented in ePCR for all cardiac chest pain patients.	o NA.

- Consider assisting ALS with Capnography.
- **STEMI** verified by ALS or physician:
  - Transport according to Protocol 2-220-50 - STEMI Destination Matrix.

AEMT:

- Ensure completion of applicable items above.
- IV NS/LR in AC (left is preferred) with pigtail extension with 18 ga or greater. Consider second 18 ga IV in right AC.
-

Adult:	Pediatric:
o **No trauma and SBP greater than 100**: Nitroglycerin 0.4 mg SL (1 spray or 1 tablet). Every 5 min until no Pain or SBP less than 90. Ensure IV access prior to Nitroglycerin administration. Contraindicated if phosphodiesterase inhibitor (i.e., Viagra) within 48 hours.	o NA.

Medic:

- Ensure completion of all applicable items above.
- Consider IO NS/LR.
- Interpret within 10 minutes of patient contact. Refer to Protocol 8-108-01 - ECG Interpretation Guide.
  - o 15-Lead ECG indicated when: normal ECG, inferior MI, ST depression in V-leads.
  - o **Cath Lab Activation**:
    - ▪ Contact ER to activate Cath Lab as early as possible via encrypted radio (CMH ER) or CMH ER Charge Nurse at 417-328-6923.
    - ▪ Transmit ECG to receiving facility ER (if possible).
- Consider serial 12-Lead ECG.
- **Pulmonary edema**: Refer to Protocol 2-726 - Pulmonary Edema.
-

Adult:	Pediatric:
o **No trauma**: ▪ **Right-sided MI (ST elevation in V4R)**: LR 1-2 L followed by Nitroglycerin 5+ mcg/min IV/IO. ▪ **SBP less than 100**: Consider Nitroglycerin 10+ mcg/min IV/IO titrated to blood pressure and Pain. ▪ **Continued discomfort or Pain**: ▪ Consider Fentanyl 50-100 mcg every 5-20 min (max 300 mcg) IV/IO/IN. ▪ **Over 65 yr old**: 0.5-2 mcg/kg.	o NA.

- **Nausea or vomiting**: Refer to Protocol 2-990 - Vomiting.

CP:

- Ensure completion of all applicable items above.

Protocol 2-220-50 - Chest Pain - STEMI Destination Matrix

CMH EMS & MIH Protocols

This matrix was developed using geographical analysis of designated facilities and historical ambulance transport statistics. It also follows Missouri regulations found in 19 CSR 30-40.790 (Transport protocol for trauma, stroke, and STEMI patients).

- These are guidelines only. Scene or patient conditions may influence an alternate destination determination.
- Patients have the right to refuse transport to the recommended destination. If the patient refuses recommended destination, document "transport / refused care" and have patient sign refusal.
- When initial transport from the scene would be prolonged, the patient may be transported to the nearest appropriate facility.

Refer to ECG Interpretation Guide.

Consider transporting to the closest STEMI center for any one the following criteria:

- ST elevation of one or more mm (1 mm) in two leads in the following areas:
    - Anterior (V3 and V4),
    - Inferior (II, III, and/or aVF),
    - Lateral Left (I, aVL, V5, and/or V6), OR
    - Septal (V1 and V2).
- ST elevation of ½ or more mm (0.5 mm) in the following areas:
    - Lateral Right (V4R), OR
    - Posterior (V8 and V9)
- New onset LBBB,
- Sgarbossa criteria,
- DeWinters syndrome, OR
- Wellens syndrome.

Location	Destination	STEMI Designation	Notes
Bolivar	Citizens Memorial	Level II	**If cardiogenic shock**: Transport to Level I STEMI center
Osage Beach	Lake Regional	Level II	

Consider transporting to the closest Level I STEMI center for any one the following criteria:

- Any criteria above, and/or
- Any of the following:
    - Cardiogenic shock OR
    - Three Vessel Disease.

Location	Destination	STEMI Designation	Notes
[Aircraft](#)	Aircraft crew determination	NA	**If over 45 min drive time**: Utilize aircraft
Springfield	Cox South	Level I	
	Mercy	Level I	
Kansas City	Research	Level I	
	St. Luke's	Level I	

Protocol 2-242 - Childbirth / Labor

CMH EMS & MIH Protocols

In general, this protocol's scope covers management of delivering a baby up to the point of cutting the umbilical cord. After cutting the cord:

- Care for mom following appropriate protocol(s) (i.e., Protocol 2-462 - Gynecologic Emergencies).
- Care for baby/babies following Protocol 2-616 - Newly Born.

EMD:

- **MPDS Protocol 24 (Pregnancy) - High risk complications**: The following conditions indicate a high-risk pregnancy or childbirth.
    - Premature birth, multiple birth, bleeding disorder, placenta abruption, placenta previa, breech, prolapsed cord, OR unknown/ignored pregnancy.

EMR:

- Consider Oxygen if SpO2 less than 88%.
- Inspect for active bleeding/crowning. Determine amount of blood loss.
- Consider applying Cardiac Monitor limb leads.
- **Crowning**: Stop transport and DELIVER infant. Both crew members should be available during delivery.
    - Consider cleaning vaginal area prior to birth.
    - **Prolapsed cord**:
        - Give 100% O2 in order to hyperoxygenate fetal hemoglobin
        - Place mother on elbows and knees, or knees to chest with goal of moving baby as far superior as possible to take pressure off of cervix.
        - Do not handle cord. Cover it with moist dressing.
        - Protect cord from compression with fingers.
        - Rapid transport to nearest hospital with OB department.
    - **Breech**: Deliver as best you can (see below).
    - **No complications**:
        - Provide peritoneal pressure during delivery to prevent tearing.
        - Check for cord around neck as soon as head is delivered and slip it over the head if found.
        - Guide head down to facilitate delivery of anterior shoulder and then up to facilitate delivery of posterior shoulder.
        - Only Suction airway if infant is in distress.
        - Dry, warm, and stimulate. Do not routinely Suction.
        - Place infant skin-to-skin with mother while she breastfeeds, if possible.
        - Clamp and cut cord halfway between mother and infant after 1-3 min. Only clamp cord if full-term gestation baby.
            - **If resuscitation is needed**: Clamp and cut cord as soon as possible.
        - Expect placenta within 5-15 min and transport it with patients.
        - Perform fundal massage.
- **Once delivered**: Refer to Protocol 2-616 - Newly Born

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EMT:

- Ensure completion of applicable items above.
- **NOT crowning**:
    - Consider orthostatic vital signs.
    - Consider transport in left lateral recumbent position to reduce risk of Vena Cava compression.

AEMT:

- Ensure completion of applicable items above.
- IV LR 500-1,000 ml bolus.

Medic:

- Ensure completion of all applicable items above.
- Consider IO LR titrated to blood pressure.
- **Pain**: Consider avoiding narcotic administration.
- **Post-partum hemorrhage**:
    - Consider contacting MEDICAL CONTROL for Oxytocin 10-20 u in 1,000 ml LR. Run wide open.
- Consider Protocol 2-451 - General Trauma Management for TXA.

CP:

- Ensure completion of all applicable items above.

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Protocol 2-286 - Drowning / Near Drowning

CMH EMS & MIH Protocols

EMD:

- **MPDS Protocol 14 (Drowning) - Obvious death**: Submersion time does not indicate obvious death.

EMR:

- Remove from water.
- Open and maintain airway. Be prepared to Suction.
- **Pulseless**: Refer to Protocol 2-198 - Cardiac Arrest.
- **Pulmonary edema suspected**: Consider assiting ventilation with BVM.
- Dry and warm the patient.
- Obtain core body Temperature, if able.
- Consider applying Cardiac Monitor limb leads and/or combo pads.
- Attempt to determine down-time and history.

EMT:

- Ensure completion of applicable items above.
-

Adult:	Pediatric:
o Consider assisting ALS with CPAP.	o NA.

- Consider assisting ALS with Capnography.

AEMT:

- Ensure completion of applicable items above.
- IV warm NS/LR.

Medic:

- Ensure completion of all applicable items above.
- Consider IO warm NS/LR.
- **Pulseless**:

- - **Shockable rhythm**: Refer to [Protocol 2-968 - V-Fib / Pulseless V-Tach](#), however, only shock once.
  - **Core** [Temperature](#) **greater than 86° F**: Remember patients require longer intervals between drug administrations due to slower absorption and metabolism.
  - **Core** [Temperature](#) **less than 86° F**: [Compressions](#) only.
- Consider [Protocol 2-044 - Airway: RSI](#).
- Treat cardiac dysrhythmias per specific protocol.

CP:

- Ensure completion of all applicable items above.

Protocol 2-330 - Exposure: Biological / Infectious

CMH EMS & MIH Protocols

EMD:

- **Situations where a biological or infectious agent may be present**, ask the following questions and advise responding units of the responses:
  - o Has anyone in the home had flu-like symptoms, breathing problems, coughing, headache, fever, or other illness in the last 14 days?
  - o Has anyone in the home traveled outside of the state in the last 14 days?
  - o Has anyone in the home been evaluated for the illness?
  - o Is anyone in the home currently under a quarantine?

EMR:

- Limit contact to only essential personnel.
- **Situations where a biological or infectious agent may be present**, re-evaluate persons at the scene with the questions listed in the EMD section above.
- Perform as many of the assessments and treatments in well ventilated areas as possible.
- Maintain minimum distance of six (6) feet from all possibly infected patients.
- **If close contact is required**, responders should wear appropriate PPE (in order of most important to least):
  - o Full-face respirator with N95 or equivalent cartridge,
  - o N95 (minimum of a surgical mask),
  - o Face shield (minimum of eye protection),
  - o Gloves, and
  - o Fluid-impermeable suit.
- **Large outbreak or pandemic scenario**:
  - o If you are within six (6) feet of another person, wear a surgical mask.
  - o If a patient is present, regardless of social distancing, place a surgical mask on the patient and all responders should wear surgical masks and eye protection.
  - o If the patient is possibly infected, symptomatic, or high-risk procedure is being performed, all responders should wear N95 masks and eye protection (full-face respirators is preferred).
  - o If entering a facility with at-risk patients, limit responders to absolute minimum, and wear N95 and eye protection. Full-face respirators should not be worn due to exhalation valves are not filtered.
- [Fever](#) **or** [respiratory distress](#):
  - o Place the patient on a NRB at 15 LPM Oxygen and
  - o Place a surgical mask over the exhaust ports of the mask.
- **Unresponsive or respiratory arrest**:
  - o **If airway management and ventilation is mandatory**, insert an [OPA](#) and place a NRB over it with Oxygen 15 LPM. Limit or eliminate (preferred to eliminate) BVM and **strongly** recommended to NOT use the facemask portion of the BVM.
  - o **If [CPR](#) is needed**, only provide chest compressions with the NRB and surgical mask described above.
- Before and after all patient contact, fully disinfect and clean equipment, uniform, PPE, and your hands.

EMT:

- Ensure completion of applicable items above.
- **Unresponsive or respiratory arrest**:
  - o **If airway management and ventilation is mandatory**, insert an [NPA](#) or [supraglottic airway](#) (NPA is preferred) with inline exhalation filter to bag. Limit or eliminate (preferred to eliminate) BVM and **strongly** recommended to NOT use the facemask portion of the BVM.
  - o Place high-volume [Suction](#) in or near the patient's mouth.
    - ▪ Note: Ensure suction exhaust is not blowing contamination in the vacinity of responders by bystanders. CMH ambulance on-board suction exhaust is discharged under the vehicle.
- **During transport**:
  - o Driver should remove gown and gloves, but retain respiratory protection.
  - o Close pass-through between driver and passenger compartment.
  - o Keep all windows down in the ambulance.
  - o Limit occupants to minimum required.
  - o All personnel in the back should continue to wear full PPE.

AEMT:

- Ensure completion of applicable items above.
- [Fever](#) **or** [respiratory distress](#):
  - o [Nebulizer](#) treatments are STRONGLY discouraged. **Consider alternatives**:
    - ▪ Meter-dosed inhaler,
    - ▪ Epinephrine 1:1,000 IM in severe patients under 50 yrs old and no cardiac history, OR

Adult	Pediatric
0.3 mg	0.01 mg/kg (max 0.25 mg)

    - ▪ Epinephrine 1:100,000 (push-dose) IV every 10 min in severe patients under 50 yrs old and no cardiac history.

Adult	Pediatric
10 mcg	0.1 mcg/kg

Medic:

- Ensure completion of all applicable items above.
- [Fever](#) **or** [respiratory distress](#):
  - o Do NOT perform [CPAP](#) or BiPAP.
- Notify receiving hospital as soon as possible to allow for preparation for your arrival.
- **Unresponsive or respiratory arrest**:

- o [Endotracheal intubation](#) is STRONGLY discouraged. **If required**, use a cuffed tube, filtered exhalation, induce deep paralysis, avoid nasotracheal, and stop CPR during intubation attempt.

CP:

- Ensure completion of all applicable items above.

Protocol 2-352 - Exposure: Cyanide

CMH EMS & MIH Protocols

EMD:

- Dispatch a non-dedicated standby ambulance to all hazmat releases where emergency response is required by other agencies.

EMR:

- Consider hazmat and DECON. Refer to Protocol 2-924 - Universal Patient Care for decontamination protocols.
- Identify possible causes and substance(s) involved.
- Consider Oxygen 100%.
- Consider applying Cardiac Monitor limb leads.

EMT:

- Ensure completion of applicable items above.
- Perform Blood Sugar Check.
- Consider assisting ALS with Capnography.

AEMT:

- Ensure completion of applicable items above.
- Consider IV NS/LR.

Medic:

- Ensure completion of all applicable items above.
- Contact POISON CONTROL at 888-268-4195.
- Consider IO NS/LR.
- Consider Protocol 2-044 - Airway: RSI.

CP:

- Ensure completion of all applicable items above.

Protocol 2-374 - Exposure: Nerve Agents

CMH EMS & MIH Protocols

EMD:

- Dispatch a non-dedicated standby ambulance to all hazmat releases where emergency response is required by other agencies.

EMR:

- Consider hazmat and DECON. Refer to Protocol 2-924 - Universal Patient Care for decontamination protocols.
- Identify possible causes and substance(s) involved.
- Consider Oxygen 100%.
    - **Paraquat poisoning**: Only administer Oxygen if SpO2 is less than 88%.
- Consider applying Cardiac Monitor limb leads.

EMT:

- Ensure completion of applicable items above.
- Perform Blood Sugar Check.
- Consider assisting ALS with Capnography.

AEMT:

- Ensure completion of applicable items above.
- Consider IV NS/LR.

Medic:

- Ensure completion of all applicable items above.
- Contact POISON CONTROL at 888-268-4195.
- Consider IO NS/LR.
- Consider Atropine repeated until dry secretions. Likely to exceed 20 mg and may be as much as 2,000 mg.
-

Adult:		Pediatric:
o 1-2+ mg IV/IO.		o 0.02-0.05 mg/kg IV/IO
o **If intubation needed**: 6 mg IV/IO.		

- **Seizing**: Refer to Protocol 2-792 - Seizure.
- Consider Protocol 2-044 - Airway: RSI.

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CP:

- Ensure completion of all applicable items above.

Protocol 2-396 - Extremity Trauma

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Consider SMR.
- Consider Oxygen 100%.
- **Extremity crush injury**: Do not release until ALS direction.
- Elevate injured extremity.
- Assess distal neurovascular status.
- Consider cold pack.
- Consider Splinting.
- Consider applying Cardiac Monitor limb leads.
- All extremities with suspected fracture or dislocation should be splinted/immobilized in the position of comfort.

EMT:

- Ensure completion of applicable items above.
- Consider Pelvic Binder.

AEMT:

- Ensure completion of applicable items above.
- **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 NS or LR. Two large bore IVs wide open.

Medic:

- E Ensure completion of all applicable items above.
- **Extremity crush injury**:
  - Consider IO NS OR LR. Two large bore vascular access points wide open.

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- Open fracture

Adult:	Pediatric:
o < 120kg Ancef 2 g over 5 min OR 2g over 10 min in 100ml NS o > 120kg Ancef 3 g over 5 min OR 3g over 10 min in 100ml NS	o Consider Ancef 35 mg/kg (max 2 g) over 5 min. o

- CP:

- Ensure completion of all applicable items above.

Protocol 2-418 - Eye Trauma

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Consider Oxygen if SpO2 less than 88%.
- Stabilize impaled objects as required.
- **Trauma**:
    - Cover injured eye with domed or cupped cover.
    - Do not apply pressure to eye.
- **Foreign substance without penetrating injury**: Flush eye with at least 1,000 ml LR over 20 minutes.

EMT:

- Ensure completion of applicable items above.

AEMT:

- Ensure completion of applicable items above.
- Consider IV.

Medic:

- Ensure completion of all applicable items above.
- **Foreign substance**:
    - Consider Tetracaine 1-2 drops in affected eye.
    - **Non-penetrating injury**: Consider Morgan Lens and flushing according to EMR section above.

CP:

- Ensure completion of all applicable items above.

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Protocol 2-440 - Fever / Sepsis

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Consider Oxygen to maintain SpO2 above 88%.
- Consider treating for shock.
- **Fever greater than 102° F**: Begin COOLING.
- **Assess for SEPSIS**:
    - **Adult**: Suspected infection AND two or more of the following:
        - Altered mental status,
        - Hypotension (if SBP less than 90 or MAP less than 65), OR
        - Tachypnea (respiratory rate greater than 22).
    - **Pediatric**: Suspected infection AND BOTH of the following:
        - One of the following:
            - Temperature greater than 100.4° F OR
            - Temperature less than 96.8° F
        - One of the following:
            - Bradycardia for age OR
            - Tachycardia for age OR
            - Tachypnea for age
- Consider applying cardiac monitor limb leads.

EMT:

- Ensure completion of applicable items above.
- Assist ALS with Capnography.
- Perform Blood Sugar Check.
    - **Blood sugar less than 60 mg/dl**: Refer to Protocol 2-572 -Hypoglycemia.

AEMT:

- Ensure completion of applicable items above.
- Consider IV LR in AC (left is preferred) with pigtail extension with 18 ga or greater. Refer to Protocol 2-583 - Hypotension / Shock for LR dose.

Medic:

- Ensure completion of all applicable items above.
- Consider IO LR. Refer to [Protocol 2-583 - Hypotension / Shock](#) for LR dose.
- **Meets SEPSIS criteria**:
  - **If SBP less than 90 or MAP less than 65 after fluid bolus**:
    - Notify [Emergency Room](#) of incoming SEPTIC SHOCK patient.
    - Attempt to initiate two large-bore IVs.
  - Target scene time of 10 minutes.
  - Notify [Emergency Room](#) of incoming SEPTIC patient.

Adult:
• Consider Phenylephrine 50 mcg-100 mcg every 5 minutes to maintain SBP greater than 90 or MAP greater than 65 after or during fluid bolus.   • If Phenylephrine unavailable use Epinephrine 1:100,000 as below.   • Consider Epinephrine 1:100,000 (PushDose) 5-20 mcg every 2-5 min.

  - Target scene time of 10 minutes.
  - Notify Emergency Room of incoming SEPTIC patient.

- **Fever greater than 102° F**:
  -

Adult:	Pediatric:
▪ **Acetaminophen NOT given within 4 hours**: Consider Acetaminophen 650 mg PO. ▪ **Acetaminophen giving within 4 hours**: Consider Ibuprofen 400 mg PO.	▪ **Acetaminophen NOT given within 4 hours**: Consider Acetaminophen Elixer 15 mg/kg PO. ▪ **Acetaminophen giving within 4 hours**: Consider Ibuprofen Elixir 10 mg/kg PO.

CP:

- Ensure completion of all applicable items above.

Protocol 2-451 - General Trauma Management

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- **Hemorrhage**:
    - Consider direct pressure.
    - Consider Oxygen 100%.
    - Consider [Hemostatic Agent](#).
    - Consider bandage.
    - **Epistaxis**:
        - Squeeze nose for 10-15 min continuously.
        - **If unsuccessful**: Repeat for another 15 min.
        - Remind and assist patient to avoid swallowing blood.
    - **Post-partum**: Refer to [Protocol 2-462 - Gynecologic Emergencies](#).
- **Chest trauma**:
    - Consider Oxygen 100%.
    - Consider occlusive dressing to open wounds.
    - **Chest crush injury**: Immediate release and rapid transport.
- Consider [SMR](#)
- Maintain patient [Temperature](#) between 91-99 ℉. Consider active re-warming.
- Consider splint.
- Consider pelvic binder.
- Consider stabilizing impaled object.
- **Superficial penetration**: Small penetrating objects such as Taser probes and fish hooks may be removed on the scene...
    - If all of the following apply:
        - The object is embedded superficially below the nipple line (not the genital area),
        - Cooperative patient,
        - Little to no pain,
        - Isolated injury, AND
        - Not grossly contaminated.
    - To remove:
        - **Taser probe**: Stabilize skin and remove by hand with a single, quick motion.
        - **Fish hook**: Wrap or cut off sharp points and remove without causing further injury.
        - Wipe wound(s) with antiseptic wipe and apply a dressing.
        - Instruct patient to follow up with their primary physician or public health agency for tetanus vaccination and infection monitoring.
    - [Cardiac monitoring](#) after Taser deployment is only required if the patient has an ALOC or cardiac symptoms.

- Refer to specific trauma protocols as appropriate:
  - [Protocol 2-286 - Drowning / Near Drowning](#)
  - [Protocol 2-396 - Extremity Trauma](#)
  - [Protocol 2-418 - Eye Trauma](#)
  - [Protocol 2-484 - Head Trauma](#)
  - [Protocol 2-814 - Spinal Cord Trauma](#)
  - [Protocol 2-836 - Spinal Immobilization Clearance](#)
  - [Protocol 2-902 - Trauma Arrest](#)

EMT:

- Ensure completion of applicable items above.
- **Hemorrhage**:
  - **Upper extremity hemorrhage**: Consider [Tourniquet](#) on humerus until occlusion of distal pulse.
  - **Lower extremity hemorrhage**: Consider two [Tourniquets](#) side-by-side on femur until occlusion of distal pulse.
- **Chest trauma**:
  - **Flail chest**: Consider assisting respirations with positive pressure BVM or assisting ALS with [CPAP](#).
- Ensure receiving facility/staff are aware if the patient is on a blood thinner. Common blood thinners include:

Aggrastat (Tirofiban)	Effient (Prasugrel)	Plavix (Clopidogrel)
Apixaban (Eliquis)	Eliquis (Apixaban)	Pletal (Cilostazol)
Arixtra (Fondaparinux)	Enoxaparin (Lovenox)	Pradaxa (Dabigatran)
Aspirin (if greater than 81 mg per day)	Eptifibatide (Integrilin)	Prasugrel (Effient)
Brilinta (Ticagrelor)	Fondaparinux (Arixtra)	Rivaroxaban (Xarelto)
Cilostazol (Pletal)	Fragmin (Dalteparin)	Savaysa (Edoxaban)
Clopidogrel (Plavix)	Heparin (Innohep)	Ticagrelor (Brilinta)
Coumadin (Warfarin, Jantoven)	Innohep (Heparin)	Tirofiban (Aggrastat)
Dabigatran (Pradaxa)	Integrilin (Eptifibatide)	Vorapaxar (Zontivity)
Dalteparin (Fragmin)	Jantoven (Warfarin, Coumadin)	Warfarin (Coumadin, Jantoven)
Dipyridamole (Persantine)	Lovenox (Enoxaparin)	Xarelto (Rivaroxaban)
Edoxaban (Savaysa)	Persantine (Dipyridamole)	Zontivity (Vorapaxar)

AEMT:

- Ensure completion of applicable items above.
- Consider IV LR bolus to allow for permissive hypotension to have SBP between 70-90 mmHg.
- **Do not use vasopressor to increase blood pressure.**

Medic:

- Ensure completion of all applicable items above.
- **Chest trauma with dyspnea**: Suspect tension pneumothorax. Consider [Decompression Needle](#).
    - 5th intercostal space, anterior axillary line OR
    - 2nd intercostal space, mid-clavicular line.
- **Major injury or hemorrhage with signs of shock**
- Consider IO LR bolus to allow for permissive hypotension to have SBP between 70-90 mmHg. Do not use vasopressor to increase blood pressure.
    -

Adult:	Pediatric:
• Consider TXA 1 g in 100 ml NS/LR over 10 min.	▪

- **Possible fracture**: Consider [Protocol 2-660 - Pain Control](#).
- **Open fracture**:

Adult:	Pediatric:
▪ < 120kg Ancef 2 g over 5 min OR 2g over 10 min in 100ml NS. ▪ > 120kg Ancef 3 g over 5 min OR 3g over 10 min in 100ml NS	▪ Consider Ancef 35 mg/kg (max 2 g) over 5 min.

- **Epistaxis that does not resolve with 15 minutes of pressure**: Consider Neo-Synephrine 2 sprays in each nare, then continued pinching of the nose for an additional 15 minutes.

CP:

- Ensure completion of all applicable items above.
- Spontaneous motor, respirations

Protocol 2-451-50 - General Trauma Management - TRAUMA Destination Matrix

CMH EMS & MIH Protocols

This matrix was developed using geographical analysis of designated facilities and historical ambulance transport statistics. It also follows Missouri regulations found in 19 CSR 30-40.790 (Transport protocol for trauma, stroke, and STEMI patients).

- These are guidelines only. Scene or patient conditions may influence an alternate destination determination.
- Patients have the right to refuse transport to the recommended destination. If the patient refuses recommended destination, document "transport / refused care" and have patient sign refusal.
- When initial transport from the scene would be prolonged, the patient may be transported to the nearest appropriate facility.

Yellow Criteria: Moderate Risk for Serious Injury

Patients meeting any one of the YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be preferentially transported to a trauma center, as available within the geographic constraints of the regional trauma system (need not be the highest-level trauma center)

Mechanism of Injury

- High Risk Auto Crash
    - Partial or complete ejection
    - Significant intrusion (including roof)
        - >12 inches occupant site OR
        - >18 inches any site OR
        - Need for extrication for entrapped patient
    - Death in passenger compartment
    - Child (age 0–9 years) unrestrained or in unsecured child safety seat
- Rider separated from transport vehicle with significant impact (eg, motorcycle, ATV, horse, etc.)
- Pedestrian/bicycle rider thrown, run over, or with significant impact
- Fall from height > 10 feet (all ages)

EMS Judgement

Consider risk factors, including:

- Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact
- Anticoagulant use
- Suspicion of child abuse
- Special, high-resource healthcare needs
- Pregnancy > 20 weeks

- Burns in conjunction with trauma
- Children should be triaged preferentially to pediatric capable centers
- If concerned, take to trauma center

Location	Destination	Trauma Designation	Notes
Bolivar	Citizens Memorial	Level III	**If possible** head trauma: Transport to Level I trauma center
Harrisonville	Cass Regional	Level III	
Osage Beach	Lake Regional	Level III	

Red Criteria: High Risk for Serious Injury

Patients meeting any one of the below RED criteria should be transported to the highest-level trauma center available within the geographic constraints of the regional trauma system

Injury patterns

- Penetrating injuries to head, neck, torso and proximal extremities
- Skull deformity, suspected skull fracture
- Suspected spinal injury with new motor or sensory loss
- Chest wall instability, deformity, or suspected flail chest
- Suspected pelvic fracture
- Suspected fracture of two or more proximal long bones
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Active bleeding requiring a tourniquet or wound packing with continuous pressure

Mental Status & Vital Sings

All Patients

- Unable to follow commands (motor GCS < 6)
- RR < 10 or > 29 breaths/min
- Respiratory distress or need for respiratory support
- Room-air pulse oximitry < 90%

Age 0-9 years

- SBP < 70 mmHg + (2 x age in years)

Age 10-64 years

- SBP < 90 mmHg or
- HR > SBP

Age ≥65 years

- SBP < 110 mmHg or
- HR > SBP

Location	Destination	Trauma Designation	Notes
Springfield	Cox South	Level I	
	Mercy	Level I	
Kansas City	Research	Level I	
	St. Luke's	Level I	
	Truman	Level I	

Protocol 2-462 - Gynecologic Emergencies

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Inspect for active bleeding / crowning.
- **Vaginal bleeding**: Consider Oxygen 100%.
- Determine amount of blood loss.
- Consider applying Cardiac Monitor limb leads.
- Consider treating for shock.
- **Post-partum hemorrhage**:
  - Massage the fundus.
  - Have mother breastfeed.
- Consider orthostatic vital signs.
- Consider transport in left lateral recumbent position to reduce risk of Vena Cava compression.

EMT:

- Ensure completion of applicable items above.

AEMT:

- Ensure completion of applicable items above.
- Consider IV LR titrated to SBP above 100.
- **Post-partum hemorrhage**: Rapidly infuse IV fluids.

Medic:

- Ensure completion of all applicable items above.
- Consider IO LR.
- **Post-partum hemorrhage**:
  - Consider contacting MEDICAL CONTROL for Oxytocin 10-20 u in 1,000 ml LR. Run wide open.
- Consider Protocol 2-451 - General Trauma Management for TXA.

CP:

- Ensure completion of all applicable items above.

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Protocol 2-484 - Head Trauma

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Consider SMR. C-collar is contraindicated with penetrating neck trauma.
- Assist Ventilations as needed.
- Consider Oxygen 100%.
- Consider applying Cardiac Monitor limb leads.
- **Head crush injury**: Immediate release and rapid transport.
- Maintain body temperature between 91° and 99° F.
- Elevate head of Cot.
- **Avulsed tooth**: Do not touch root. Place in NS.

EMT:

- Ensure completion of applicable items above.
- Consider assisting ALS with Capnography.
- **Severe head injury with Cushing's Triad**: Moderate hyperventilation to target EtCO2 of 30-35.
- **If destination facility is on CT divert**: Bypass that facility and transport to next closest appropriate facility taking into consideration the patient's wishes.

AEMT:

- Ensure completion of applicable items above.
- Consider IV LR 20 ml/kg (max 40 ml/kg or 2,000 ml) titrated to maintain SBP between 110-140.

Medic:

- Ensure completion of all applicable items above.
- Consider IO LR.
- **GCS less than 8 OR Cushing's Triad**: Consider Protocol 2-044 - Airway: RSI.
  - **Cushing's Triad**: Abnormal breathing AND Bradycardia AND Hypertension.
-

Adult	Pediatric
o Consider Fentanyl 50-100 mcg every 5-20 minutes (max 300 mcg) IV/IO/IN. ▪ **Over 65 years old**: 0.5-2 mcg/kg. o **Nausea**: Consider Zofran 4 mg (max 8 mg) IV/IO/IN/IM.	o **Less than 3 years old**: Atropine 0.02 mg/kg (min 0.1 mg) IV/IO. o Consider Fentanyl 1-2 mcg/kg (max 150 mcg) IV/IO/IN. May repeat. o Consider contacting MEDICAL CONTROL.

CP:

- Ensure completion of all applicable items above.

Protocol 2-506 - Hyperglycemia

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Identify possible causes.
- Consider Oxygen if SpO2 less than 88%.
- Consider applying Cardiac Monitor limb leads.

EMT:

- Ensure completion of applicable items above.
- Perform Blood Sugar Check. Refer to Equipment 8-324 - Glucometer for blood sugar critical levels.

AEMT:

- Ensure completion of applicable items above.
- Consider IV NS/LR.
- **Blood sugar greater than 250 mg/dl AND symptomatic**:
    -

Adult:	Pediatric:
▪ LR 1,000 ml IV.	▪ LR 10 ml/kg IV. May repeat up to 40 ml/kg after reassessment.

Medic:

- Ensure completion of all applicable items above.

CP:

- Ensure completion of all applicable items above.

Protocol 2-528 - Hypertension

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Calm and reassure the patient.
- Identify possible causes.
- Consider Oxygen if SpO2 less than 88%.
- Apply Cardiac Monitor limb leads.
- Obtain and compare blood pressures in both arms.
- Dim lights. Avoid loud noises and rough transport.
- Transport with head slightly elevated.
- **Epistaxis**: Squeeze nose for 10-15 minutes continuously.

EMT:

- Ensure completion of applicable items above.
- **Pregnant**: Consider transport in left lateral recumbent position to reduce risk of Vena Cava compression.
- **If destination hospital is on CT divert and patient is symptomatic**: Transport to the next closest appropriate facility with a CT machine and taking into consideration the patient's wishes.

AEMT:

- Ensure completion of applicable items above.
- IV NS/LR.

Medic:

- Ensure completion of all applicable items above.
- Consider IO NS/LR.
- Do not reduce MAP lower than 20% of the original.
- **DBP greater than 115 with nausea, ALOC, blurred vision, headache, or chest pain**: Contact MEDICAL CONTROL for:
  -

Adult:	Pediatric:
▪ Consider Labetalol 20 mg over 2 min IV/IO.	▪ Consider Labetalol 0.4-1 mg/kg/hr IV/IO.

▪ Consider Hydralazine 10-20 mg IV/IO/IM. ▪ Consider Nitroglycerin 0.4 mg SL. ▪ Consider Nitroglycerin drip IV/IO.	▪ Consider Hydralazine 0.1-0.2 mg/kg (max 20 mg) IV/IO/IM.

- **Pregnant** (20-weeks gestation through 6-weeks post-partum):
  - **Actively seizing**: Magnesium Sulfate 4 g IV/IO/IM (IV/IO in NS over 5 minutes). Refer to [Protocol 2-792 - Seizure](#).
  - Consider contacting [MEDICAL CONTROL](#) for:
    - Magnesium Sulfate 4-6 g IV/IO in NS over 20 minutes or 2 g/hr.
    - OR Labetalol 20 mg IV/IO over 2 mintues.
    - OR Hydralazine 5-20 mg IV/IO/IM.

CP:

- Ensure completion of all applicable items above.

Protocol 2-550 - Hyperthermia

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Remove from exposure.
- Open and maintain airway.
- Attempt to determine down-time and history.
- Consider Oxygen if SpO2 less than 88%.
- Passively cool patient.
- Obtain core body Temperature, if able. If unable, consider patient with at least HEAT EXHAUSTION if Heat Index above 103° F.
- Consider applying Cardiac Monitor limb leads.
- **Altered mentation and/or Temperature greater than 104° F (HEAT STROKE)**: Active, rapid cooling is indicated using ice, evaporation, and/or cold packs. Attempt to cool to 102° F.
- **Normal mentation and Temperature less than 104° F (HEAT EXHAUSTION)**: Passive cooling. Treat specific complaints per protocol.

EMT:

- Ensure completion of applicable items above.
- Assist ALS with Capnography.

AEMT:

- Ensure completion of applicable items above.
- Consider IV cool NS/LR.
-

Adult:	Pediatric:
o 125 ml/hr.	o 20 ml/kg (may repeat once).

Medic:

- Ensure completion of all applicable items above.
- Consider IO cool NS/LR.
- Monitor closely for arrhythmias. Treat per protocol.

CP:

- Ensure completion of all applicable items above.

Protocol 2-550-50 - Hyperthermia - Heat Index Chart

CMH EMS & MIH Protocols

Note: Heat exhaustion can occur in less than 30 minutes when heat index is above 103° F.

Relative Humidity	Temperature														
	80° F	82° F	84° F	86° F	88° F	90° F	92° F	94° F	96° F	98° F	100° F	102° F	104° F	106° F	106° F	110° F
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										

Protocol 2-572 - Hypoglycemia

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Identify possible causes.
- Consider Oxygen if SpO2 less than 88%.
- Consider applying Cardiac Monitor limb leads.

EMT:

- Ensure completion of applicable items above.
- Perform Blood Sugar Check. Refer to Equipment 8-324 - Glucometer for blood sugar critical levels.
- **Blood sugar less than 60 mg/dl, conscious, AND able to swallow**: Glucose 15 g PO.
- **No transport**: Have patient eat after treatment.

AEMT:

- Ensure completion of applicable items above.
- Consider IV NS/LR.
-

Adult:	Pediatric:
o **Blood sugar less than 60 mg/dl AND symptomatic**: ▪ Dextrose 25 g IV. ▪ **If unable to obtain IV**: **Patients 14 years & older** ▪ Consider Glucagon 2 mg IM.	o **Blood sugar less than 50 mg/dl AND symptomatic**: ▪ Dextrose 0.5-1 g/kg IV. Repeat as needed. o **If unable to obtain IV: Pediatrics >4 yrs old – 14 yrs** ▪ **Greater than 20 kg or 5 yr old**: Consider Glucagon 1 mg IM. ▪ **Less than 20 kg or 5 yr old**: Consider Glucagon 0.5 mg IM.

Medic:

- Ensure completion of all applicable items above.
- Consider IO NS/LR. Refer to AEMT section above for Dextrose administration via IO.
- Contact MEDICAL CONTROL prior to PRC if any of the following:
    - IV or IO access has been performed.
    - Oral hypoglycemic in patient medication list.
    - Long-acting insulin in patient medication list.
    - Treated with Glucagon.
    - Unknown cause of Hypoglycemia.

CP:

- Ensure completion of all applicable items above.

Protocol 2-583 - Hypotension / Shock

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Establish and maintain airway and ventilate, as needed, with Oxygen to maintain SpO2 as indicated by specific patient condition.
- Treat for shock by prevention of heat loss.

EMT:

- Ensure completion of applicable items above.
- Assist ALS with Capnography.

AEMT:

- Ensure completion of applicable items above.
- IV NS/LR.
- HYPOTENSION IN TRAUMA EXCULDES THE BELOW TREATMENTS

Adult:	Pediatric:
o **Meets SEPSIS criteria**: ▪ LR bolus of 30 ml/kg. Up to a max of 2,000 mL o LR 250-500 ml IV bolus to maintain MAP greater than 65 and/or SBP greater than 90.	o Consider LR 20 ml/kg IV bolus (may repeat) to maintain MAP greater than 65.

Medic:

- Ensure completion of all applicable items above.
- Consider IO NS/LR.

Adult:	Pediatric:

o **SBP less than 90 or MAP less than 65 after fluid bolus**:
    ▪ Consider Phenylephrine 50 mcg-100 mcg every 5 minutes to maintain SBP greater than 90 or MAP greater than 65 after or during fluid bolus
    ▪ If Phenylephrine unavailable use Epinephrine 1:100,000 as below.
    ▪ Consider Epinephrine drip 1:100,000 (Push-Dose) 5-20 mcg every 2-5 min.
    ▪ Consider Epinephrine 1:10,000 2-10 mcg/min IV/IO:
        ▪ Mix 1 mg in 100 ml NS/LR.
        ▪ 2 mcg/min = 12 ml/hr.
        ▪ 10 mcg/min = 60 ml/hr.
	o Epinephrine 1:100,000 5-20 mcg every 2-5 min (Push-Dose) OR
	o Consider repeated fluid bolus in AEMT section.

CP:

- Ensure completion of all applicable items above.

Protocol 2-594 - Hypothermia

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Remove from exposure.
- Open and maintain airway.
- Be prepared to Suction airway.
- **Pulseless**: Refer to Protocol 2-198 - Cardiac Arrest.

    - **Drowning or near drowning**: Refer to Protocol 2-286 - Drowning / Near Drowning.
- Dry and warm patient.
- Remove constricting or wet clothing and jewelry.
- Apply hot packs to axilla bilaterally.
- Apply hot packs to groin bilaterally.
- Wrap patient with Mylar Blanket to prevent heat loss.
- Cover effected frost bitten tissue with loose, dry, sterile dressing.
- Obtain core body Temperature, if able.
- Consider applying Cardiac Monitor limb leads or combo pads.
- Attempt to determine down-time and history.

EMT:

- Ensure completion of applicable items above.
- Assist ALS with Capnography.
- **Pulseless**:
    - Do not delay transport for rewarming.
    - Rapid transport to hospital.

AEMT:

- Ensure completion of applicable items above.
- Consider IV warm NS/LR.

Medic:

- Ensure completion of all applicable items above.
- Consider IO warm NS/LR.
- **Pulseless**:

- o **Shockable ryhthm**: Refer to [Protocol 2-968 - V-Fib / Pulseless V-Tach](#), however, only shock once.
  - o **Core** [Temperature](#) **greater than 86° F**: Remember patients require longer intervals between drug administrations due to slower absorption and metabolism.
  - o **Core** [Temperature](#) **less than 86° F**: [Compressions](#) only.
- **Pain**: Refer to [Protocol 2-660 - Pain Control](#).
- **Nausea**: Refer to [Protocol 2-990 - Vomiting](#).
- Consider [Protocol 2-044 - Airway: RSI](#).

CP:

- Ensure completion of all applicable items above.

Protocol 2-616 - Newly Born

CMH EMS & MIH Protocols

In general, this protocol's scope covers management of the baby/babies after delivery and the point of cutting the umbilical cord. Before cutting the cord refer to [Protocol 2-242 - Childbirth / Labor](#).

EMD:

- No specific protocol.

EMR:

- **Mother still in labor**: Refer to [Protocol 2-242 - Childbirth / Labor](#).
- Confirm ABCs.
- **RESUSCITATION is required**:
  - Clamp and cut umbilical cord immediately.
  - Dry, warm, stimulate.
  - Establish and maintain airway with 100% oxygen.
  - [Suction](#) thoroughly. Mouth first, then nose.
  - **HR less than 60**: Chest compressions at 120 per minute. Ratio of 3:1. Use BVM. Reassess after 60 seconds.
  - **HR less than 100**: BVM with room air at 40-60 breaths per minute. Remember, newborn tidal volume may be 25 ml or less. Reassess after 30 seconds.
  - If no signs of effective PPV are present, use the following corrective measures (decreasing HR and/or SpO2 sat).
    - **M – Mask Adjustment –** Ensure good seal of mask on face.
    - **R – Reposition Airway –** Sniffing position
    - **S – Suction Mouth and Nose –** If secretions present
    - **O – Open Mouth -** Ventilate with baby mouth slightly open and lift the jaw forward
    - **P – Pressure Increase –** Gradually increase the pressure every few breaths
    - **A –** Airway Alternative -
  - Apply [Cardiac Monitor](#).
- **Resuscitation is NOT required**:
  - Wait 1 minute to clamp and cord.
  - Consider Oxygen to maintain pre-ductal SpO2 according to chart found on [Protocol 2-616-66 - Targeted Pre-Ductal SpO2](#).
- Maintain warmth of the infant.
- [Suction](#) mouth, then nose, with bulb syringe.
- Dry and STIMULATE with a clean towel.
- Obtain APGAR score at 1 minute and 5 minutes after delivery.
  - Refer to [Protocol 2-616-33 - APGAR Scoring System](#).

EMT:

- Ensure completion of applicable items above.
- Ensure ventilation and ventilation corrective steps
- Consider iGel
- Obtain accucheck
- **Blood sugar less than 50 mg/dl**: Refer to [Protocol 2-572 - Hypoglycemia](#) for treatment.

AEMT:

- Ensure completion of applicable items above.
- **If RESUSCITATION is required**:
    - o Consider IV NS 10 ml/kg over 10 min.
    - o Consider Narcan 0.1 mg/kg IV/IN with a max single dose of 0.4mg

Medic:

- Ensure completion of all applicable items above.
- **If RESUSCITATION is required**:
    - o **Meconium present**: [Laryngoscopy](#) and [Deep Suction](#) trachea with [ET Tube](#). After intubation, prolonged positive pressure ventilation at 40-60 breaths per minute.
    - o **No response after stimulation, BVM, compressions, and deep suctioning**: INTUBATE.
        - ▪

Gestational age	ET Size	Depth
Less than 28 weeks	2.5	6-7 cm
28-34 weeks	3.0	7-8 cm
34-38 weeks	3.5	8-9 cm
Greater than 38 weeks	4.0	9-10 cm

    - o Consider IO NS fluid bolus if IV in AEMT section unsuccessful.
    - o **HR remains less than 60 despite BVM and chest compressions**:
        - ▪ Epinephrine 1:10,000 0.02 mg/kg IV/IO (0.2 ml/kg) followed by NS flush (repeat every 3-5 minutes).
        - ▪ **If no IV/IO Access:** Epinephrine 1:10,000 0.1 mg/kg (1 ml/kg) [ET](#) followed by 4 breaths.
    - o Consider Narcan IV/IO/IN same doses as AEMT above.

CP:

- Ensure completion of all applicable items above.

APGAR Scoring System

Sign		2	1	0
A	Appearance (skin color)	Normal over entire body	Normal except extremities	Cyanotic or pale all over
P	Pulse	>100 bpm	<100 bpm	Absent
G	Grimace (reflex irritability)	Sneezes, coughs, or vigorous cry	Grimaces	No response
A	Activity (muscle tone)	Active	Arms and legs flexed	Absent
R	Respirations	Good, crying	Gasping, irregular	Absent

Protocol 2-616-66 - Newly Born - Targeted Pre-Ductal SpO2

CMH EMS & MIH Protocols

Time after Birth	Target SpO2
1 minute	60-65%
2 minutes	65-70%
3 minutes	70-75%
4 minutes	75-80%
5 minutes	80-85%
10 minutes	85-90%

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Protocol 2-638 - Overdose / Toxic Ingestion

CMH EMS & MIH Protocols

EMD:

- Dispatch a non-dedicated standby ambulance to all hazmat releases where emergency response is required by other agencies.

EMR:

- Consider hazmat and DECON. Refer to Protocol 2-924 - Universal Patient Care for decontamination protocols.
- **Caustic material or chemical burns**: Refer to Protocol 2-176 - Burns.
- **Excited delirium or anxiety due to recreational medication or overdose**: Refer to Protocol 2-110 - Behavioral.
- Identify possible causes and substance(s) involved.
- Consider Oxygen 100%.
    - **Paraquat poisoning**: Only administer Oxygen if SpO2 is less than 88%.
- Consider applying Cardiac Monitor limb leads.
- **Narcotic overdose with respiratory depression and unable to ventilate**:
    - Note: Narcan administration should be limited to "last resort" situations and only after risk/benefit has been assessed regarding potential violent patient after administration.
    -

Adult:	Pediatric:
▪ Narcan 0.2-0.4 mg IN. Repeat as necessary to maintain airway, SpO2, and ETCO2	▪ Narcan 0.1 mg/kg IN. Repeat as necessary to maintain airway, SpO2, and ETCO2

EMT:

- Ensure completion of applicable items above.
- Perform Blood Sugar Check.
- Consider assisting ALS with Capnography.

AEMT:

- Ensure completion of applicable items above.
- Consider IV NS/LR.
- **Narcotic overdose with respiratory depression and unable to ventilate**: Narcan IV/IN same doses as EMT above.

Medic:

- Ensure completion of all applicable items above.
- Contact POISON CONTROL at 888-268-4195.
- Consider IO NS/LR.
- **If suspected intentional poisoning or overdose**: MANDATORY ALS patient and pre-hospital IV or IO access is REQUIRED.
- Consider Protocol 2-044 - Airway: RSI.
- **Beta-blocker overdose**:
  - Refer to Protocol 2-154 - Bradycardia.

Adult:	Pediatric:
▪ If hypotension. Give 1,000 mL fluid bolus	▪ If hypotension. Give 20 ml/kg fluid bolus.

- **Calcium channel blocker overdose**:
  - Consider contacting MEDICAL CONTROL for:
    - ▪

Adult:	Pediatric:
▪ Calcium Chloride 50 mg/min (max 1 g).	▪ NA.

- **Caustic substance ingestion**:
  - Consider contacting MEDICAL CONTROL for water or milk ingestion within a few minutes immediately after ingestion.
    - ▪

Adult:	Pediatric:
▪ Max 8 oz.	▪ Max 4 oz.

- **Monoamine Oxidase Inhibitor (MAOI) overdose**:
  - Hyperthermia: Contact MEDICAL CONTROL for Versed 0.1 mg/kg in 2 mg increments slow IV/IO (max 5 mg). Half dose if over 65 years old.
- **Narcotic overdose**:
  - Narcan IV/IO/IN same doses as EMR above.
- **Selective Serotonin Reuptake Inhibitor (SSRI) overdose**:
  - Aggressively control Hyperthermia with active cooling measures.
  - **Hypotension**: LR IV/IO 20 ml/kg.
  - Contact MEDICAL CONTROL.
- **Tricyclic Antidepressant overdose**:
  - **Hypotension**: LR IV/IO 20 ml/kg.

CP:

- Ensure completion of all applicable items above.

Protocol 2-660 - Pain Control

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Identify possible causes.
- Consider Oxygen if SpO2 is less than 88%.
- Consider applying Cardiac Monitor limb leads.
- **Consider BLS pain relief actions**:
    - Splinting or immobilizing.
    - Elevating.
    - Cold pack.
    - Verbal sedation.

EMT:

- Ensure completion of applicable items above.
- Assume abdominal, back, and/or thoracic pain with unknown cause is a STEMI: Obtain a 12-Lead ECG within 10 minutes of patient contact.
- **If narcotic administered**: Consider assisting ALS with Capnography.

AEMT:

- Ensure completion of applicable items above.
- Consider IV NS/LR.

Medic:

- Ensure completion of all applicable items above.
- Consider IO NS/LR.
- **Painful procedure of short duration** (i.e., cardioversion, external cardiac pacing, fracture manipulation, extrication, etc.):
    - Consider Etomidate 0.1 mg/kg IV/IO.
    - Consider Ketamine (dissociative dose):
        - 1-2 mg/kg IV/IO.
        - 4-5 mg/kg IM.
        - **Over 65 years old:** Half dose.
- **Severe pain**: Give Fentanyl prior to Ketamine
- **Severe pain**: Consider Ketamine (analgesic dose):
    - 0.1-0.5 mg/kg *[ideal body weight]* IV/IO.

- o 0.8-1 mg/kg *[ideal body weight]* IM.
  - o **Over 65 years old**: Half dose.
- **Acute or chronic (acute exacerbation with autonomic signs and symptoms) pain**:
  - o

Adult:	Pediatric:
- Consider Fentanyl 12.5-100 mcg IV/IO/IN. May repeat every 15 minutes. **Over 65 years old**: 12.5-50 mcg. May repeat every 15 minutes (max 150 mcg). *Only During Fentanyl Shortage* Consider Morphine 2-5 mg IV/IO (max 10 mg). Maintain SBP greater than 100 - Consider Benadryl 25-50 mg IV/IO to potentiate Morphine and reduce hypotension. - Consider Toradol 15 mg IV/IO or 15 mg IM. - Contraindicated in pregnancy. **Over 65 years old**: 15 mg IV/IO or 15 mg IM.	- Consider Fentanyl 1-2 mcg/kg IV/IO/IN. May repeat every 15 minutes. *Only During Fentanyl Shortage* use **one or the other** of the below Morphine dosages. - Consider Morphine 0.1mg/kg IV/IO may repeat 0.1mg/kg in 30 minutes (IM only if IV/IO access unobtainable. Do not repeat IM dosage.) **Or** - Consider Morphine 0.2 mg/kg IV/IO **may not repeat** (IM only if IV/IO access unobtainable. Do not repeat IM dosage.) - Consider Benadryl 1 mg/kg (max 50 mg) IV/IO to potentiate Morphine and reduce hypotension.

- **Chronic pain without autonomic signs and symptoms**: Transport in position of comfort.
- Any patient receiving narcotics must be transported.

CP:

- Ensure completion of all applicable items above.

Protocol 2-682 - Patient Refusal

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- A Patient Care Report (PCR) must be completed for every EMS response. An Electronic Patient Care Report (ePCR) is required for EMS transport agencies.
    - Every effort should be made to have the PCR shall be completed within 24 hours if volunteer responder (by end of shift if career employee) and be available to the Medical Director (or designee) within 24 hours of completion, if requested.
- **Always act in the best interest of the patient**:
    1. Treating and transporting is preferable to PRC.
    2. PRC is preferable to NCN.

- **Patient Refusal of Care** (PRC):
    - Arrival to scene is classified as within 250 yards of the patient under EMTALA Federal law.
    - When you are within 250 yard and are cancelled continue into the scene to attempt to make patient contact. (0.14 miles)
    - If cancellation occurs further than 250 yards from the scene, no patient contact is required.
    - Providers should attempt to obtain a history and physical, in as much detail as is permitted by the patient.
    - Conduct three assessments:
        - **Legal competence**: Patient is at least 18 years old (or legal guardian is present to refuse care) AND legally competent to refuse care.
            - **Patient's with Legal Guardian**: Until the patient's surrogate decision-maker or legal guardian is available to make decisions on the patient's behalf, at which time informed consent shall be obtained from their legal guardian.
            - If the responsible party (guardian) is not on scene, verbal consent may be obtained via telephone. If telephone consent is obtained, two (2) witnesses are required. If it is necessary to use this method, the responsible party's contact information should be obtained and recorded in the refusal of care section. If unable to contact legal guardian, medical control shall be contacted for further decisions.
        - **Mental competence**: Patient is oriented to person, place, time, and purpose, not a danger to themselves or others, capable of understanding the risks of refusing care/transport, and no signs of mental incapacity (i.e. drug/alcohol intoxication, unsteady gait, slurred speech, etc.).
        - **Medical and situational competence**: Patient is not suffering from acute medical condition that would impair judgment (i.e. hypovolemia, hypoxia, head trauma, diabetic emergencies, hypo/hyperthermia, etc.).

- If the patient refuses care and/or transport, patient should be informed of potential risks, and need for transport and comprehensive Physician evaluation. **Read the patient refusal statement below out loud to the patient.**
- **No ambulance dispatched**: EMR or above may obtain a PRC.
- In the absences of an ALS assessment, BLS-only ambulance crew must contact MEDICAL CONTROL.
  - Patients electing to go to walk-in clinic or ER via personal vehicle (and witnessed leaving with family or bystander) may be PRC'd by EMR or EMT without the need for ALS assessment or contacting MEDICAL CONTROL or supervisor.
  - **EMR or EMT may PRC a patient without ALS if the following are met**:
    - Minor mechanisms of injury (i.e. falls from standing or vehicle accidents with no passenger compartment damage).
- If any ALS intervention has been performed, MEDICAL CONTROL must be contacted prior to PRC.
- Obtain signature of patient or guardian. If patient refuses to sign, document this fact.
- Obtain signature of witness. Preferably law enforcement official or family member.

- **No Care Needed** (NCN):
  - After scene assessment, there may be no patients (i.e. false alarms). A PCR shall be completed including: situation description, number of individuals, and medical screening, if done.
  - If an individual exhibits any significant mechanism of injury, pain behaviors, indications of altered mental status, or the individual at any time requested medical treatment or ambulance transport: **Treatment and transport or PRC must be completed**.

EMT:

- Ensure completion of applicable items above.
- As complete as an assessment as the patient will allow shall be completed and documented on all patient contacts.
- Referral to further medical care by a **physician** shall always be completed and documented on all patient refusals. Referrals may include:
  - Patient or caregiver driving via private vehicle to an Emergency Room or Walk-In / Urgent Care Clinic.
  - Patient or caregiver scheduling an appointment with their Primary Care Provider (PCP).
- Prior to obtaining refusal signatures, the Refusal Statement (found below) must be read out loud. Documentation of reading the Refusal Statement should also be completed.
  - Patient should be advised of the medical importance of their signs and symptoms, the potential for further illness or injury, and the need for transport and a more comprehensive evaluation by a physician.
  - Risks of not being treated and transported should be explained to the patient.
  - If a family member is present, explain the risk of the patient not being treated and transported and benefit of ambulance transport and document family member name and relationship.
  - The patient decision making capacity should be documented.
- Refer to Guideline 1-700-33 - Patient Care Documentation for documentation requirements.

AEMT:

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- Ensure completion of applicable items above.

Medic:

- Ensure completion of all applicable items above.
- If patient care would have met ALS criteria, PRC must be completed by the RN, Paramedic, or AEMT.
- MEDICAL CONTROL **and an ALS assessment is required before PRC for all of the following**:
  - Drug or alcohol intoxication,
  - Acute mental impairment, OR
  - Attempted suicide, verbalized suicidal intent, or EMS providers suspect Suicidal Intent.

CP:

- Ensure completion of all applicable items above.
- A request for an ambulance or activation of 9-1-1, regardless of refusal status, must be a completely separate incident from an MIH visit. If a patient refuses ambulance transport after a 9-1-1 call but has needs MIH may fill, make an appointment for a return visit for enrollment in MIH.

Refusal Statement (print and laminate cards)

Patient Refusal Statement
Updated: 5/27/2022

By signing this refusal document, you are agreeing to the following:

- I understand that the EMS personnel are not physicians and are not qualified or authorized to make a diagnosis and that their care is not a substitute for that of a physician.
- I recognize that I may have a serious injury or illness which could get worse without medical attention even though I (or the patient on whose behalf I legally sign this document) may feel fine at the present time.
- I understand that I may change my mind and call 9-1-1 if treatment or assistance is needed later.
- I also understand that treatment is available at an emergency department 24 hours a day or from my physician.

Protocol 2-704 - Post Resuscitation

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Ensure Palpable Central Pulses (Carotid and/or Femoral)
- If no pulse begin compressions and return to Cardiac Arrest protocol
- Establish and maintain airway and ventilate with Oxygen.
  - Avoid hyperventilation.
  - Attempt to maintain SpO2 between 92-98%.
- Apply Cardiac Monitor Combo Pads and limb leads.

EMT:

- Ensure Palpable Central Pulses (Carotid and/or Femoral)
- Ensure completion of applicable items above.
- Assist ALS with Capnography.
- Capnography greater than 45 = ventilate at a faster rate
- Capnography less than 35 = ventilate at a slower rate
- Sudden drop in Capnography = **Ensure Palpable Central Pulses. If no pulse begin compressions and return to Cardiac Arrest protocol.**

AEMT:

- Ensure completion of applicable items above.
- IV NS/LR. Refer to Protocol 2-583 - Hypotension / Shock for LR dose.

Medic:

- Ensure completion of all applicable items above.
- Obtain 12-Lead ECG.
- Treat rate and rhythm per protocol.
- Secure airway, if necessary.
- **Hypotensive**:
  - Consider IO NS/LR.
  - Refer to Protocol 2-583 - Hypotension / Shock.
- **Continued sedation**: Refer to continued sedation section of Protocol 2-044 - Airway: RSI.
- Consider remaining on scene for at least ten (10) minutes after ROSC to stabilize the patient before initiating transport.

CP:

- Ensure completion of all applicable items above.

Protocol 2-726 - Pulmonary Edema

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Oxygen to maintain SpO2 between 94-99%.
- Apply cardiac monitor limb leads.
- Elevate head of Cot.

EMT:

- Ensure completion of applicable items above.
- Assist ALS with Capnography.
-

Adult:		Pediatric:
o Consider assisting ALS with CPAP.		o

AEMT:

- Ensure completion of applicable items above.
- Consider IV lock in AC (left is preferred) with pigtail extension with 18 ga or greater.
- Consider Albuterol 2.5 mg in NS 3 ml Nebulized.
- **Wheezing or obstructed EtCO2 waveform**: Refer to Protocol 2-770 - Respiratory Distress, however, do NOT administer Epinephrine.

RN:

- Ensure completion of all applicable items above.
- Consider Ventilator in CPAP mode with PSV (BiPAP).
- Consider IO lock.
- Obtain 12-Lead ECG. Consider 15-Lead ECG.
-

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Adult:	Pediatric:
SBP less than 110: - Consider Captopril 12.5 mg SL. - Consider Nitroglycerine 60+ mcg/min IV/IO. Titrate to SBP greater than 90 and dyspnea. **SBP greater than 110**: - Consider Captopril 25 mg SL. - Consider Nitroglycerine 0.4-0.8 mg SL every 3-5 minutes until no dyspnea or SBP less than 90.	Consider contacting MEDICAL CONTROL.

Medic:

- Ensure completion of all applicable items above.
- Consider Protocol 2-044 - Airway: RSI.

CP:

- Ensure completion of all applicable items above

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Protocol 2-748 - Pulseless Electrical Activity

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Refer to Protocol 2-198 - Cardiac Arrest.
- If no pulse at pulse check and AED advises no shock advised. Continue Compressions.

EMT:

- Ensure completion of applicable items above.

AEMT:

- Ensure completion of applicable items above.

Medic:

- Ensure completion of all applicable items above.
- Until proven otherwise, PEA should be considered and treated as **PROFOUND SHOCK**.
- Continue Compressions
- **Consider and correct treatable causes:** Hypovolemia, hypoxia, hypo/hyperkalemia, hypothermia, hypoglycemia, acidosis, tension pneumothorax, toxins, thrombosis, and cardiac tamponade.
  - **If abrupt jump in ETCO2 level during CPR great than 45.** Expect Return of Spontaneous Circulation finding at next pulse check and refer to Post Resuscitation protocol for further treatments.

Adult:		Pediatric:

o **Slow PEA rate**:
    ▪ Consider Atropine 1 mg IV/IO every 3-5 min (max 3 mg).
    ▪ Consider Pacing.
o **Suspected mechanical cardiac activity**:
    ▪ Consider large fluid bolus.
		o

- Narrow complex PEA should **NOT** be terminated in the field.

CP:

- Ensure completion of all applicable items above.

Protocol 2-770 - Respiratory Distress

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Oxygen to maintain SpO2 between 88-92%.
- Consider moving patient to a cold air environment.
- Apply cardiac monitor limb leads.

EMT:

- Ensure completion of applicable items above.
- Assume respiratory distress with unknown cause is a STEMI: Obtain a 12-Lead ECG within 10 minutes of patient contact.
- Assist ALS with Capnography.
-

Adult:	Pediatric:
o Consider assisting ALS with a trial of CPAP.	o NA

AEMT:

- Ensure completion of applicable items above.
- Consider IV NS/LR in AC (left is preferred) with pigtail extension with 18 ga or greater.
- Consider Albuterol 2.5 mg in NS 3 ml Nebulized.
-

Adult:	Pediatric:
o Consider Duoneb 3 ml Nebulized (max 1 dose). o Consider Epinephrine 1:1,000 0.3-0.5 mg IM. **Lateral thigh only.** Caution when greater than 55 yr old with cardiac history.	o Consider Duoneb 1.5 ml Nebulized (max 1 dose).

Medic:

- Ensure completion of all applicable items above.
- Consider IO NS/LR.
- Consider 12-Lead ECG.
-

Adult:	Pediatric:

o Consider Decadron 16 mg Nebulized.
o Consider Solu-Medrol 125 mg IV/IO.
o Consider Magnesium Sulfate 2 g IV/IO in NS over 15-20 min.
	o **Croup or epiglottitis**: Consider Racemic Epinephrine 0.5 ml with 3 ml NS Nebulized.
	  ▪ In the absence of Racemic Epinephrine, Epinephrine 1:1,000 0.5 ml/kg (max 5 ml) may be Nebulized.
	o Consider Decadron 4-8 mg Nebulized.
	o Consider contacting MEDICAL CONTROL:
	  ▪ Consider Solu-Medrol 1-2 mg/kg IV/IO.
	  ▪ Consider Magnesium Sulfate 25-50 mg/kg IV/IO in NS over 15-20 min.

- **CHF or pulmonary edema**: Refer to Protocol 2-726 - Pulmonary Edema.
- Consider Protocol 2-044 - Airway: RSI.

CP:

- Ensure completion of all applicable items above.

Protocol 2-792 - Seizure

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Ensure open Airway.
- Identify possible causes. Options include:
    - Alcohol use or withdrawal
    - Brain injury or tumor
    - Drug use or withdrawal
    - Epilepsy
    - Fever
    - Hypertension
    - Hyperthermia
    - Hypoglycemia
    - Poisoning
    - Stroke
- Clear area to decrease chance of injury.
- Consider Oxygen if SpO2 less than 88%.
- Apply Cardiac Monitor limb leads.

EMT:

- Ensure completion of applicable items above.
- Perform Blood Sugar Check.
- Consider assisting ALS with Capnography.
- **No history of seizures, afebrile, and destination hospital is on CT divert**: Bypass that facility and transport to next closest appropriate facility taking into consideration the patient's wishes.

AEMT:

- Ensure completion of applicable items above.
- Consider IV NS/LR.

Medic:

- Ensure completion of all applicable items above.

- Consider IO NS/LR.
- **Actively seizing**: Continue Versed as below until seizures stopped. Max single dose of 5 mg IV/IO/IN or 10 mg IM.
  - o

Adult:	Pediatric:

▪ Consider Versed 10 mg IM.
  ▪ OR Versed 2.5-5 mg IV/IO/IN
    ▪ **Pregnant** [Hypertension](#) **(20-week gestation through 6-week post-partum)**: Magnesium Sulfate 4 g IM/IV/IO (IV/IO in NS over 5 minutes) and refer to [Protocol 2-528 - Hypertension](#).
	▪ **12-18 year old**: Consider Versed same as adult.
	▪ **1-12 year old**: Consider Versed 0.15 mg/kg (max 5 mg) IM/IN/IV/IO. May repeat every 5 minutes.
	▪ **1-12 month old**: Consider Versed 0.2 mg/kg IM/IN (max 5 mg). May repeat every 5 minutes.

- Use [RSI](#) with caution in seizure patients. Paralysis only masks the manifestation of seizure.
  - o **Continued sedation for** [intubated](#) **patient**: Versed 2.5-5 mg IV/IO.

CP:

- Ensure completion of all applicable items above.

Protocol 2-814 - Spinal Cord Trauma

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Consider SMR. C-collar is contraindicated with penetrating neck trauma.
- Assist Ventilations as needed.
- Consider Oxygen 100%.
- Consider applying Cardiac Monitor limb leads.
- Maintain body temperature between 91° and 99° F.

EMT:

- Ensure completion of applicable items above.
- **Sporting Event Standby**:
  - Park the emergency vehicle 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.
  - Make contact with athletic trainers upon arrival (if they are present).
  - Prepare equipment for rapid deployment.
  - If medical care is needed for a player, event staff should wave EMS onto the field/track if you are needed.
  - **Football player or other event with significant padding and helmet**:
    - Assist athletic trainers in removing athletic equipment prior to transport.
    - If unable or not recommended by athletic trainer, secure player to Backboard with helmet and pads remaining in place.
    - Apply C-collar and Backboard if spinal injury is suspected.
    - Use 8-person lift or scoop stretcher to move patient from the ground to the backboard. Avoid use of log-roll procedure unless posterior inspection is required.
    - 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 PCR report shall be completed for all dedicated standbys. Be specific about which standby it is and which location.

AEMT:

- Ensure completion of applicable items above.
- Consider IV LR titrated to maintain SBP according to age.

- o Refer to [Protocol 2-924 - Universal Patient Care](#) and do not exceed the lower range of the SBP indicated in the Normal Vital Signs table.

RN:

- Ensure completion of all applicable items above.
- Consider IO LR.

Medic:

- Ensure completion of all applicable items above.
- Consider [Protocol 2-044 - Airway: RSI](#).

CP:

- Ensure completion of all applicable items above.

Protocol 2-836 - Spinal Immobilization Clearance

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Providers should not manually stabilize alert and spontaneously moving patients, since patients with Pain will self-limit movement, and forcing immobilization in this scenario may unnecessarily increase discomfort and Anxiety.
- **Patients should NOT be transported on a backboard.**
- **Indications for C-Collar:**
    - **High-energy mechanism of injury OR 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).
    - Patients "cleared" by transferring physician being taken to trauma center meeting requirements for SMR must have SMR.

EMT:

- Ensure completion of applicable items above.

AEMT:

- Ensure completion of applicable items above.

Medic:

- Ensure completion of all applicable items above.

CP:

- Ensure completion of all applicable items above.

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Protocol 2-858 - Supraventricular Tachycardia

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Calm and reassure patient. Ensure patient does not exert themselves.
- Oxygen to maintain SpO2 between 94-99%.
- Apply cardiac monitor limb leads.
-

Adult:	Pediatric:
o **Rate greater than 150**: Apply Combo Pads anterior / posterior	o **Rate greater than 180 (child) or 220 (infant)**: Apply Combo Pads anterior / posterior

EMT:

- Ensure completion of applicable items above.
- Consider assisting ALS with Capnography.

AEMT:

- Ensure completion of applicable items above.
- IV LR in AC (left is preferred) with pigtail extension with 18 ga or greater.

Medic:

- Ensure completion of all applicable items above.
- Obtain 12-Lead ECG.
- Consider IO LR. Do not delay IV/IO if symptomatic.
- **Determine and treat the cause of tachycardia before medication administration (i.e. infection, dehydration, pain, etc.).**
- Refer to protocol 2-583 Hypotension/Shock if MAP is less than 65 and/or SBP greater than 90

Adult:
o **Unstable and rate greater than 150**: ▪ **Conscious**: Consider Protocol 2-660 - Pain Control.

- Synchronized Cardioversion 200 J. **If unsuccessful**, repeat at 200 J.
- o **Stable and rate greater than 150**:
  - **Vagal maneuver**: Have patient blow on 10 ml syringe to move the plunger for 15 seconds while sitting and immediately place supine and elevate feet afterward.
  - **Consider Cardizem as an equal choice to Adenosine when treating SVT.**
    - If using Cardizem use standard dosing as outlined in A-Fib/A-Flutter section below
  - **Regular rhythm (not A-Fib, A-Flutter, or WPW)**: Adenosine 6-12 mg RAPID IV/IO.
    - **If ineffective**, second dose at 12 mg.
    - Consider Cardizem
    - If Adenosine or Cardizem is infective contact MEDICAL CONTROL to administer Amiodarone
  - **A-Fib or A-Flutter**: 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 rate controlled with** Cardizem **bolus**, begin drip at 10 mg/hr.
    - **Mixing instructions:**
      - Remove top from Diltiazem drug and top from ADD-Vantage bag.
      - Connect Diltiazem to ADD-Vantage bag.
      - Once drug and bag are connected, pull stopper from top of drug container so that the liquid from the ADD-Vantage bag can flow into and out of the drug container.
  - **WPW**: Amiodarone 150 mg IV/IO over 10 min. May repeat at 150 mg over 10 min if tachycardia returns (max 300 mg). If rate controlled with Amiodarone bolus, begin drip at 1 mg/min.

Pediatric:

- o **Vagal maneuver**: Place bag of ice on the patient's face for 15 seconds while sitting and immediately place supine and elevate feet afterward.
- o **Unstable/symptomatic and rate greater than 180 (child) or 220 (infant)**:
  - Adenosine 0.1 mg/kg (max 6 mg) RAPID IV/IO.
    - **If ineffective**, second dose at 0.2 mg/kg (max 12 mg).
  - Consider Protocol 2-660 - Pain Control.
  - Consider Synchronized Cardioversion 0.5-1 J/kg. Subsequent Cardioversion should be at 2 J/kg.
  - Patients 8 years and older consider Cardizem at adult dose:
    - 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.
  - o **Mixing instructions:**
    - Remove top from Diltiazem drug and top from ADD-Vantage bag.
    - Connect Diltiazem to ADD-Vantage bag.
    - Once drug and bag are connected, pull stopper from top of drug container so that the liquid from the ADD-Vantage bag can flow into and out of the drug container.
- o **Stable/asymptomatic and rate greater than 180 (child) or 220 (infant)**:
  - Consider contacting MEDICAL CONTROL:
    - Consider Adenosine 0.1 mg/kg (max 6 mg) RAPID IV/IO.
      - **If ineffective**, second dose at 0.2 mg/kg (max 12 mg).
    - Consider Cardizem if 8 years and older.
      - **Mixing instructions:**

- Remove top from Diltiazem drug and top from ADD-Vantage bag.
- Connect Diltiazem to ADD-Vantage bag.
- Once drug and bag are connected, pull stopper from top of drug container so that the liquid from the ADD-Vantage bag can flow into and out of the drug container.
- Consider [Protocol 2-660 - Pain Control](#).
- Consider [Synchronized Cardioversion](#) 0.5-1 J/kg.

  -

- Consider and correct treatable causes: Hypovolemia, hypoxia, hypo/hyperkalemia, [MEDICAL CONTROL](#), [hypoglycemia](#), acidosis, [tension pneumothorax](#), [toxins](#), [thrombosis](#), and cardiac tamponade

CP:

- Ensure completion of all applicable items above.

Protocol 2-880 - Suspected Stroke

CMH EMS & MIH Protocols

EMD:

- **MPDS Protocol 18 (Headache) and Protocol 28 (Stroke) - Stroke time window**: Time window set by MEDICAL CONTROL is 24 hours. Greater than 24 hours since the patient was last seen normal is usually outside the therapeutic window.

EMR:

- Complete Protocol 2-880-24 - STROKE Assessment Tool.
- Oxygen to maintain SpO2 between 94-99%.
- Apply Cardiac Monitor limb leads.
- Elevate head of Cot.

EMT:

- Ensure completion of applicable items above.
- Perform Blood Sugar Check. **If blood sugar less than 60 mg/dl**: Refer to Protocol 2-572 - Hypoglycemia.
- Obtain and record contact information for family and/or witnesses. **If transporting by Aircraft: Contact receiving facility with this information.**
- Assist patient to walk to the Cot to assess gait.
- Transport according to Protocol 2-880-72 - STROKE Destination Matrix.

AEMT:

- Ensure completion of applicable items above.
- IV NS/LR.
    - Bilateral 18 ga IVs in the AC are preferred.
    - Avoid multiple unsuccessful IV attempts.

Medic:

- Ensure completion of all applicable items above.
- Consider IO NS/LR.
- Obtain 12-Lead ECG.
- Do NOT treat hypertension. CONTACT MEDICAL CONTROL.
    - Document GCS and NIHSS every 15 minutes.
    - **If complications:** Contact receiving facility MEDICAL CONTROL. **Complications include**
        - Lips or tongue swelling,

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- - Muffled voice,
  - Dyspnea,
  - Severe headache,
  - Acute hypertension,
  - Nausea, OR
  - Vomiting
  - **If hypertensive (greater than 180/105) OR hypotensive (less than 140/80): Contact receiving facility** MEDICAL CONTROL.

CP:

- Ensure completion of all applicable items above.

Protocol 2-880-24 - Suspected Stroke - Assessment Tool

Stroke Assessment

RACE Criteria

Item	Instruction	Result	
Facial weakness	Ask the patient to smile	Nil deficit	0
		Mild deficit	1
		Moderate/severe deficit	2
Arm Motor Function	Extend arm 90° (sitting) or 45°(supine)	Normal to mild (upheld >10sec)	0
		Moderate (upheld <10sec)	1
		Severe	2
Leg Motor Function	Extend patients leg 30 degrees (supine)	Normal / mild (upheld >5sec)	0
		Moderate (upheld <5sec)	1
		Severe	2
Head/gaze deviation	Observe eyes & deviated gaze	Absent	0
		Present	1
Right-sided Weakness	Ask: "Close your eyes" then "make a fist"	Normal	0
		Moderate	1
		Severe	2
Left-sided Weakness	Ask: "Whose arm is this?" then "Can you move this arm well?"	Normal	0
		Moderate	1
		Severe	2
Score total:		0-9	/11

Protocol 2-880-72 - Suspected Stroke - Destination Matrix

CMH EMS & MIH Protocols

This matrix was developed using geographical analysis of designated facilities and historical ambulance transport statistics. It also follows Missouri regulations found in 19 CSR 30-40.790 (Transport protocol for trauma, stroke, and STEMI patients).

- These are guidelines only. Scene or patient conditions may influence an alternate destination determination.
- Patients have the right to refuse transport to the recommended destination. If the patient refuses recommended destination, document "transport / refused care" and have patient sign refusal.
- When initial transport from the scene would be prolonged, the patient may be transported to the nearest appropriate facility.
- **All suspected strokes that are from the last known well of 0-4.5 hours should go to the closest ER that can do TPA.**

Location	Destination	Stroke Designation	Notes
Bolivar	Citizens Memorial	Level III	
Clinton	Golden Valley Memorial	Level III	
El Dorado Springs	Cedar County Memorial	Level III	**If on CT divert**: Transport to the next closest stroke center.
Harrisonville	Cass Regional	Level III	
Lamar	Cox Barton	Level III	

- **For those strokes with a last known well of 4.5-24 hours, they should go to the closest facility that does CTA and CTP studies with the CT scan.**

Location	Destination	Stroke Designation	Notes
Bolivar	CMH	Level III	**Suspected strokes that are over the 4.5-hour window for TPA administration are to come to CMH, Lake Regional, Mercy Springfield, Cox South, or Freeman because those facilities are either level II stroke centers or can do CTA and CTP.**
Joplin	Freeman	Level II	
Joplin	Mercy	Level II	

Osage Beach	Lake Regional	Level II	
Springfield	Mercy	Level II	
Springfield	Cox South	Level I	
Kansas City	Research	Level I	
Kansas City	St. Lukes	Level I	

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Protocol 2-902 - Trauma Arrest Adult

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Confirm apnea and pulselessness.
- Attempt to determine down-time and history.
- Consider SMR.
- If patient is found pulseless and apneic, contact medical control directly for consultation on not beginning resuscitation.

EMT:

- Ensure completion of applicable items above.
- If patient had any pulse or respirations or had arrest witnessed by ambulance personnel, begin CPR with C-spine protection and pelvic binder application.
- BLS only crew shall transport to the closest Trauma center

Medic:

- Assure the above items are completed.
- If patient is found pulseless and apneic upon patient contact, contact medical control directly for consultation on not beginning resuscitation.
- Establish and secure airway according to Protocol 2-044 – Airway: RSI.
- If intubated and unable to ventilate due to increased airway pressures, reconfirm proper ET placement and perform bilateral chest decompression.
- As soon as possible and without delaying transport to establish two (2) IV lines with as large a catheter as possible up to a 14 gauge according to General Trauma Management treatment of hypotension. Allow for permissive hypotension to have SBP between 70-90 mmHg.

CP:

- Ensure completion of all applicable items above.

Protocol 2-903 - Trauma Arrest Pediatric

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Age of patient 15 years or older refer to Protocol 2-902 - Trauma Arrest
- Age of patient <15 years old follow steps below
- Confirm apnea and pulselessness.
    - Severe head/brain injury = DO NOT RESUCITATE. Contact medical control to terminate efforts.
- Spontaneous motor, respirations, or reactive pupils
    - Establish airway
    - Administer oxygen
    - Control bleeding
    - Consider Pelvic Binder if patient weight above 50 lbs (23kg)
    - Preserve body heat
    - Wait for arriving ambulance to continue treatments. If no pulse after above treatments, contact medical control to terminate efforts.

EMT:

- Ensure completion of applicable items above.
    - If pulse returns transport to nearest highest level trauma center within 45 minutes.
    - If no pulse after above treatments, CONTACT MEDICAL CONTROL to terminate efforts.

AEMT:

- Ensure completion of applicable items above.
- IV LR 20ml/kg
    - If pulse returns transport to nearest highest level trauma center within 45 minutes.
    - If no pulse after above treatments, CONTACT MEDICAL CONTROL to terminate efforts.

Medic:

- Ensure completion of applicable items above.
- Consider bilateral Needle Decompression
- Consider IO LR.20ml/kg
- Consider Intubation.
    - If pulse returns transport to nearest highest level trauma center within 45 minutes or highest-level trauma center available within the geographic constraints of the regional trauma system.
    - Refer to Protocol 2-451-50 - General Trauma Management - TRAUMA Destination Matrix

- - If no pulse after above treatments, CONTACT MEDICAL CONTROL to terminate efforts.

CP:

- Ensure completion of all applicable items above.

Protocol 2-924 - Universal Patient Care

CMH EMS & MIH Protocols

EMD:

- Utilize appropriate MPDS protocol for all calls where a patient may be ill or injured.

EMR:

- Scene safety. Wear PPE and place PPE on your patient as necessary. Some situations when PPE is indicated include, but not limited to the following:
  - **Reflective vest indications**:
    - You and/or your patient are not in a vehicle, but on a roadway (i.e. side of highway), OR
    - You and/or your patient are not in a vehicle, but near moving vehicles (i.e. landing a helicopter), OR
    - You and/or your patient are a pedestrian and visibility is reduced (i.e. foggy weather).
  - **Helmet indications**:
    - You and/or your patient are under other activities (i.e. someone above you), OR
    - You and/or your patient are under objects that are likely to fall (i.e. loose building materials), OR
    - You and/or your patient are walking or climbing on significantly uneven terrain (i.e. climbing a rocky embankment), OR
    - You and/or your patient are near technical rescue activities (i.e. inside a vehicle with extrication in progress).
  - **Personal floatation device indication**:
    - You and/or your patient are within ten (10) feet of exposed moving liquids (i.e. river), OR
    - You and/or your patient are within ten (10) feet of water deeper than three feet (i.e. swimming pool).
- **Potentially contaminated scene or patients**:
  - Identify the substance with two sources, if possible: NIOSH, WebWISER
  - Notify receiving facilities as soon as possible with possible contamination agent.
  - **Establish decontamination procedures according to research**:
    - **All persons leaving the hot zone must be gross decontaminated**:
      - Remove outer clothing and jewelry.
      - If contaminated with liquids, high volume water rinsing.
      - Irrigate eyes and face.
    - **All persons leaving the warm zone must be technically decontaminated**:
      - Do not contaminate ambulances with patients or responders that have not been decontaminated.
      - Do not perform most ALS procedures until technical decontamination has been performed due to causing additional breaks in the skin.
      - Remove ALL clothing and jewelry.
      - Gentle washing with soap and water.
- Coordinate with or establish incident command. Establish hot, warm, and cold zones, if applicable.
- BSI and ensure proper PPE.
- Determine nature of illness and/or mechanism of injury.

- Determine number of patients. **If greater than five (5) patients**: Refer to [Guideline 1-850-25 - Mass Casualty](#).
- Determine need for additional resources.
- ABCs.
- LOC.
- **Altered mental status**: Refer to [Protocol 2-077 - Altered Mental Status](#) to assess and treat causes
- SAMPLE history.
- Focused assessment.
- Baseline vitals.
  - Refer to [Protocol 2-924-24 - Normal Vital Signs](#).
  - Refer to [Protocol 2-924-48 - Glasgow Coma Scale (GCS)](#).
  - Two sets of vitals should be obtained that include time, blood pressure, pulse, respirations, SpO2, and Pain level. If patient contact time is less than 15 minutes (i.e. very short transport time with a critical patient), one set of vitals may be appropriate.
  - When appropriate, additional vitals may include [Temperature](#), orthostatic blood pressure, and [glucose](#). Consider assisting ALS with [ETCO2](#).
- Treat per appropriate protocol.

EMT:

- Ensure completion of applicable items above.
- **Responsive and no significant MOI**:
  - Treatment and transport decision (BLS/ALS).
  - Goal of moving a TCD patient ([Sepsis](#), [STEMI](#), [Stroke](#), or [Trauma](#)) towards definitive care within 10 minutes.
- [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](#). Any [cardiac monitor](#) for cardiac assessment or [12-Lead ECG](#) must be transported ALS or transmitted to the ER for interpretation.
- A BLS ambulance with an ALS patient shall request ALS intercept or transport to the nearest emergency room or CMH unless the destination is refused by the patient.
- Transport.
  - Routine use of lights and sirens is not warranted.
  - **Transport to the closest facility unless one of the two below**:
    - If the patient refuses the closest facility, transport to their choice, and obtain a refusal signature.
    - **Altered mental status and the closest facility is on CT divert**, bypass and transport to next closest appropriate facility.
    - **Time critical diagnosis:** Transport according to destination matrix:
      - **STEMI**: [Protocol 2-220-50 - STEMI Destination Matrix](#)
      - **Stroke**: [Protocol 2-880-72 - STROKE Destination Matrix](#)
      - **Trauma**: [Protocol 2-451 - TRAUMA destination matrix](#)
  - Ensure accurate weight is obtained on all patients upon arrival at the ER, if able.

AEMT:

- Ensure completion of applicable items above.
- Consider IV LR bolus to maintain SBP above 100.

Medic:

- Ensure completion of all applicable items above.
- **ALS indicated when new onset of the following**:
  - Significant MOI.
  - Unresponsive.
  - **Responsive meeting one of the following**:
    - Altered mental status.
    - Chest discomfort.
    - Need for IV/IO or medications.
    - overdose or poisoning.
    - Respiratory distress.
    - Severe Pain.
    - Signs of shock.
- Rapid medical and/or trauma assessment.
- Treat per appropriate protocol.
- **If transfer out of the hospital**:
  - **If Priority 1 transfer**:
    - Shall be responded to in the same fashion and promptness as any other priority 1 dispatches.
    - Patient care shall be provided by the RN or paramedic.
  - **If patient on a Ventilator and sedated with Propofol:**
    - Consider replacing Propofol at hospital bedside with Ketamine from ambulance stock.
    - Ketamine 1 mg/kg IV/IO.
    -

Adult:	Pediatric:
- Consider Fentanyl 50-100 mcg IV/IO/IN (max 300 mcg).	- Consider Fentanyl 1-2 mcg/kg IV/IO/IN (max 150 mcg)

CP:

- Ensure completion of all applicable items above.

Updated 6/11/25 - Version 25.10

Protocol 2-924-24 - Universal Patient Care - Normal Vital Signs

CMH EMS & MIH Protocols

Description	Age	Ideal Weight	Broslow / Handtevy	Pulse Rate	Respiratory Rate	Systolic BP	Diastolic BP	MAP	Temp
Preemie	Before due date	2 kg		120-170	40-70	55-90			
Newborn / Neonate	0-1 mo	4 kg		Awake: 100-205 Asleep: 90-160	30-60	67-84	35-53	45-60	98.0-100.0 °F
Infant	1-6 mo	6 kg	Pink	Awake: 100-180 Asleep: 90-160	30-53	72-104	37-56	50-62	96.8-99.6 °F
Infant	6-12 mo	8 kg	Red						
Toddler	1 yr	10 kg	Purple	Awake: 98-140	22-37	86-106	42-63	49-62	
Toddler	2 yr	12 kg	Yellow						
Preschooler	3 yr	15 kg	White	Asleep: 80-120	20-28	89-112	46-72	58-69	
Preschooler	4 yr	17 kg	White						
Preschooler	5 yr	20 kg	Blue						
Schoolager	6 yr	22 kg	Blue	Awake: 75-118 Asleep: 58-90	18-25	97-120	57-80	66-79	98.6 °F
Schoolager	7 yr	25 kg	Orange						
Schoolager	8 yr	27 kg	Orange						
Schoolager	9 yr	30 kg	Green						
Schoolager	10 yr	35 kg	Green						
Schoolager	11 yr	40 kg	Green						
Adolescent	12 yr	50 kg	Green	Awake: 60-100 Asleep: 50-90	12-20	110-131	64-83	73-84	
Adolescent	13 yr	60 kg	Green						
Adolescent	14-16 yr	60-75 kg	Green						
Early Adult	17-40 yr	75 kg	Light Blue	60-100		90-140			
Middle Adult	41-60 yr	100 kg	Light Blue						
Older Adult	61+ yr		Light Blue						

Protocol 2-924-48 - Universal Patient Care - Glasgow Coma Scale

CMH EMS & MIH Protocols

Question	Adult Options	Pediatric Options
Eye Opening	4 - Spontaneous 3 - To speech 2 - To pain 1 - None	4 - Spontaneous 3 - To speech 2 - To pain 1 - None
Verbal Response	5 - Oriented 4 - Confused 3 - Inappropriate 2 - Incomprehensible 1 - None	5 - Coos and babbles 4 - Irritable cry 3 - Cries to pain 2 - Moans to pain 1 - None
Best Motor Response	6 - Obeys commands 5 - Localizes pain 4 - Withdraws from pain 3 - Abnormal flexion 2 - Abnormal extension 1 - None	6 - Spontaneous movement 5 - Withdraws to touch 4 - Withdraws from pain 3 - Abnormal flexion 2 - Abnormal extension 1 - None

Protocol 2-946 - Ventricular Tachycardia

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Calm and reassure patient. Ensure patient does not exert themselves.
- Oxygen to maintain SpO2 between 94-99%.
- Apply Cardiac Monitor limb leads.
-

Adult:	Pediatric:
o **Heart rate greater than 150**: Apply Combo Pads anterior / posterior	o **Child with heart rate greater than 160 OR infant with heart rate greater than 220**: Consider applying Combo Pads anterior / posterior.

EMT:

- Ensure completion of applicable items above.
- Consider assisting ALS with Capnography.

AEMT:

- Ensure completion of applicable items above.
- IV NS/LR in AC (left is preferred) with pigtail extension with 18 ga or greater.

Medic:

- Ensure completion of all applicable items above.
- Obtain 12-Lead ECG as soon as able.
- Consider IO NS/LR. Do not delay for IV/IO if symptomatic.
-

Adult:	Pediatric:
o **Heart rate greater than 150**: ▪ **Symptomatic**:	o **Child with heart rate greater than 160 OR infant with heart rate greater than 220**:

- **Conscious**:
  Consider [Protocol 2-660 - Pain Control](#).
  - [Synchronized Cardioversion](#) 125 J. If unsuccessful, increase to 200 J.
- **Asymptomatic**:
  - Amiodarone 150 mg IV/IO over 10 min. Mix in 100 ml NS. Repeat as needed (max 2.2 gm over 24 hr). If converted by Amiodarone, consider drip at 1 mg/min.
- **QTc greater than 0.300 sec**: Magnesium Sulfate 1-2 g IV/IO in NS over 15-20 min.

- **Symptomatic**:
  - **Conscious**: Consider [Protocol 2-660 - Pain Control](#).
  - [Synchronized Cardioversion](#) 0.5-1 J/kg.
  - Consider contacting [MEDICAL CONTROL](#) for Amiodarone as dosed in asymptomatic below.
- **Asymptomatic. Contact [MEDICAL CONTROL](#) for**:
  - Consider Adenosine 0.1 mg/kg (max 6 mg). May repeat at 0.2 mg/kg (max 12 mg).
  - Consider Amiodarone 5 mg/kg IV/IO over 20-60 min (max 150 mg).
  - Consider [Protocol 2-660 - Pain Control](#).
  - Consider [Synchronized Cardioversion](#) 0.5-1 J/kg.

- **Consider and correct treatable causes**: Hypovolemia, hypoxia, hypo/hyperkalemia, [MEDICAL CONTROL](#), [hypoglycemia](#), acidosis, [tension pneumothorax](#), [toxins](#), [thrombosis](#), and cardiac tamponade.

CP:

- Ensure completion of all applicable items above.

Protocol 2-968 - V-Fib / Pulseless V-Tach

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Refer to Protocol 2-198 - Cardiac Arrest.

EMT:

- Ensure completion of applicable items above.

AEMT:

- Ensure completion of applicable items above.

Medic:

- Ensure completion of all applicable items above.
- **If ALS and** Cardiac Monitor **is available**, manual defibrillation is preferred.
- **Winessed arrest by EMS**: Immediate Defibrillation.
- **Unwitnessed arrest**: Perform 2 min of Compressions, then Defibrillation. Immediately start Compressions for 2 min after each shock before rhythm or pulse check.
- Every 2 minutes, charge Monitor in anticipation of shock able rhythm. During pause in Compressions, Defibrillate or dump charge.
  - ○

Adult:	Pediatric:
▪ 360 J (OR consider biphasic dose of 200 J).	▪ 4 J/kg. ▪ Add 2 J/kg each shock (max 10 J/kg).

- Consider Amiodarone IV/IO:
  -

Adult:	Pediatric:
▪ 300 mg.	▪ 5 mg/kg.

  - **Recurrent VF/VT**: Repeat Amiodarone:
    - ▪

Adult:	Pediatric:
▪ 150 mg.	▪ 2.5 mg/kg.

- **Persistent fibrillation after five (5) attempted Defibrillations:** Consider Dual-Sequential or Dual-Simultaneous Defibrillation.
- **Torsades de Pointes**:

-

Adult:	Pediatric:

- Magnesium Sulfate 1-2 g over 2 min.
  - ▪ Follow with Magnesium Sulfate 0.5-1 g/hr IV/IO titrated to control Torsades de Pointes.
- **Conscious**:
  - ▪ Consider Protocol 2-660 - Pain Control.
  - ▪ Synchronized Cardioversion 200 J.
	- Magnesium Sulfate 25-50 mg/kg over 2 min.
	- **Conscious**:
	  - ▪ Consider Protocol 2-660 - Pain Control.
	  - ▪ Synchronized Cardioversion 0.5-1 J/kg.

CP:

- Ensure completion of all applicable items above.

Protocol 2-990 - Vomiting

CMH EMS & MIH Protocols

EMD:

- No specific protocol.

EMR:

- Identify possible causes.
- Consider Oxygen if SpO2 is less than 88%.
- Consider applying Cardiac Monitor limb leads.

EMT:

- Ensure completion of applicable items above.
- Assume nausea or vomiting with unknown cause is a STEMI: Obtain 12-Lead ECG within 10 minutes of patient contact.

AEMT:

- Ensure completion of applicable items above.
- Consider IV NS/LR.

Medic:

- Ensure completion of all applicable items above.
- Consider IO NS/LR.
-

Adult:	Pediatric:
- Consider Zofran 4 mg IV/IO/IM/IN/PO/SL (max 8 mg). - Consider Phenergan 6.25-25 mg: - IM OR - IV/IO infused in NS/LR over 15-30 minutes OR - Diluted in NS flush and pushed VERY slowly. - Consider Benadryl 12.5-25 mg IV/IO/IM.	**Greater than 2 years old**: - Consider Zofran 0.1-0.2 mg/kg IV/IO/IM/IN/PO/SL (max 8 mg). - Consider Phenergan: 0.25-0.5 mg/kg IM OR 0.25-0.5 mg/kg IV/IO infused in NS/LR over 15-30 minutes OR 0.25 mg/kg diluted in NS flush and pushed VERY slowly.

o   Consider Benadryl 0.1 mg/kg IV/IO/IM (max 25 mg).

CP:

- Ensure completion of all applicable items above.

Guideline 1-100 - Air Transport of Patients

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

Air ambulances shall be used as appropriate to provide safe and exceptional patient care.

Purpose:

The purpose of this guideline is to provide guidance on utilization of air ambulances.

Procedure:

I.   Upon request for air ambulance, the dispatch agency covering the jurisdiction where the landing zone will be located, shall contact Cox Air Care and advise location, destination, and patient demographics (if known).

II.   If ground transport is within **45 minutes** drive time from the destination at the time of aircraft request, it is potentially faster to drive by ground than request an aircraft.

III.   **Consider air ambulance if ONE or more of the following**:

A.   The patient condition or resources available warrant an aircraft as determined by the ambulance lead provider. Prior to arrival of an ambulance on scene, the current lead medical provider may request an aircraft to respond. However, final transport mode decision is made in collaboration between air and ground ambulance providers.

1.   If an aircraft is determined to be warranted, consider requesting additional personnel and/or specialty equipment from the sending facility to accompany the transport as an alternative option, if applicable.

2. Patient conditions to evaluate includes, but not limited to, patient acuity, potential for deterioration, and/or complex medical management is required. Duration of the transport should be taken into account.

3. Resources available to evaluate includes, but not limited to, equipment and personnel available in the back of an ambulance during a ground transport.

B. Ground resources are exhausted.

C. Prolonged extrication time (greater than 20 min) is anticipated.

D. Road or bridge conditions which prevent ground transport.

E. Time Critical Diagnosis where air transport will be quicker than ground transport to TCD facility:

    1. **STEMI:**

        a. Acute MI or Chest Pain suggestive of MI.

        b. Uncontrollable cardiac dysrhythmias.

        c. Need for airway control intervention.

    2. **Stroke:**

        a. Sudden onset of Stroke symptoms with last seen normal less than 12 hours ago.

    3. **Trauma:**

        a. Head or Spinal Trauma with neurological deficits.

        b. Second or third degree Burns greater than 20% BSA.

        c. **Vital signs indicating compensation in addition to the following injuries**: Pulsating abdominal mass, severe bleeding, trauma during pregnancy, loss of consciousness, or penetrating injury.

IV. Request for Air Ambulance should be made as early as possible. Can be made while en route.

V. Request for Air Ambulance should be made through the dispatch in the county of the LZ location.

VI. Once en route, the request can only be canceled by EMS or rescue personnel on scene.

VII. Prepare a safe landing zone. Utilize local law enforcement and fire department.

VIII. Final decision to accept a mission is the responsibility of the pilot.

IX. Patient requests for specific aircraft and destinations should be discussed with flight crew.

Guideline 1-100-50 - Helicopter Landing Zone

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

A safe and secure landing area for air ambulances will be used when it is necessary to transfer a patient by helicopter.

Purpose:

To provide guidelines for safe and secure landing and operations around air ambulances.

Procedure:

I. The landing area shall be acceptable to the incoming helicopter service pilot.
II. The landing area shall be clear of wires, loose debris, obstructions, or hazards.
III. The landing area shall be a minimum of 100 foot by 100 foot. This area shall be level and without dips or rises.
IV. Landing Zone Command (LZ Command) shall alert the incoming pilot of the landing scene and possible hazards or problems with the landing site.
   A. Communications between LZ Command and the incoming aircraft are usually conducted on radio channel VFire21 - Fire Mutual Aid.
   B. Possible hazards include if multiple aircraft are responding to the same scene.
V. Ground crews shall not approach the helicopter without direction from the helicopter pilot or crew.
   A. When the helicopter is approached, it shall be done from a 45 degree angle from the front and in full view of the pilot.

B.   An approach from another angle shall only be done under the direction and instruction of the flight crew.

Guideline 1-200 - EMS Dispatch

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

The designated Emergency Medical Services (EMS) Dispatch Center shall seek to ensure dispatch of the appropriate ambulance which has the shortest Estimated Time of Arrival (ETA) to the scene of priority one, two, and three responses. Citizens Memorial Hospital (CMH) ambulances will be dispatched in an efficient manner to each request for service.

Purpose:

The purpose of this guideline is to establish standards and procedures for the dispatch of emergency medical resources to requests for ambulance or medical transport and to ensure ALS ambulance is available for 911 Response in CMH service areas.

Procedure:

I. Dispatch administration:
   A. It should be a goal for all call takers and ambulance dispatchers to be experienced with EMS and be currently certified Emergency Medical Dispatchers (EMDs).
   B. Communications center directors shall be familiar with and strive to meet NFPA 1221 (Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems), specifically:

1. **Section 7.2: Telecommunicator Qualifications and Training**. This section references NFPA 1061 (Standard for Public Safety Telecommunications Personnel Professional Qualifications) and describes required certifications and training.
2. **Section 7.3: Staffing**. This section requires sufficient staffing based on call volume with a minimum of two on duty at all times.
3. **Section 7.4 Operating Procedures**. This section sets call answering and processing time requirements. Specifically, 90% of calls answered within 15 seconds and 90% of calls processed within 60 seconds. EMDs are required and CPR instructions shall be provided when a patient is unresponsive and not breathing. Refer to performance data for the four dispatch centers serving CMH EMS:

C. In each instance when an ambulance is not available to respond to a request for an emergency, an EMS Missed Run Log entry will be made and kept. A report of missed runs will be sent to PHS leadership no later than the 5th day after the beginning of each month. Weekly reporting is preferred.

II. General dispatching:
A. If the dispatched ambulance does not acknowledge the call within one minute, a second attempt at dispatch should be made. If no response after another minute, the next closest ambulance should be dispatched and resources deployed to obtain the status of the non-responsive ambulance staff. Additionally, PHS leadership should be advised of the incident.
B. Primary dispatch should include the ambulance identifier, general location of the call, nature of the call, and priority.
C. Dispatchers should provide secondary dispatch information within two minutes of the unit calling en route, when possible. Secondary information should include the full address and all pertinent patient and safety information.
D. The dispatch center shall record the following for every request for an ambulance. This data shall be available to the ambulance crew at the end of the call to complete required documentation.
   1. Call received time
   2. Dispatch time
   3. En route time
   4. On scene time
   5. Transporting time
   6. Transporting mileage
   7. Destination time
   8. Destination mileage
   9. In service time
   10. Run number. A unique run number will be assigned each time an ambulance is dispatched.
E. The EMS Dispatch Center shall monitor ambulance movement. The EMS Dispatch center will dispatch the closest ambulance for Priority One and Two responses.
F. A form of call rotation will be used where more than one ambulance covers the same geographic location.
G. If multiple ambulances respond and transport patients, ambulance crews will request additional run numbers. Secondary run numbers will not be auto assigned just because multiple ambulances are responding.
H. Upon arrival at the destination, the ambulance is automatically in service for another call immediately, unless notified by the crew otherwise.
I. Within the last 30 minutes of a shift, the crew may notify dispatch of End Of Shift (EOS) and then will move to the back of the response rotation.

III. 9-1-1 call dispatching:
A. Refer to Guideline 1-200-24 - Call Natures for specific EMD medical directions.

B. Refer to [Guideline 1-200-48 - Mutual Aid](#) to determine which ambulances to dispatch based on location.

Requests for mutual aid ambulances from neighboring counties will by honored if an ambulance is available. Ambulances will not be held from response unless directed by PHS leadership. Mutual aid requests further than one county away should be approved by PHS leadership.

C. EMDs will utilize Medical Priority Dispatch System (MPDS) version 13 approved by the International Academy of Emergency Medical Dispatch (IAEMD) to provide emergency medical instructions to 9-1-1 callers. This includes protocols 1 through 33 and associated determinate codes, pre-arrival instructions, and diagnostic tools.
   1. If MPDS recommends a BLS ambulance, utilization of BLS resources should be done first. If no BLS ambulance is available, an ALS ambulance should be used for priority 1, 2, and 3. Priority 4 requests should wait until a BLS ambulance is available.
   2. If MPDS recommends an ALS ambulance, utilization of ALS resources should be done first. If no ALS ambulance is available, a BLS ambulance should be used in addition to the nearest mutual aid ALS ambulance.
D. All requests for an ambulance where the patient is not located in a hospital, shall be processed as if a 9-1-1 call has been placed. This includes all calls from Long Term Care (LTC) facilities, clinics, and physician offices.
E. If an ambulance is transporting a patient to a facility within the response area, and a Priority One or Two request is pending, check with ambulance crew for quick turn-around and obtain an estimated time they can be enroute to the call. If the time is within 20 min, dispatch may use this unit for a quick turn-around. In either case, dispatch the closest currently available unit to respond (including mutual aid). The ambulance first arriving to the scene will take the call.
F. If an aircraft is requested, the dispatch agency where the landing zone is located should make the request. Refer to fire department dispatching policies for establishing the landing zone. Refer to [Guideline 1-100 - Air Transport of Patients](#). If the aircraft refuses the flight due to weather, do not continue to "shop" for another aircraft.

IV. Transfer dispatching:
   A. Reminder, "transfers" are only out of the hospital, all other requests for an ambulance should use MPDS protocols 1 through 32.
   B. The above calculator should be used to triage and prioritize transfers out of the hospital. When patients to be transferred are triaged and prioritized correctly, this allows efficient use of ambulance resources and meets the needs for the condition of the patient.
   C. If multiple transfers are pending with the same priority level, they should be dispatched in order of current locations as follows:
      1. Emergency room
      2. Cath lab
      3. Obstetrics
      4. ICU
      5. Medical/surgical
   D. ModivCare requests (previously LogistiCare): ModivCare requests are automatically approved unless one or more of the following conditions:
      1. Long distance transfer
      2. A CMH facility is neither the patient location nor the destination
   E. Refer to the 9-1-1 dispatching section as it relates to BLS and ALS dispatching.
   F. Long distance transfers (defined as greater than 100 miles) must be approved by CMH Pre-Hospital leadership. Contact order for leadership shall be:
      1. Crew Leader on Duty
      2. Supervisor on Duty

3. Manager on Duty
4. Manager on Call

Guideline 1-200-24 - EMS Dispatching: Call Natures

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

EMS dispatch centers shall dispatch the correct resources to requests for ambulances.

Purpose:

The purpose of this guideline is to outline details regarding resources to be dispatched based on the nature of the call.

Procedure:

Nature of Call	Dispatcher Actions
All 9-1-1 calls	Refer to Guideline 1-100 - Air Transport of Patients. Refer to Guideline 1-200 - Ambulance Dispatch. Refer to Protocol 2-924 - Universal Patient Care. Structure fire or other incident where firefighters may be entering a hazardous atmosphere: Dispatch a non-dedicated standby ALS ambulance.

Aircraft Emergency 2 (Full Emergency)	Dispatch closest ALS ambulance for standby.
Aircraft Emergency 3 (Accident)	Dispatch closest two (2) ALS ambulances and Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
Aspirin Diagnostic	Refer to Protocol 2-220 - Chest Pain / Suspected Cardiac Event.
Hazardous Materials Release	If patient or patients: Refer to MPDS Protocol 8 below. If no patients: Dispatch closest ALS ambulance for standby and notify Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
All MPDS Protocols	Echo-level (not breathing): Dispatch closest ambulance, closest ALS ambulance (if closest is not ALS), and Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance). In other words, the absolute closest ambulance should be dispatched. A total of two ALS providers should be dispatched.
MPDS Protocol 4 (Assault)	4-D-1 (Arrest): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
	4-D-1 (Multiple Victims): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) and Rescue Task Force (or additional ALS ambulance).
MPDS Protocol 7 (Burns)	Refer to Protocol 2-176 - Burns.
	7-D-1 (Multiple Victims): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) and Rescue Task Force (or additional ALS ambulance).
	7-D-2 (Arrest): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
	7-C-4 (Significant Facial Burns): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
MPDS Protocol 8 (Hazmat)	Refer to Protocol 2-176 - Burns. Refer to Protocol 2-352 - Exposure: Cyanide. Refer to Protocol 2-374 - Exposure: Nerve Agents.
	8-D-1 (Arrest): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
	8-D-5 (Multiple Victims): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) and Rescue Task Force (or additional ALS ambulance).
	Cardiac arrest pathway: Refer to Protocol 2-198 - Cardiac Arrest.

MPDS Protocol 9 (Cardiac Arrest)	Obvious or expected death: Refer to Protocol 2-198 - Cardiac Arrest.
MPDS Protocol 14 (Drowning)	Obvious death: Refer to Protocol 2-286 - Drowning / Near Drowning
	14-D-2 (Underwater): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
MPDS Protocol 15 (Electrocution)	15-D-1 (Multiple Victims): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) and Rescue Task Force (or additional ALS ambulance).
MPDS Protocol 17 (Fall)	17-D-2 (Arrest): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
MPDS Protocol 18 (Headache)	Stroke time window: Refer to Protocol 2-880 - Suspected Stroke.
MPDS Protocol 20 (Heat/Cold Exposure)	20-D-2 (Multiple Victims): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) and Rescue Task Force (or additional ALS ambulance).
MPDS Protocol 21 (Hemorrhage)	21-D-1 (Arrest): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
MPDS Protocol 22 (Inaccessible)	22-D-1 (Mechanical), 22-D-2 (Trench), 22-D-3 (Structure), 22-D-4 (Confined), 22-D-5 (Terrain), 22-D-6 (Mudslide), or 22-B-2 (Peripheral): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
MPDS Protocol 24 (Pregnancy)	High risk complications: Refer to Protocol 2-242 - Childbirth / Labor
	24-D-1 (Breech), 24-D-2 (Head Visible), 22-D-3 (Imminent), 24-D-6 (Baby Born, Baby Complications), or 24-D-7 (Baby Born, Mother Complications): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
MPDS Protocol 27 (Penetrating)	27-D-1 (Arrest): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
	27-D-6 (Multiple Victims): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) and Rescue Task Force (or additional ALS ambulance).
MPDS Protocol 28 (Stroke)	Stroke time window: Refer to Protocol 2-880 - Suspected Stroke.
MPDS Protocol 29 (Traffic)	29-D-1 (Major Incident): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) and Rescue Task Force (or additional ALS ambulance).

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	29-D-2 (High Mechanism), 29-D-4 (Hazmat), 29-D-5 (Pinned), or 29-D-6 (Arrest): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
MPDS Protocol 30 (Trauma)	30-D-1 (Arrest): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
MPDS Protocol 31 (Unconscious)	31-D-1 (Agonal): In addition to primary ambulance, dispatch Ops Ambulance (EMS Crew Leader) (or additional ALS ambulance).
MPDS Protocol 33 (Transfer)	This protocol only applies to transfers out of a hospital (i.e., ER, ICU, etc.). All other requests for an ambulance should be processed using MPDS protocols 1 through 32.

Guideline 1-200-48 - EMS Dispatching: Mutual Aid

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

The closest and most appropriate ambulance shall be dispatched and respond to priority medical emergencies.

Purpose:

The purpose of this guideline is to provide maps and guidance to dispatchers to facilitate choosing the best ambulance.

Procedure:

I. When requesting resources, utilize Ambulance Locations and the following maps to determine the closest, most appropriate ambulance.

II. These are simplified boundaries based on response time calculations by Theron Becker in February 2016. KML files are available upon request for integration into GIS and CAD.

III. Polk County:

A.   All ambulances available:
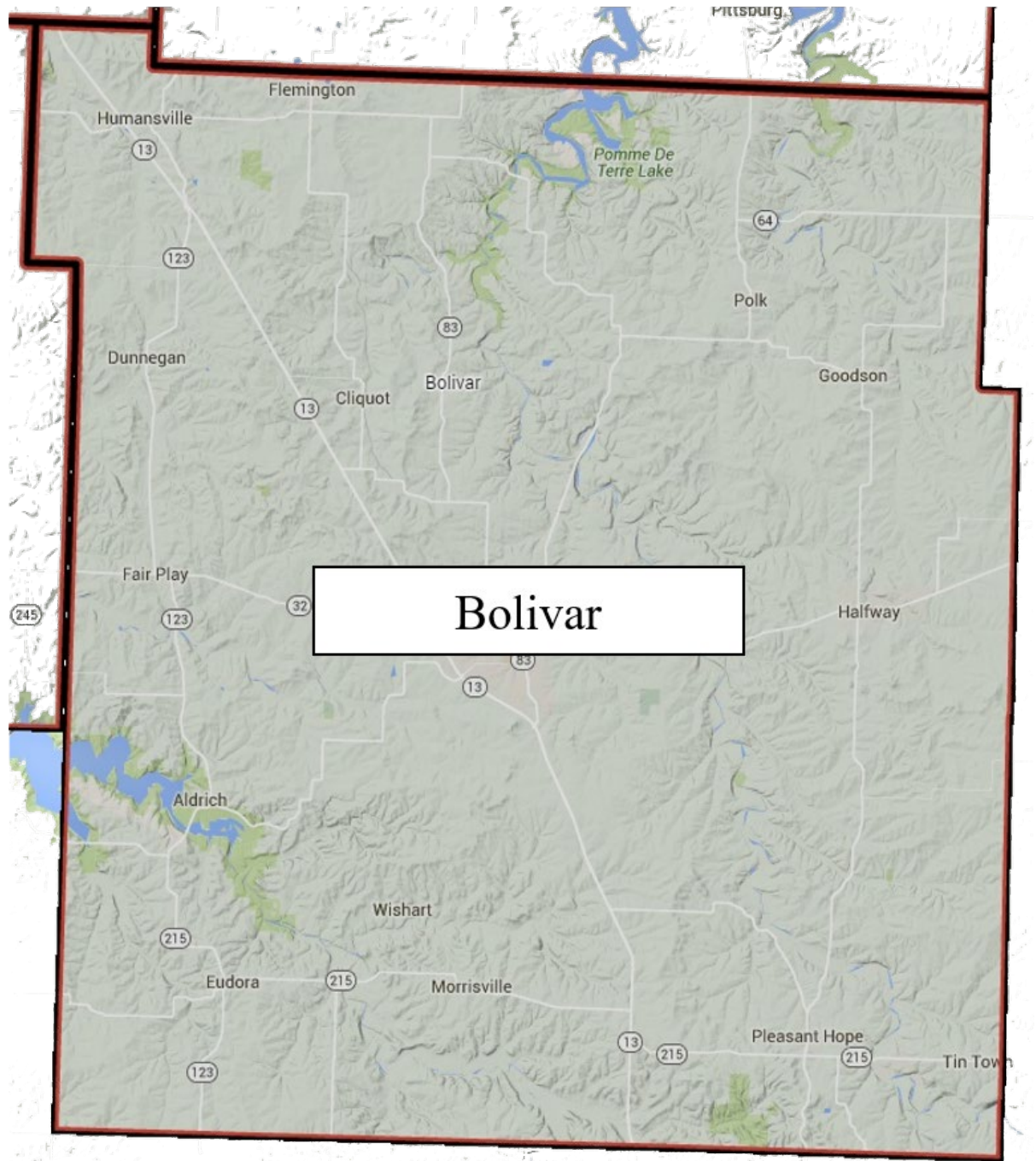
B.   Bolivar ambulances are unavailable:
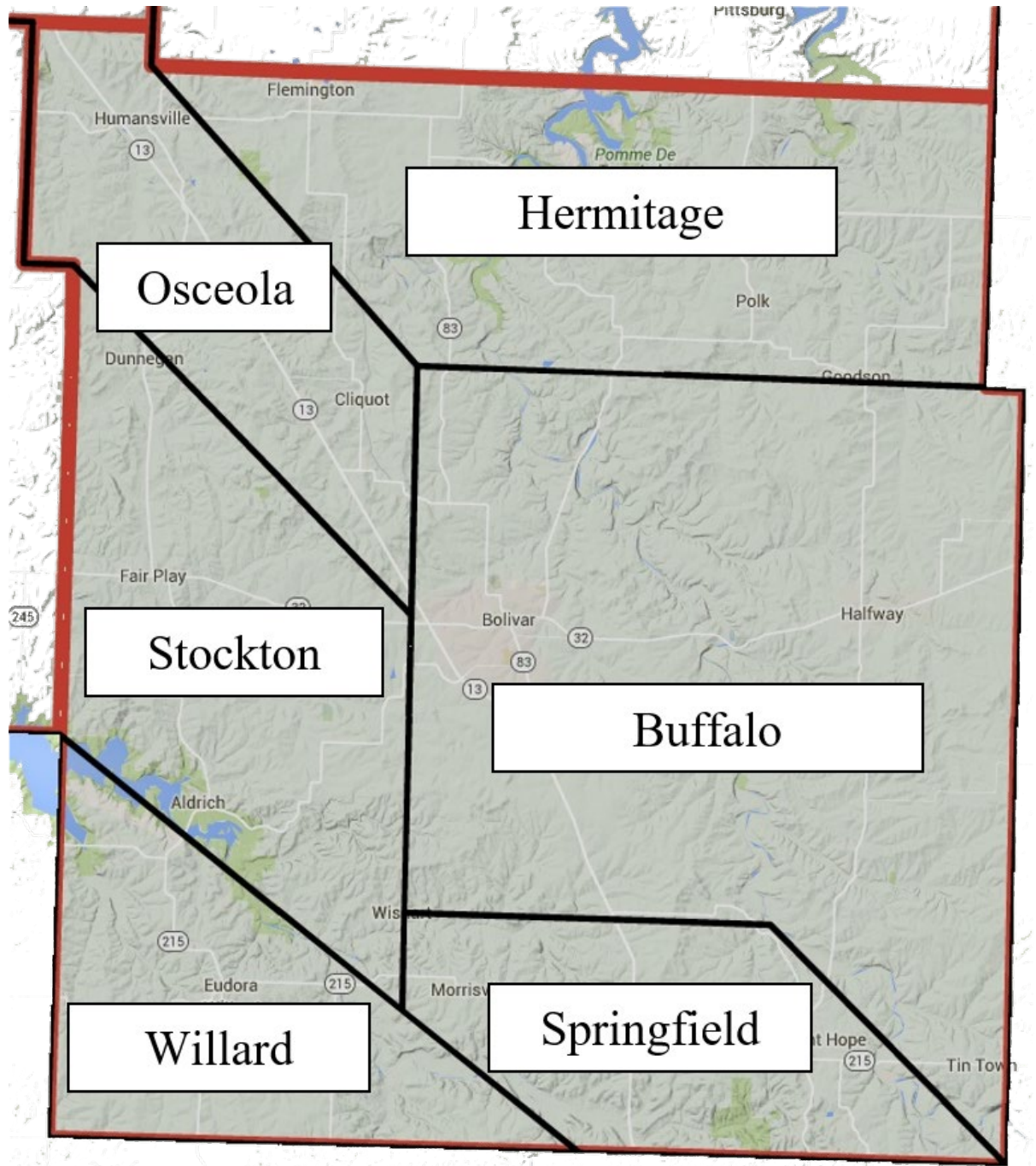
IV.   Hickory County:

A.   All ambulances available:
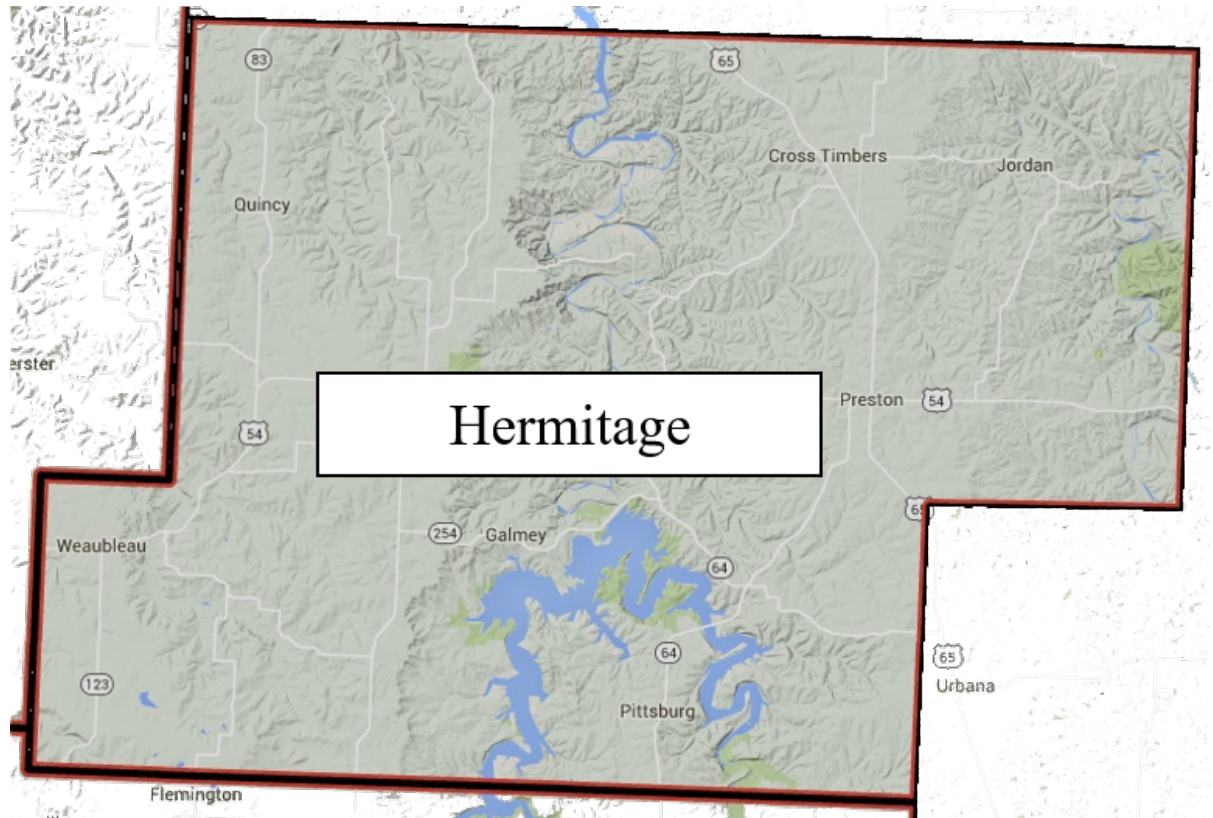
B.   Hermitage ambulance is unavailable:
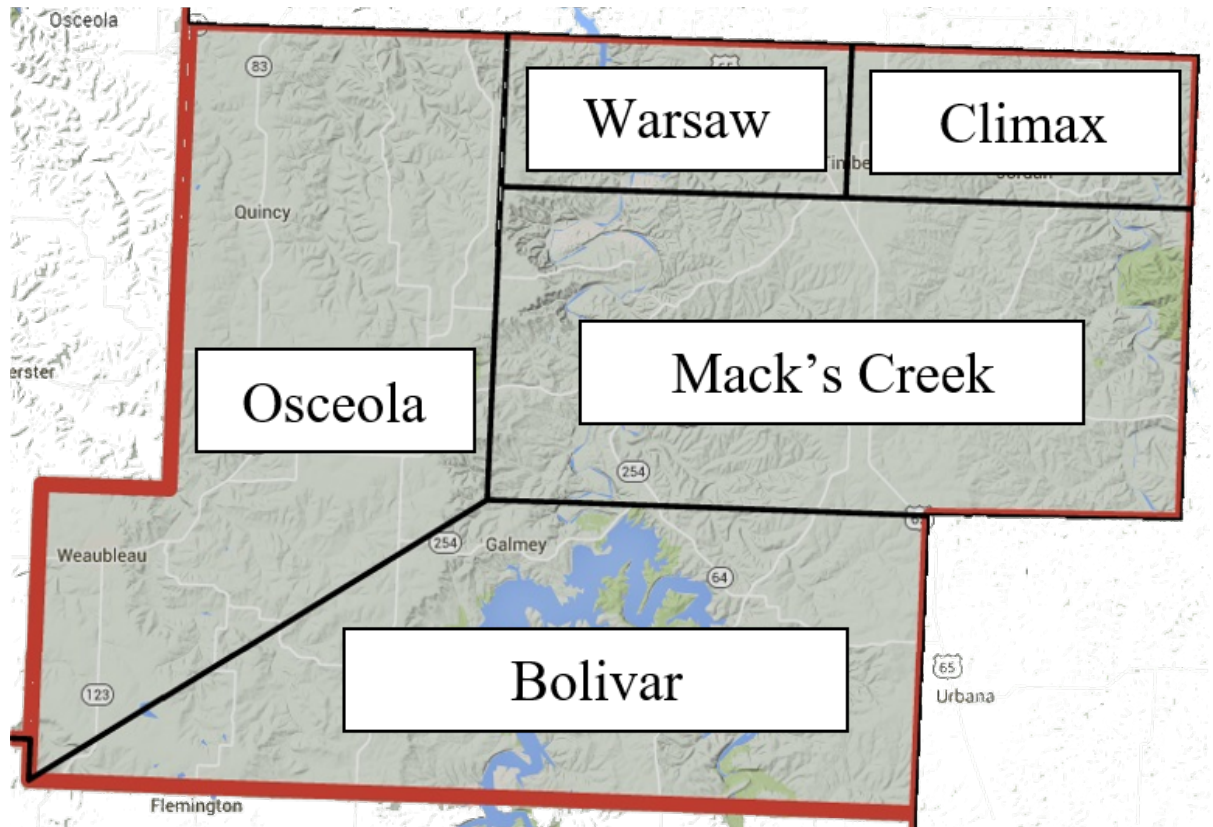
V.   Cedar County:

A.	El Dorado Springs ambulance is unavailable:

B.   Stockton ambulance is unavailable:
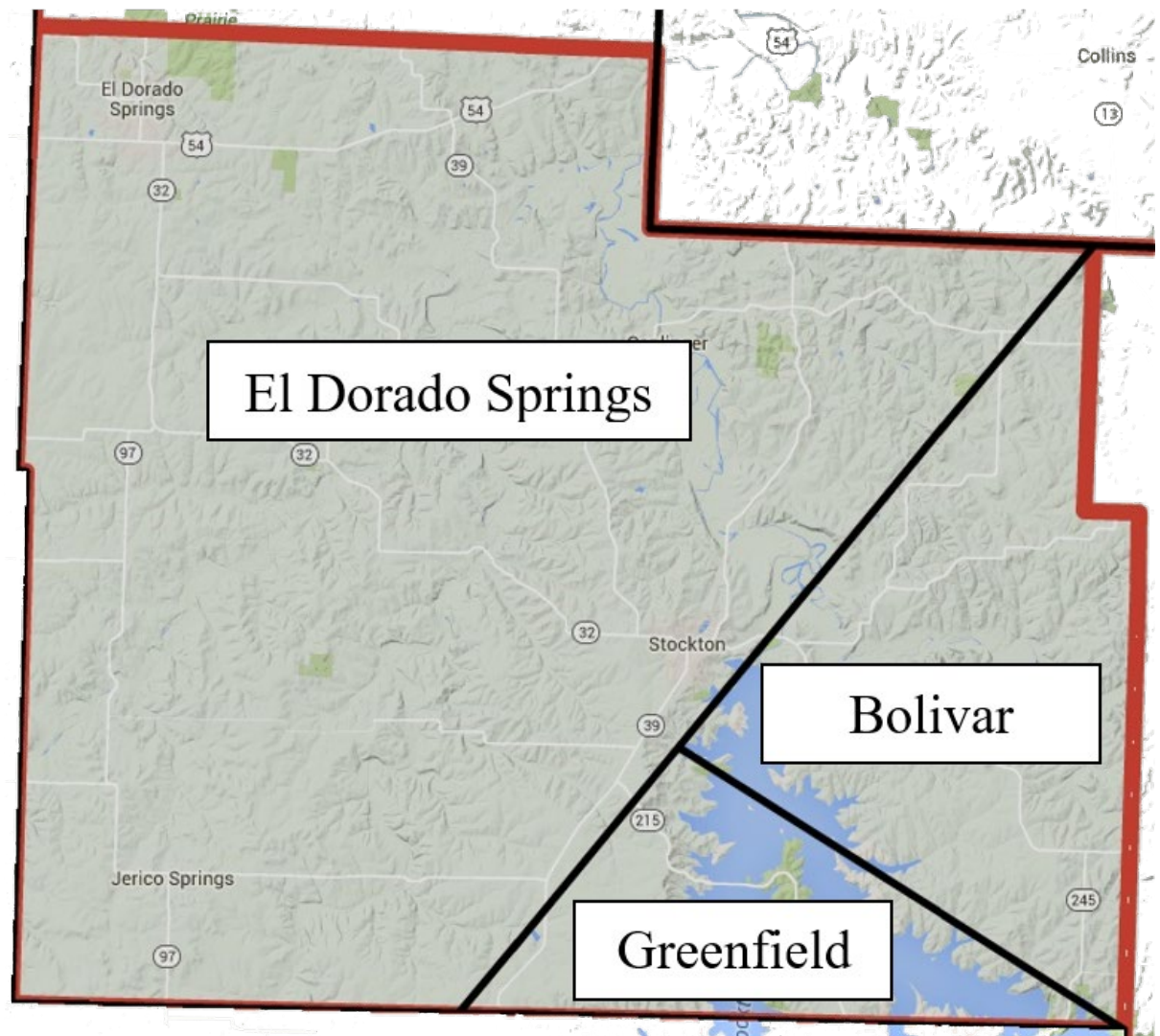
C.   Both ambulances are unavailable:
       [MAP PENDING]

VI.   St Clair County:

A. All ambulances available:
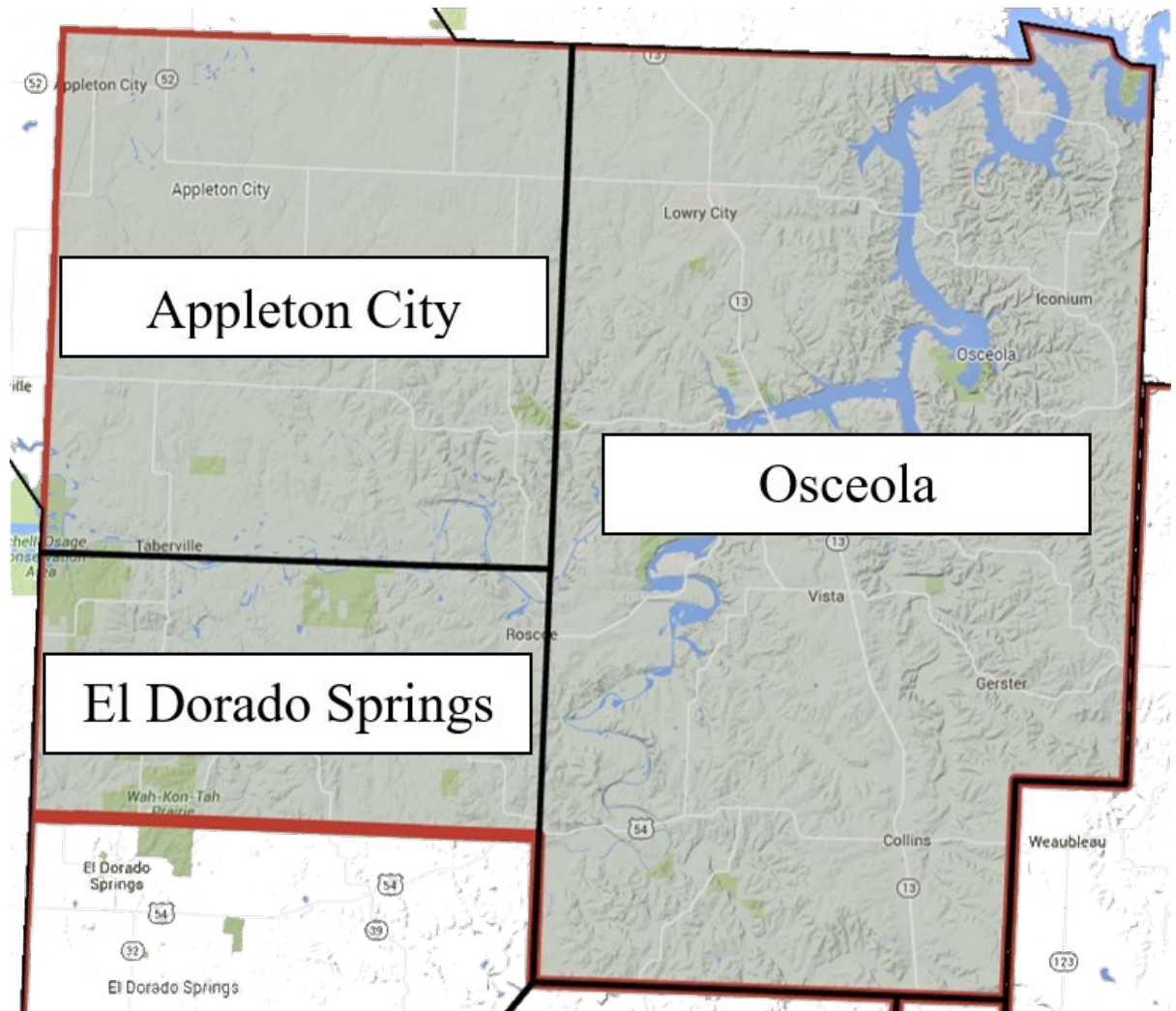
B.   Appleton City ambulance is unavailable:
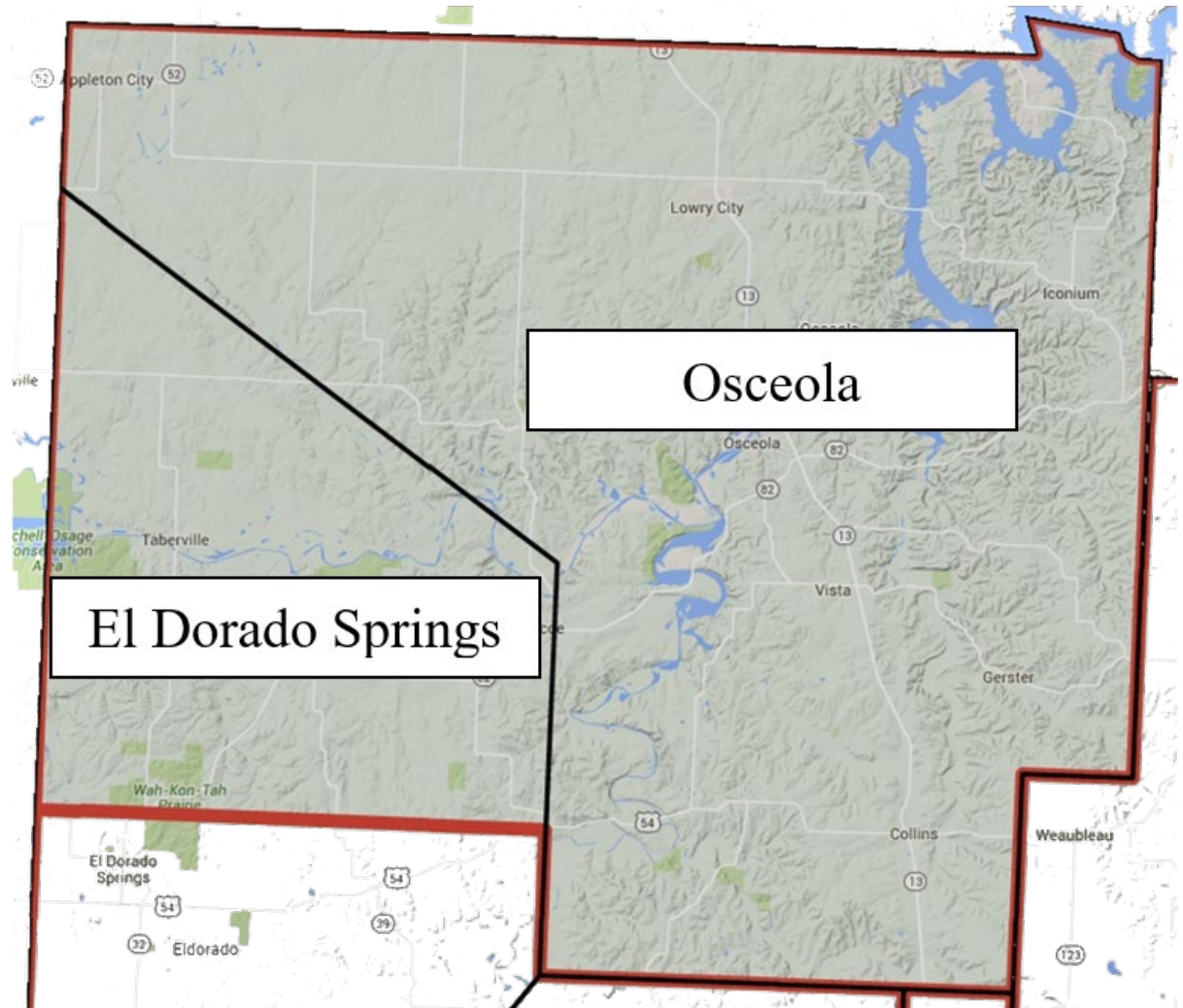
C.   El Dorado Springs ambulance is unavailable:
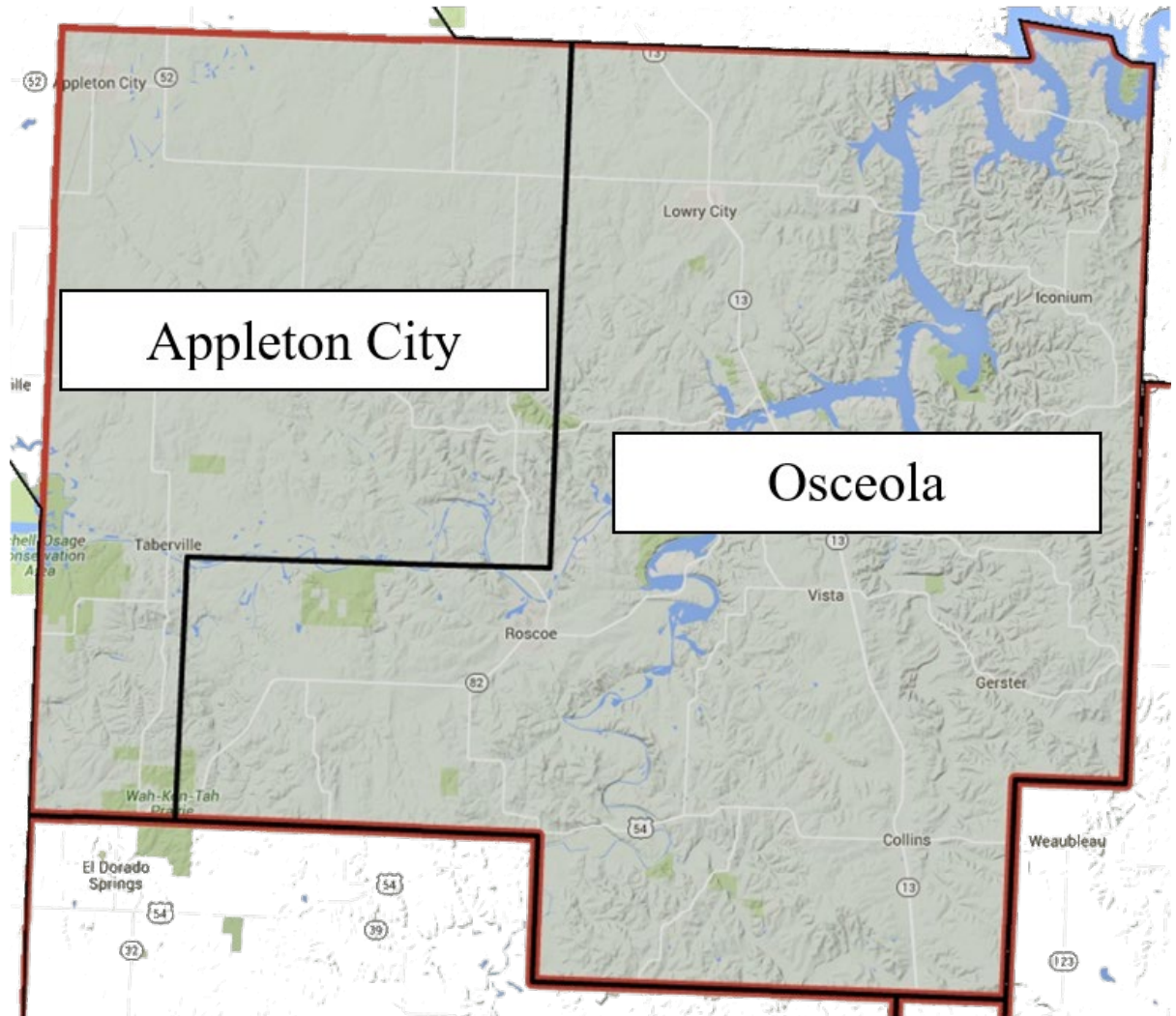
D.   Osceola ambulance is unavailable:
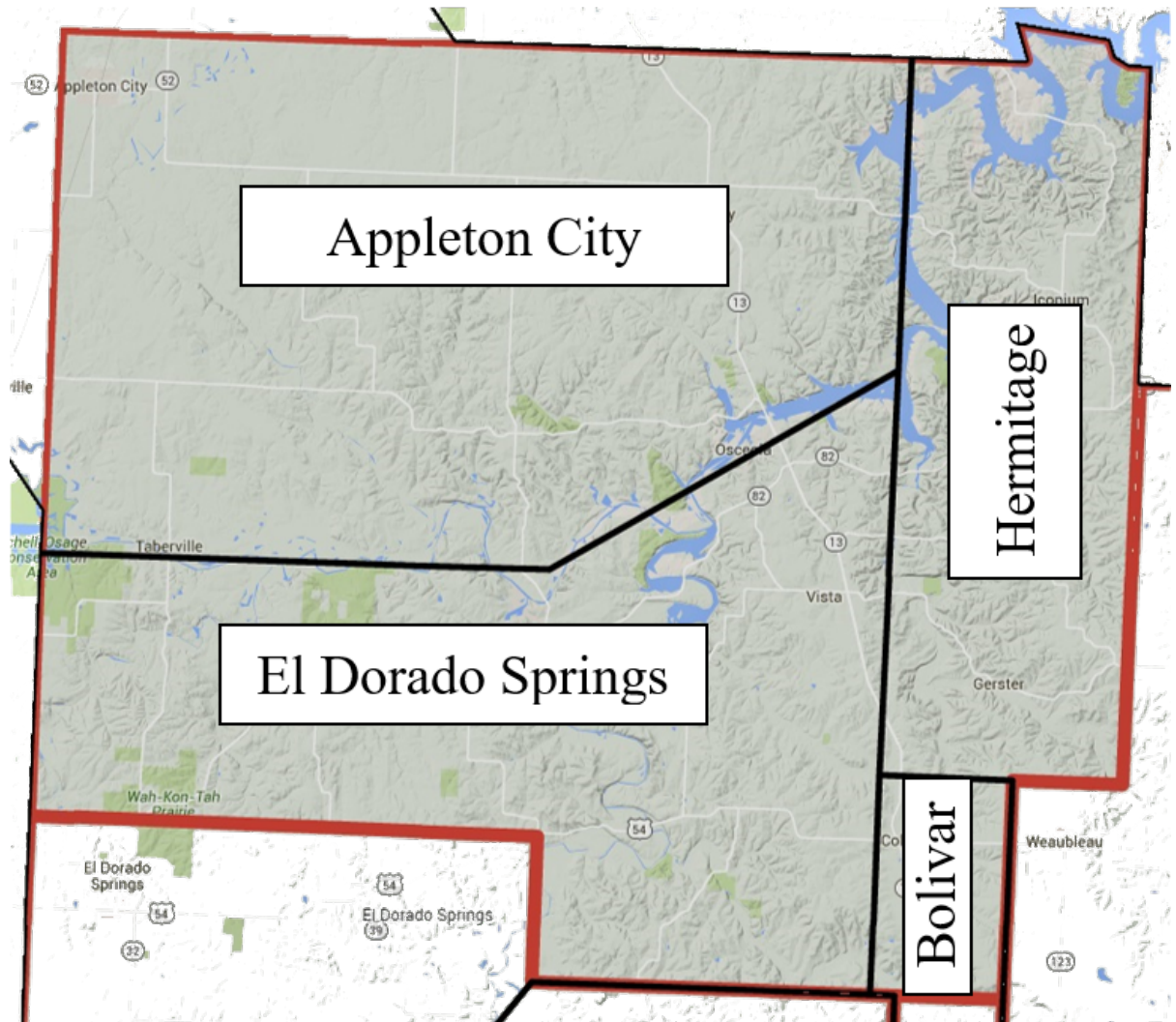
E.   None of the ambulances are available:
      [MAP PENDING]

Guideline 1-400 - EMS Communications

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

Medical personnel shall communicate to provide the best patient care and patient safety possible.

Purpose:

The purpose of this guideline is to assist staff in communicating with each other to provide exceptional patient care with an emphasis on patient safety.

Procedure:

I. Radio and emergency communications shall be made in a NIMS-compliant manner.
    A. Ambulances shall be named and numbered to reduce confusion:
        1. "**Rescue**" refers to a non-transport capable vehicle. This vehicle can have any combination of BLS, ALS, and leadership staff on board and can perform as a quick response vehicle, support vehicle, and/or command vehicle.
        2. "**Squad**" refers to a BLS-level ambulance capable of transporting a patient. NIMS type 3 or 4 ambulance.
        3. "**Medic**" refers to an ALS-level ambulance capable of transporting a patient. NIMS type 1 or 2 ambulance.

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4. "**Ops**" refers to an ALS-level ambulance with an [Ambulance Strike Team Leader](#) on board. This ambulance can be referred to as a command vehicle in addition to transport ambulance.
5. Numbering shall be by primary BEMS license assignment:
   a. **01 through 09**: Dunnegan Critical Care Unit (Polk and Hickory Counties).
   b. **10 through 19**: Cedar County Ambulance District (Cedar County).
   c. **20 through 29**: Sac Osage Hospital (St Clair County).

II. Official communication between ambulance staff members should follow the chain of command outlined in [Guideline 1-400-12 - Staff Communication Paths](#). This guideline is not meant to limit communication, only serve as a guide. There is no such thing as too much communication, regardless of the format or path.

III. Medical control contact should follow [Guideline 1-400-48 - Medical Control](#).

IV. While on duty, ambulance staff shall carry a hand-held radio.

V. Required radio communications by ambulance crews: Note, utilization of the phone for the following communications is discouraged.
   A. Start of shift check in within 15 minutes of shift start. This communication shall include vehicle assignment and crew names.
   B. While available for a call, each time a county line is crossed into or out of Polk, Hickory, Cedar, or St Clair counties. Contact both dispatch centers indicating you are leaving one and entering the other and available for call.
      1. Additionally, when leaving Springfield, contact Polk Dispatch advising location and available.
      2. If ambulance is available and mobile farther than usual from the station, advise dispatch of location and availability. Crew members must also stay together during their shift to allow for immediate response.
   C. En route to call.
   D. Unplanned stops during response or transporting.
   E. On scene at scene.
   F. Leaving the scene. If transporting, include mileage and destination facility.
   G. Arrive at destination, if applicable. Include destination mileage.
   H. Within 30 minutes of end of shift, crew may advise "EOS" to be moved to the bottom of the rotation and use this time for EOS duties.
   I. Out of service at the end of shift. If a call is pending, crews may be held by CMH PHS leadership for up to an hour to provide coverage.

VI. When dispatched to an emergency call, crews will respond without dispute. A grievance may be filed with leadership at a later time.

VII. ER radio reports should be attempted starting with at least a 15-minute ETA.

VIII. Patient handoff reports (i.e. from first responders to ambulance crew or from ambulance crew to ER staff) should follow [Guideline 1-400-72 - Patient Handoff Report](#).

Guideline 1-400-12 - Staff Communications Paths

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	No	NA
EMR	No	No	NA
EMT	No	No	Yes
AEMT	No	No	Yes
RN	No	No	Yes
Medic	No	No	Yes
CP	No	No	Yes

Guideline:

EMS personnel and leadership shall communicate frequently and efficiently to ensure safety and exceptional patient care.

Purpose:

The purpose of this guideline is to provide tools and guidance to facilitate EMS staff communications.

Procedure:

I. Staff Meetings:
   A. CMH PHS staff meetings will occur weekly on Tuesday mornings at 0830 on a rotating basis as described below:
      1. Bolivar A-week
      2. Hermitage
      3. Stockton
      4. Bolivar B-week
      5. Osceola
      6. Eldorado
II. Upstream Path:

A.   Staff → Crew Leaders through monthly rounding.
B.   Crew Leaders → Managers through monthly rounding.
C.   Managers → Chiefs through scouting reports due each Monday.
D.   Chiefs → Director through scouting reports due each Tuesday.
III.   Downstream Path:
A.   Director → Chiefs through weekly briefing each Tuesday morning.
B.   Chiefs → Managers through weekly manager meeting each Wednesday morning.
C.   Chiefs → all staff through weekly email briefing each Wednesday afternoon.
D.   Managers → Crew Leaders through weekly huddles.
E.   Crew Leaders → Staff through daily huddles at shift changes.

Guideline 1-400-48 - Communications: Medical Control

Scope:

License	Volunteer	Career	CMH
EMD	NA	No	NA
EMR	No	No	NA
EMT	No	No	Yes
AEMT	No	No	Yes
RN	No	No	Yes
Medic	No	No	Yes
CP	No	No	Yes

Guideline:

Field medical providers shall contact medical control for guidance and orders that outside scope of these protocols.

Purpose:

The purpose of this guideline is to provide tools for field medical providers to contact medical control.

Procedure:

I. Medical control is the responsibility of the highest medical-licensed provider available and needed* to be primary care provider.
    A. "Needed" level is determined by patient complaint, assessment, and care needed.
    B. Determining needed level of care is the responsibility of the highest medical-licensed provider on the scene.
II. 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.

III. Medical control is preferred to be provided by the receiving hospital. If contact cannot be made, CMH Emergency Room will be the default medical control for CMH ambulances and EMH Emergency Room will be the default medical control for EMH ambulances. Sending physician (if transfer) may also be consulted.
IV. When transporting from another facility and treatment that deviates from protocol is suggested by transferring Physician, RN/Paramedic should contact receiving MEDICAL CONTROL in the ambulance to verify orders.
V. 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.
VI. If an on-scene physician gives orders, RN/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 RN/Paramedic.
VII. Community Paramedics work in full capacity under the CMH Mobile Integrated Healthcare medical director's license.
   A. Community Paramedics follow standing orders and medical providers orders from Primary Care Providers (PCP) of each patient.
   B. If needed care is beyond standing orders or the care plan as outlined by the PCP, the Community Paramedic shall make contact with a Mid-Level Provider or Physician to obtain written or verbal orders. If PCP orders cannot be obtained, consider contacting the Emergency Room Physician.

Medical Control Contact Information:

City	Facility	Medical Control Phone
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	660-885-6690
Columbia	Boone County Hospital	573-815-8000
	University Hospital	573-882-8091
	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
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
Springfield	Cox North	417-269-3393
	Cox South	417-269-4983
	Mercy	417-820-2115
St Louis	Barnes Jewish Hospital	314-294-1403

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Guideline 1-400-72 - Communications: Patient Handoff Report

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	No	NA
EMR	No	No	NA
EMT	No	No	Yes
AEMT	No	No	Yes
RN	No	No	Yes
Medic	No	No	Yes
CP	No	No	Yes

Guideline:

Pre-arrival patient reports should be given to emergency rooms and other facilities receiving patients.

Purpose:

To provide guidelines for ESO Alerting and radio reports.

Procedure:

I.   If transporting a patient to a facility, a pre-arrival report should be given.
   A.   If the transport is a result of a transfer, a report has already been given via doctor-to-doctor, nurse-to-nurse, or other, however, an ambulance heads-up on ETA and any patient changes is polite to the receiving facility.
      1.   The transfer pre-arrival report should be done by telephone.
   B.   If the transport destination is an emergency room, make all efforts to provide a pre-arrival patient report at least a ten (10) minutes prior to arrival.
      1.   Best practice is to create a case in the **ESO Alerting** app for every patient transport. If the destination hospital does not use ESO Alerting, select "Non Transport" as the destination. Use the information you entered to formulate your radio report and then import into ESO EHR.

2. If the destination is CMH ER and time, patient condition, or other factors do not allow the use of ESO Alerting, contact should be made via the encrypted radio channel "**CMH ER Reporting**."
3. If the destination is not CMH ER and not a facility that uses ESO Alerting, contact should be made via the analog, unencrypted radio channel "**VMed28 HEAR**."
4. Another option, but should be rarely used and only as a last resort, is by telephone.

II. **ESO Alerting** procedure:
   A. Mobile devices in ambulances or personal devices may be used. No patient information is stored at any time on the device.
      1. iPads in ambulances may be logged in using "device number" + ".cmhems" (for example "12345.cmhems").
      2. Each employee has a login using "username" + ".cmhems" (for example "flast.cmhems").
      3. The agency code is "cmhems."
      4. The unit number should be "CMH" + short number (for example "CMH 1"). Do not include the full number (i.e. 701 is 1). Do not include "Ops," "Medic," or "Squad."
   B. Assume fields are NOT mandatory until the app tells you they are.
   C. **All hospitals request EMS to <u>OVER TRIAGE</u> (i.e. If your patient *might* be a TRAUMA, STEMI, or STROKE pick the appropriate TCD).**
   D. Enter the basics required for a typical radio report and add anything extra you would like.
   E. Photos of injuries or videos of assessments can be added at any time and are appreciated by ER staff. However, if you are transporting to CMH ER and want to include the ECG, only transmit via the LifePak modem through LifeNet. Do not include a photo of the ECG in ESO Alerting for CMH ER. Non-CMH destinations will need the ECG.
   F. The last page has a required field of "Case Priority." Options are 1, 2, or 3. Think of these like Red, Yellow, or Green.

Priority 1 (Red): If you are going lights and siren to the ER or this is a TCD patient, select 1 (red).	Priority 2 (Yellow): All patients that do not meet criteria 1 or 3 are 2 (yellow).	Priority 3 (Green): If this patient is appropriate for triage, select 3 (green).

   G. Keep the app open to be notified when the ER opens your report and if they send you any messages.
   H. Estimated Time of Arrival (ETA) is provided by the device's internal GPS. If prompted, select "Always Allow Location Permission."
   I. To import into EHR, open the Flowchart tab in EHR and click "Import."
   J. Nearby hospitals currently using ESO Alerting:

▪ CMH	▪ Cox Branson ▪ Cox North ▪ Cox South	▪ Mercy Springfield

K. Fields that import into EHR from Alerting:

Patient name	AVPU	Activation type
DOB	GCS	Medications given
Age	Vitals	Procedures performed
Gender		Destination hospital

III. **CMH ER Reporting** radio channel procedure:
  A. Follow the procedure below for VMed28-HEAR radio, however, patient identifying information may be provided, if needed.

IV. **VMed28 HEAR** radio channel procedure:
  A. Identify your unit and the destination hospital.
  B. Allow the receiving ER time here to divert you, if they are on diversion. All requests for diversion should be made clearly and should be repeated (i.e. "Medic 1 copies Hospital XYZ that we are being diverted."). Diversions shall be documented in EHR.
  C. Identify your patient by approximate age and gender.
  D. Identify the type of patient condition (medical or trauma) and the triage color code (see color codes in ESO Alerting section above).
  E. Report your patient's chief complaint or problem along with relevant history and the findings of assessment and exam.
  F. Report the patient's vital signs.
  G. Report medications and treatments provided and the results of those treatments.
  H. Provide an approximate ETA.
  I. If physician's orders are provided, repeat back those orders.

V. **Face-to-Face** handoff procedure:
  A. Patient handoff in the field (i.e. rescue services to transporting ambulance or ground ambulance to air ambulance) shall be conducted from the current lead provider to the provider assuming care with as little distractions as possible and face-to-face. For example, let others move the patient while verbal handoff is taking place a few steps away.
  B. Patient handoff in the emergency room shall be conducted with the receiving nursing staff with as little distractions as possible and face-to-face. Additionally, EMS crews shall make every effort to seek out the Mid-Level Provider or Physician taking responsibility for the patient and provide a high-level report directly to him or her.

Guideline 1-450 - EMS Leadership

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	No	NA
EMR	No	No	NA
EMT	No	No	Yes
AEMT	No	No	Yes
RN	No	No	Yes
Medic	No	No	Yes
CP	No	No	Yes

Guideline:

CMH PHS leaders shall be utilized to improve safety, quality of care, and efficiency while deploying ambulances and managing emergency medical resources.

Purpose:

The purpose of this guideline is to provide support to leaders and staff to formally communicate resources and processes for EMS leadership.

Procedure:

I. CMH EMS Chain of Command:
   A. Medical Director
   B. Pre-Hospital Director
   C. Clinical Chief
   D. Managers
   E. Supervisors
   F. Crew Leaders
   G. Community Paramedics (ALS FTOs have seniority)
   H. Paramedics (ALS FTOs have seniority)
   I. Registered Nurses (ALS FTOs have seniority)

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    J.   Advanced EMTs (FTOs have seniority)
    K.   EMTs (FTOs have seniority)
    L.   Drivers
    M.   New hires
    N.   Students and all other riders

II.   Crew Leader recommended duties:
    A.   The Crew Leader position is intended to serve as field supervisor to coordinate ambulance operations and support emergency and non-emergency responses in all four counties.
    B.   Be involved and dedicated to improving the service you work for and your profession.
    C.   Have an in-depth knowledge of all EMS policies, guidelines, and protocols.
    D.   Maintain situational awareness via all communication tools available (radio, Slack, vehicle tracking, etc.).
    E.   Make decisions at the lowest possible level. Be Empowered and "Just-Fix-It."
    F.   Demonstrate good clinical and professional behaviors. Enforce those behaviors when deviations witnessed. Escalate as needed to include appropriate management staff.
    G.   Complete Just Culture training and utilize Just Culture decision-making.
    H.   Ensure ESO documentation reviews are caught up. Refer to [Guideline 1-450-33 - Documentation Reviewer Reference Sheet](#).
    I.   Touch base with EMS leadership, if available and appropriate at the beginning of shift.
    J.   Contact the appropriate dispatch centers when available.
    K.   Be the point of contact for dispatch to coordinate transfers and make transfer decisions.
    L.   Crew Leaders are expected to float between all counties, as appropriate, and are not in any dispatch call rotation.
    M.   It is up to Crew Leaders to pick up calls when status zero or other issues when an additional response is needed. Refer to [Guideline 1-200 - Ambulance Dispatch](#) for a list of call types where an EMS Supervisor and/or an additional ALS ambulance might be needed.
    N.   Support staff, as available, with Echo-level, multiple patients, RSI situations, and other situations you feel you are needed.
    O.   Facilitate implementation of hold-over guideline for all crews, including yourself, as needed.
    P.   Daily activities:
        1.   Walk station and grounds. Fix or report any issues.
        2.   Follow up on daily cleaning chores to make sure being done.
        3.   Conduct staff huddles and report any issues or concerns to supervisor or manager.
        4.   Check and correct mileage on Orbcomm when ambulance comes back from Fleet.
        5.   Monitor ESO for ensure trip tickets are being completed timely.
        6.   Monitor ambulance locations.
        7.   Monitor radio traffic and Slack for ambulance status levels in all counties.
    Q.   Weekly activities:
        1.   Complete ambulance mileage report on F: drive.
        2.   Check oxygen quantities on hand.
        3.   Obtain and forward missed call report from dispatch center.
        4.   Check biohazard box and call for pickup when needed.
        5.   Monitor restock supplies.
        6.   Collect and forward receipts and invoices to manager.
        7.   Check narcotic boxes and log sheets.
        8.   Check RSI kits.
        9.   Ensure daily run logs are completed.

III.   Supervisor recommended duties (in addition to Crew Leader above):
    A.   Ensure ESO clinical reviews are caught up. Refer to [Guideline 1-800-33 - Clinical Reviewer Reference Sheet](#). Refer to [Guideline 1-800 - Quality Improvement](#) to determine which charts need reviewed.

Guideline 1-450-33 - Documentation Reviews

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	No	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

Purpose:

Procedure:

Refer to Guideline 1-700-33 - Documenter Reference Sheet for reference and definitions.

Reviewers should look for:

- LifePak download attached?
- Facesheet and other scans attached?
- **Incident tab**:
  - Incident number formatted correctly?
  - Emergent vs. Non-Emergent accurate?
  - EMD complaint and EMD Code correct? Only if EMD was used should a code be entered?
  - Responding from correctly indicates the station they were assigned and aligns with run number?
  - "Transport Due To" correct?
    - Should be "Closest Facility" unless clinical needs made it "Protocol."
    - If "Patient Choice," is there a refusal signature?
  - Receiving facility chart number correct?
  - Mileage looks appropriate?
- **Patient tab**:

- o   Complete history included?
- **Vitals tab**:
  - o   Complete set of vital signs?
- **Flowchart tab**:
  - o   If ALS provider on the crew, is "ALS Assessment" in flowchart?
- **Assessments tab**:
  - o   Laterality documented and consistent?
  - o   All treatments provided supported by assessment findings?

- **Narrative tab**:
  - o   If anything is marked UTO, has it been explained?
  - o   Narrative includes complete DRAATT information?
  - o   Lab value interpretations listed?
  - o   If transfer, details of hospital visit and reason for transfer included?
  - o   If PRC, reading the Miranda out loud documented?
  - o   If PRC, referral documented?
- **Forms tab**:
  - o   Appropriate forms been filled out?
    - ▪   Acute Coronary Syndrome?
    - ▪   Obstetrical?
    - ▪   Spinal Immobilization Screening Tool?
    - ▪   RACE Stroke Scale
    - ▪   Sepsis Screening
    - ▪   BEFAST Stroke Scale
- **Billing tab**:
  - o   CMS Service Level correct?
    - ▪   If ALS1 or ALS2, is "ALS Assessment" in the flowchart?
    - ▪   Is Immediate vs. Non-Immediate selected correctly?
  - o   If PCS transfer, is Medical Necessity and Transport completed? (*Not just "higher level of care"*)
- **Signatures tab**:
  - o   Were all signatures obtained?

Add feedback:

- Be specific, positive, and give them the benefit of the doubt.

Rating:

Rating	Can be approved for billing immediately?	Changes NEEDED?	Changes RECOMMENDED?
Poor	No	Several major	NA
Fair	No	Only a few major	NA
Good	Yes	Only a few major	or Several minor
Very Good	Yes	None	Only a few minor

Excellent	Yes	None	None

Send message:

- Send message for review and/or fixing by the documenter: Include their manager as a recipient of the message. Consider adding their partner, too.
- Open EHR and "unlock" the chart if the documenter needs to make changes.

Change status:

- Mark "approved" only if all the above answers are "yes" and it is ready to send to billing.

Send to clinical reviewer or peer counselors?:

- If you feel there were serious deviations from protocol, standard of care, or other concern, switch to "clinical review" and assign it to a clinical reviewer or other appropriate leader. Also, please send a Slack or Cortext to let them know to look for it.
- If you feel this call might cause stress to the staff (i.e. pediatric, family member, major trauma, etc.), please send a Slack or Cortext to the appropriate peer counselor.

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	No
AEMT	Yes	Yes	No
RN	Yes	Yes	No
Medic	Yes	Yes	No
CP	Yes	Yes	No

Guideline:

Each individual following these protocols shall be educated and demonstrate competence.

Purpose:

The purpose of this guideline is to establish a process and standards for responders (non CMH-employees) to acquire education and maintain emergency medical competence.

Procedure:

A. Underline Requirements: Two tables below detail requirements for those responders and staff utilizing these protocols. The first table is for first responders and ambulance staff that are not employees of Citizens Memorial Hospital Pre-Hospital Services. The second table is for staff that are employed by CMH PHS.

B. Required Licenses: Refer to the tables below for the required licenses for each responder level. Each individual is responsible for maintaining licensures as listed.

C. Required Certifications: Refer to the tables below for the required certifications for each responder level. Each individual is responsible for obtaining and maintaining certifications as listed.

D. Required Competence: Each year, a list of competency requirements will be compiled from input from Quality Program, MEDICAL CONTROL, staff, dispatch agencies, and first responder agencies.

1. Required Annual Competence: Life support competency opportunities will be available throughout the year (typically every month on the second Tuesday). Successful completion of the Life Support Competency is equivalent to a refresher certification in AHA BLS, ACLS, and PALS (if the student already possesses an unexpired certificate). New AHA certification cards along with CEU certificates will be issued upon successful completion.
2. Required Triannual Competence: At least three times per year, an educational competency will be held. Competencies will routinely be comprised of different topics offered throughout the year. Additional classroom and/or skill competencies may be required based on community and professional development needs. Competency schedule will be posted and announced at least 30 days ahead. Typically, one competency topic per trimester. Agencies may deliver the competency locally with the approval of CMH PHS. CMH PHS will offer each topic at least five times over a two-week period to allow participation. CEU certificates will be issued upon successful completion.
3. Required Monthly Competence: Each month, a protocol quiz is available to familiarize responders and staff with current protocols. Completion of each month's protocol quiz is only valid if completed within the given month (i.e. after the first day and before the last day of the month). Quizzes are open-book and may be taken as many times as necessary to obtain a passing score of at least 80%. CEU certificates will be issued upon successful completion.

E. Recordkeeping: It is the responsibility of each agency to maintain records demonstrating each responder meets these requirements.

Level	Required Licenses	Required Certifications	Required Competence
EMD	• None.	• EMD certification. • AHA Basic Life Support (BLS) certification or equivalent.	• Annual: EMDs may, but are not required, to attend life support competencies. Maintaining AHA BLS certification is sufficient. • Triannual: Annually, each EMD shall attend and successfully complete **100%** of the offered topics that year. • Monthly: Annually, each EMD shall successfully complete **100%** of the offered protocol quizzes.
EMR (volunteer)	• None.	• EMR certification. • AHA Basic Life Support (BLS) certification or equivalent.	• Annual: Same as EMD. • Triannual: Annually, each volunteer EMR shall attend and successfully complete **33%** of the offered topics that year. • Monthly: Annually, each volunteer EMR shall successfully complete **33%** of the offered protocol quizzes.
EMR (career)	• None.	• EMR certification. • AHA Basic Life Support (BLS) certification or equivalent.	• Same as EMD.

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EMT (volunteer)	• State of Missouri Emergency Medical Technician (EMT) License.	• AHA Basic Life Support (BLS) certification or equivalent.	• <u>Annual</u>: Volunteer EMTs who are not employed by CMH PHS may, but are not required, to attend life support competencies. Maintaining AHA BLS certification is sufficient. • <u>Triannual</u>: Annually, each volunteer EMT shall attend and successfully complete **66%** of the offered topics that year. • <u>Monthly</u>: Annually, each volunteer EMT shall successfully complete **66%** of the offered protocol quizzes.
EMT (career)	• State of Missouri Emergency Medical Technician (EMT) License.	• Same as volunteer EMT.	• Same as career EMR.
AEMT (volunteer)	• State of Missouri Advanced Emergency Medical Technician (AEMT) License.	• Same as career EMT.	• Same as volunteer EMT.
AEMT (career)	• State of Missouri Advanced Emergency Medical Technician (AEMT) License.	• Same as volunteer AEMT.	• Same as career EMT.
RN	• State of Missouri Registered Nurse (RN) License.	• Same as career AEMT plus... • AHA Advanced Cardiac Life Support (ACLS) certification or equivalent. • AHA Pediatric Advanced Life Support (PALS) certification or equivalent.	• <u>Annual</u>: RNs who are not employed by CMH PHS may, but are not required, to attend life support competencies. Maintaining AHA BLS, ACLS, and PALS certifications is sufficient. • <u>Triannual</u>: Same as career AEMT. • <u>Monthly</u>: Same as career AEMT.

Medic	• State of Missouri Paramedic License.	• Same as RN.	• Same as RN.

Guideline 1-600 - Employee Safety

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

Purpose:

Procedure:

EMD:

-

EMR:

-

EMT:

- Ensure completion of applicable EMR items above.
-

AEMT:

- Ensure completion of applicable EMT items above.
-

RN

Medic:

- Ensure completion of all applicable BLS items above.

Guideline 1-700 - EMS Operations

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

Ambulances shall operate and function efficiently to provide safe and exceptional patient care.

Purpose:

The purpose of this guideline is to outline procedures to be used to improve safety and efficiency in ambulance operations.

Procedure:

I. First responder personnel will assume patient care from initial patient contact until face-to-face verbal report given to transporting ambulance crew.
    A. Verbal report shall include, but not limited to: Patient history, current status, and treatments provided. Refer to Guideline 1-400-72 - Patient Handoff Report.
    B. Available documentation should also be transferred (i.e. ECGs, patient information, etc.).
II. Ambulance personnel should acknowledge within 60 seconds of call notification. The responding ambulance is expected to be en route within 60 seconds of call notification on priority 1 and priority 2 calls.
III. Ambulance 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.

IV. In a multi-patient incident, ambulance personnel will continue patient care until care can be transferred to appropriate in-coming ambulance with face-to-face verbal report.

V. In the event of mechanical difficulty or other situation requiring transferring a patient to another ambulance, CMH crew may maintain patient care in the new ambulance (even if the new ambulance is not a CMH ambulance).

VI. **While ON duty**, AEMTs, RNs, Paramedics, and Community Paramedic may provide **Advanced Life Support** according to these protocols if the following conditions are met:
1. The ALS-provider is currently licensed in the state of Missouri AND
2. The agency the provider is officially responding with is a currently licensed Emergency Medical Response Agency (EMRA) or ALS-level Ambulance Service with MO BEMS.

VII. **While OFF duty**, EMTs, AEMTs, RNs, Paramedics, and Community Paramedics currently employed with an agency that has adopted these protocols may provide **Basic Life Support** following to these protocols.
. Ensure 9-1-1 is contacted and an ambulance is responding as appropriate.

VIII. **While OFF duty**, AEMTs, RNs, Paramedics, and Community Paramedics may provide **Advanced Life Support** according to these protocols if the following conditions are met:
0. Ensure 9-1-1 is contacted and an ambulance is responding as appropriate,
1. All provisions allowing on-duty ALS care must also be met,
2. A CMH ambulance must be the transporting unit, AND
3. The ALS care rendered must be within the scope of practice of the on-duty CMH provider taking patient care (OR the off-duty ALS provider must be the ambulance attendant during transport).

IX. **Ambulance crew documentation**: Refer to Guideline 1-700-33 - Documenter Reference Sheet.

Guideline 1-700-33 - Patient Care Documentation

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	No	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

Purpose:

Procedure:

An ePCR must be completed for every EMS response (regardless of patient contact or transport status).

All PCRs shall be completed, faxed, and exported prior to end of shift unless approved by supervisor.

Appropriate documentation must be completed for each MIH encounter.

Suggested workflow:

- **Update mobile**: At the beginning of every shift, enter your credentials and click "update."
- **Lock your chart**: After writing your chart in Mobile, "Lock" it by clicking the checkmark in the top right.
- **Sync records on the dashboard**: The chart will no longer be accessible from Mobile. You can "sync" at any time to work on your chart on ESOsuite.net.
- Both "lock" and "sync" are required to finish your chart.

Incident tab:

- **Response**:
    - o Each responding ambulance needs it's own "incident number." If multiple patients per ambulance, add "A", "B", etc. to "run number."
    - o **Incident Number** configuration: 20X1234. "20" is the year. "X" is the station identifier:
        - ▪

B = Bolivar	**H** = Hermitage	**S** = Stockton	**L** = Eldorado	**C** = Osceola

    - o **Run Type**:
        - ▪ Use "911 Response" if an on-duty ambulance was needed for the response.
        - ▪ Use "Medical Transport" or "Inter-Facility Transfer" if the scene location is at a hospital and the patient is under the care of a physician.
        - ▪ Use "Standby" if a standby or public relation event. Enter the name and address in the patient data area. Narrative should explain why the ambulance was needed at the event.
    - o **Response Mode**:
        - ▪ If dispatched priority 1 or 2, select "Emergent."
        - ▪ If dispatched priority 3 or 4, select "Non-Emergent."
- **Disposition**:
    - o **Disposition: Patient treated, transferred care to another EMS professional**: Includes intercept and flight crews. Select the receiving hospital as the destination so the facility will be able to get your documentation.
    - o **Transport Due To**:
        - ▪ **Closest Facility**: Should be used as the default.
        - ▪ **Diversion**: If appropriate facility is on divert or diverted after giving radio report.
        - ▪ **Family Choice**: Similar to patient's choice, but patient unable to make decision.
        - ▪ **Insurance**: NOT USED.
        - ▪ **Law Enforcement**: NOT USED.
        - ▪ **On-Line / On-Scene Medical Direction**: Only used if transporting crew spoke directly with sending or receiving physician for orders.
        - ▪ **Other**: NOT USED.
        - ▪ **Patient's Choice**: Should only be used if patient refused closest facility AND facility recommended by protocol.
        - ▪ **Patient's Physician's Choice**: Patient being transferred by physician order.
        - ▪ **Protocol**: Should be used if closest facility was bypassed due to TCD.
        - ▪ **Regional Specialty Center**: Used in conjunction with a protocol or physician order.
        - ▪ **Cancelled**: Only if no patient contact was made.
- **Destination: Chart number**: From destination face sheet.
    - o **General info**: Epic usually uses "CSN", Cerner usually uses "FIN", and Meditech uses "Account#."
    - o **CMH**: Account number in top right of face sheet is "H" followed by 11 digits (i.e. H00001234567).
    - o **Cox**: Patient number (PT NO) in top right of face sheet is 12-digit number (i.e. 123456789012).
    - o **Mercy**: CSN number in top left of face sheet is 9-digit number (i.e. 123456789).
    - o **St Luke's**: CSN number in the top right of face sheet is 5-digit number (i.e. 12345). CSN can also be found on bottom left under the barcode.
- **Times**:
    - o **Call Closed**: This is the time back at the station. If another call, assignment, or errand is taken prior to returning to the station, the call closed time is the time that additional event is initiated. Examples: Dispatch time to a second call, arrival time on an MVA you drive up on, arrival time at a personal errand (if it will take more than a couple mintues) on your way back to the station.

Patient tab: History:

- Thoroughly complete this history section.
- Include only the previously diagnosed conditions, not the current condition (unless it has been previously diagnosed by a physician).
- Include smoking history with details of how much they currently smoke per day.

Vitals tab:

- A full set of vitals should be obtained on all patient contacts. Two full sets of vitals are preferred if patient contact is longer than 15 minutes. GCS and pain level are included in a full set of vitals.
- If 4-lead or 12-lead performed, at least one entry has ECG interpretation documented.

Flowchart tab:

- If a paramedic is present, add "ALS Assessment" and document findings on the Assessment tab.
- "BLS Assessment" is only required when COBRA form says BLS ambulance is required and if a paramedic is not present during the assessment. However, BLS Assessment can be added to any chart if one was completed.
- Include all interventions and assessments available (that were performed) in the selection lists.
- All assessment findings that require treatments available, must be listed with indications of whether they were successfully completed.

Assessment tab:

- All positive assessment findings must be listed.
- All treatments provided must coincide with an assessment finding indication as to why the treatment was needed.
- Double-check laterality. All assessment findings must indicate right- or left-sided must coincide with narrative and later documented findings of later assessments by other providers.

Narrative tab:

- **Injured**: If fall, height of fall is number of feet between part of patient that struck an object and the object he/she struck. For example, a fall from standing striking their head might be five (5) feet.
- **Narrative**: Narrative should be a picture of how all the technical information from the rest of the chart played out on the call. Should be DRAATT format in chronological order with double space between each section for easier review:
  - **Dispatch**: All details provided from initial dispatch. Examples include, but not limited to:
    - Precise nature of call at time of dispatch.
    - Was it scheduled?
  - **Response**: How crew responded and any additional information provided while en route.
  - **Arrival**: All details of the scene leading up to patient contact. Examples include, but not limited to:
    - Scene size-up: What did you find?
    - Observations that affect MOI and/or NOI.
    - Location and position patient found.
    - What is your first general impression of patient?

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- o **Assessment**: Initial patient presentation and assessment leading up to loading the patient for transport. Examples include, but not limited to:
  - Document and describe any immediate life threats.
  - Further expand on what was listed in the Assessment Tab with details of size, shape, specific location, color, odor, etc.
  - What did the patient tell you?
  - What is the patient's baseline?
  - Does the patient have decision-making ability?
  - If the patient is pregnant, details of the pregnancy are required which include gestation or due date.
  - If the patient has a prior amputation, details of the amputation are required which include which body part and location of amputation.
  - If out-of-hospital transfer, the following details are required:
    - Why does the transfer need to go by ambulance.
    - Why does the transfer need to occur (what services are not available at the sending facility).
    - What was the specific reason they are at the sending facility (i.e. diagnosis).
    - Include short description of what was done for the patient at the sending facility.
  - Discussion on ECG findings and interpretation.
  - Discussion of lab values and interpretation. Coders are not able to interpret values. This includes examples such as (but not limited to):
    - Low SpO2 must be interpreted and documented as "hypoxic."
    - Low blood sugar must be interpreted and documented as "hypoglycemic."
    - High temperature must be interpreted and documented as "hyperthermic."
    - High capnometry with shark fin Capnography must be interpreted and documented as "hypercarbic and obstructed."
- o **Treatment**: All treatments performed and the patient's response. Include treatments indicated or considered but not performed and why.
- o **Transport**: All details of patient reassessment and what happened during transport including patient hand-off to receiving provider. Examples include, but not limited to:
  - Detailed description of how moved to stretcher.
  - Clinical reason for destination or patient preference. If clinical, what was the clinical reason for that destination? *"Higher level of care" is not a clinical reason for transport. Be more specific.*
  - Describe any changes from earlier assessments.
  - Describe patient belongings and what did you do with them.

- o **If PRC**: Should be highly detailed covering all bases. Examples include, but not limited to:
  - Does the patient have the ability to understand the ramifications of the decision to refuse care?
  - If the patient does not have decision-making capacity, who is the responsible party the patient is left in care of?
  - Discussed risks, etc. with family or other concerned party. Name of party.
  - Narrative of the discussion with the patient and others (including noting what the patient repeated back to you).
  - If the patient does not have decision-making capacity, list the physician's name who was consulted when you contacted medical control.
  - "Referral" to other care must be documented (i.e. POV to ER, walk-in clinic, follow-up with PCP, etc.).

- Document the Refusal Miranda was read out-loud to the patient and/or caretaker. Refusal Miranda can be found here: Protocol 2-682 - Patient Refusal.

Forms tab:

- **Acute Coronary Syndrome Form** should be completed on all patients with chest discomfort, altered mental status, syncope, nausea, dizziness, or weakness.
- **Obstetrical Form** should be completed on all pregnant patients.
- **Spinal Immobilization Screening Tool Form** should be completed on all trauma or fall patients.
- **RACE Stroke Scale Form** should be completed on all patients with altered mental status, syncope, nausea, dizziness, or weakness.
- **Sepsis Screening Form** should be completed on all patients with altered mental status, fever, suspected infection, or weakness.
- **BEFAST Stroke Scale Form** should be completed on all patients with altered mental status, syncope, nausea, dizziness, or weakness.

Billing tab:

- **Details**:
  - **Response urgency definitions**:
    - **Immediate**: You responded "as quickly as possible to take the steps necessary to respond to the call." (i.e. you were dispatched priority 1 or 2).
    - **Non-Immediate**: "Omega" EMD codes and scheduled transfers and standbys - all other calls should be "emergency." (i.e. you were dispatched priority 3 or 4).
  - **CMS service level definitions**:
    - **ALS2**: The patient required and received:
      - At least three (3) separate administrations of one or more IV medications, OR
      - At least one (1) of the following procedures:
        - Defibrillation,
        - Cardioversion,
        - Pacing,
        - Intubation,
        - Surgical airway,
        - Chest decompression, OR
        - Intraosseous access.
    - **ALS1**: The patient required and received:
      - The complaint at the time of dispatch requires an ALS assessment and they received an ALS assessment. Refer to Protocol 2-924 - Universal Patient Care for the list of conditions requiring ALS. After the ALS assessment, the patient can be transported BLS (if appropriate) and still have a ALS1 CMS service level, OR
      - At least one ALS intervention. ALS interventions are defined by those that require an AEMT or Paramedic license to perform (with the exception of starting an IV and giving isotonic fluids).
    - **BLS**: Does not meet any of the conditions above. Only starting an IV and giving fluids does not make a patient ALS for billing purposes.
- **Transport**:
  - **Physician's Certification Statement (PCS)** should be checked "Yes" or "No" on all transfers.

- o **Reason for Transport** should be completed on all transfers. The reason must correspond with narrative and cannot only be for "higher level of care."
- o **Reason for Transport Comments** should reference comments in the narrative tab.

Signatures tab:

- **Billing Authorization**: Start with section I and only move onto the next section if you are unable to complete the previous section.
  - o **Section I**: Patient signature is required for assessment and treatment.
  - o **Section II**: If patient is unable to sign, is there a responsible party that makes decisions for the patient (i.e. facility staff or parent). Responders and EMS should NOT be signing here.
  - o **Section III**: If patient is unable to sign AND no responsible party is present, obtain EMS and facility signatures.
- **Standard Signatures**: Complete ALL the appropriate sections.
  - o **Provider Signatures**: Obtain signatures from everyone assigned to the ambulance on that shift.
  - o **Facility Signatures**: Obtain signature from the provider taking over patient care (including flight crew). If signature cannot be obtained, type the agency name and provider name and sign "via xxxx" where "xxxx" is your signature.
  - o **Refusal**:
    - ▪ This is required for all refusals including refusing all care, a specific treatment, or transport to recommended facility.
    - ▪ Witness signature is required.
  - o **PCS**: This section is not required if a hard copy of the PCS is obtained from the facility.
- **Custom Documents**: Complete ALL the appropriate sections.
  - o **Controlled Substances**: Sign and obtain witness signatures if controlled substances are accessed.

Scanning hard-copy forms:

- All hard-copy forms shall be scanned and attached to the EHR. This includes PCS forms, face sheets, etc. The process to scan attach is:
  1. Place forms on copier.
  2. Button-presses may vary from copier to copier:
     - ▪ The Bolivar variation is: Scan - Scan to Network Folder - Scan_Doc - Scan
     - ▪ The Stockton variation is: Send - Address Book - Circle - "ESO_SCAN" - OK - OK - Start
  3. Open ESO
  4. Hamburger Menu
  5. Attachments
  6. Add Attachment
  7. Browse
  8. Files should be located here: F:/Depts/Pre-Hospita/Scan_Doc then the name of the location you scanned to.

Other reference sheets:

Refer to Guideline 1-450-33 - Documentation Reviewer Reference Sheet for info on how your charts will be reviewed prior to sending to Billing.

Refer to Guideline 1-800-33 - Clinical Reviewer Reference Sheet for info on how your charts will be reviewed for clinical competence.

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Guideline 1-700-60 - Hazardous Atmosphere Standby

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	No	NA
EMR	No	No	NA
EMT	No	No	Yes
AEMT	No	No	Yes
RN	No	No	Yes
Medic	No	No	Yes
CP	No	No	Yes

Guideline:

Ambulances may be utilized on the scene where emergency personnel are engaged in highly dangerous activities.

Purpose:

The purpose of this guideline is to outline procedures to be used when an ambulance is requested to stand by in the event of emergency responders operating in an Immediately Dangerous to Life and Health (IDLH) atmosphere.

Procedure:

I. 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.

II. If Incident Commander requests ambulance to be dedicated and remain on the scene, contact the supervisor or Crew Leader.

III. Once on scene, check in with the Staging Officer or Incident Commander.

IV. 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.
V. Ambulance crew duties are to care for civilians, bystanders, and/or responders that require treatment and/or transport for an injury or illness.
VI. 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.
VII. **Persons with smoke inhalation**: Refer to Protocol 2-352 - Exposure: Cyanide.
VIII. Rehab of responders, baseline vitals, hydration, etc. shall preferably be conducted by fire department and/or emergency management personnel. **"Assistance" with rehab duties as assigned within fire department policies which may include**:
    A. Encourage removal of PPE, rest, passive cooling, and oral hydration.
    B. Prior to returning to activity, obtain and record vitals. If vitals are outside the limits below, **suggest** further rest.
        1. SBP greater than 200.
        2. Pulse greater than 110.
        3. Respirations greater than 40.
        4. Temperature greater than 101.
        5. PulseOx less than 90%.

Guideline 1-800 - Quality Improvement

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

Documentation and clinical documentation shall be reviewed to ensure quality patient care.

Purpose:

Guidelines for documentation review is to ensure exceptional and compassionate care is being provided and documented.

Procedure:

Ongoing in-house quality improvement must include review of documentation by management staff to ensure clinical competence, protocol compliance, appropriate patient care, and liability reduction.

These reviews must be shared in a timely manner with the individuals reviewed for future improvements.

Refer to Guideline 1-800-33 – Clinical Reviewer Reference Sheet.

In the event, clinical issues or concerns are found, refer to Guideline 1-800-66 - Employee Remediation.

Refer to specific licensure levels for minimum review rates.

EMD **Monthly, each agency must review reports by EMDs:**

	• The first ten (10) reports by newly hired or newly certified EMDs should be reviewed for documentation and clinical correctness. • 10% documentation review. • 50% clinical review.
EMR	**Monthly, each agency must review reports by EMRs**: • The first ten (10) reports by newly hired or newly certified EMRs should be reviewed for documentation and clinical correctness. • At least 0% documentation review of a random sampling. • At least 10% clinical review of a random sampling.

EMT	**Monthly, each agency must review reports by EMTs**:
	
	• The first ten (10) reports by newly hired or newly licensed EMTs should be reviewed for documentation and clinical correctness.
	• **Monthly, each agency must review reports by volunteer EMTs**:
	    o At least 25% documentation review of a random sampling.
	    o At least 10% clinical review of a random sampling.
	• **Monthly, each agency must review reports by career EMTs**:
	    o At least 50% documentation review of a random sampling.
	    o Select the lowest scoring documenters and clinicians from previous months for 100% clinical review. Select as many individuals as needed to get total clinical review to at least 10% of all requests for service.

AEMT	**Monthly, each agency must review reports by AEMTs**:
	
	• Ensure completion of applicable EMT items above.
	• The first 15 reports by newly hired or newly licensed AEMTs should be reviewed for documentation and clinical correctness.
	• **Monthly, each agency must review reports by AEMTs**:
	    o At least 75% documentation review of a random sampling.
	    o Refer to EMT section above for individual selection to meet 10% review rate.

RN	**Monthly, each agency must review reports by RNs**:
	
	• The first 20 reports by newly hired or newly licensed RNs should be reviewed for documentation and clinical correctness.
	• **Monthly, each agency must review reports by RNs**:
	    o At least 100% documentation review.
	    o At least 50% clinical review of calls where the patient was transported lights and siren and/or transported by air ambulance.
	    o At least 50% clinical review of the following diagnoses:
	        ▪ Cardiac Arrest
	        ▪ Sepsis
	        ▪ Stroke
	        ▪ STEMI

- ▪ Critical Trauma
- • Specifically, review trauma patients where a c-collar was indicated according to Protocol 2-836 - Spinal Immobilization Clearance.
  - o At least 75% clinical review of the following treatments:
    - ▪ Cardioversion, defibrillation, or pacing.
    - ▪ Intubation (attempted or successful) or cases where RSIshould have been used but was not (i.e., GCS less than eight with BVM for prolonged periods).
  - o At least 100% clinical review of the following treatments:
    - ▪ RSI (attempted or successful) or paralytics administered (i.e, Rocuronium, Succinylcholine, or Vecuronium.
    - ▪ Ketamine administered.
  - o Refer to EMT section above for individual selection to meet 10% review rate.

Medic

Monthly, each agency must review reports by Paramedics:

- • The first 20 reports by newly hired or newly licensed Paramedics should be reviewed for documentation and clinical correctness.
- • **Monthly, each agency must review reports by Paramedics**:
  - o At least 100% documentation review.
  - o At least 50% clinical review of calls where the patient was transported lights and siren and/or transported by air ambulance.
  - o At least 50% clinical review of the following diagnoses:
    - ▪ Cardiac Arrest
    - ▪ Sepsis
    - ▪ Stroke
    - ▪ STEMI
    - ▪ Critical Trauma
      - ▪ Specifically, review trauma patients where a c-collar was indicated according to Protocol 2-836 - Spinal Immobilization Clearance
      - ▪ .
  - o At least 75% clinical review of the following treatments:
    - ▪ Cardioversion, defibrillation, or pacing.
    - ▪ Intubation (attempted or successful) or cases where RSI should have been used but was not (i.e., GCS less than eight with BVM for prolonged periods).
  - o At least 100% clinical review of the following treatments:
    - ▪ RSI (attempted or successful) or paralytics administered (i.e, Rocuronium, Succinylcholine, or Vecuronium.
    - ▪ Ketamine administered.
  - o Refer to EMT section above for individual selection to meet 10% review rate.

CP

Monthly, each agency must review reports by CPs:

- • The first 20 reports by newly hired or newly licensed CPs should be reviewed for documentation and clinical correctness.
- • **Monthly, each agency must review reports by CPs**:
  - o At least 10% documentation review.
  - o At least 10% clinical review of all client encounters.

Guideline 1-800-33 - Clinical Reviews

CMH EMS & MIH Protocols

Scope

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

Purpose:

Procedure:

Refer to Guideline 1-450-33 - Documentation Reviewer Reference Sheet.

Refer to Guideline 1-700-33 - Patient Care Documentation for reference and definitions.

Refer to Guideline 1-800 - Quality Improvement to determine which charts should be reviewed.

Reviewers should look for:

- o **All charts**:
  - o In general, if there is a fill-in spot or drop-down for something, it should be documented there, not the narrative.
  - o Review the appropriate protocol and determine minimum treatments were provided.
  - o Review the narrative. Were all parts of DRATT included?
- o **Trauma**:
  - o C-collar and SMR applied according to Protocol 2-836 - Spinal Immobilization Clearance
  - o ?
  - o Appropriate vascular access?

- Oxygen administered appropriately?
- TXA administered, if appropriate?
- Was the patient warmed?
- Scene time and landing zone time kept to a minimum?
- Transported according to Protocol 2-924 - Universal Patient Care?
  - **Protocol 2-044 – Airway: RSI or airway needed**:
    - Treated according to Protocol 2-044 – Airway: RSI?
    - Was RSI appropriate? Was RSI needed and not provided?
    - Medications given correctly?
    - Attempts, placement, confirmation, etc. documented?
  - **Protocol 2-440 - Fever / Sepsis:**
    - Treated according to Protocol 2-440 - Fever / Sepsis?
    - Temperature recorded?
    - Capnography recorded?
    - Source of infection investigated?
    - LR fluid bolus appropriately given?
    - Blood sugar checked and managed appropriately?
    - Scene time and landing zone time kept to a minimum?
    - Transported appropriately?
  - **Protocol 2-220 - Chest Pain / Suspected Cardiac Event**:
    - Treated according to Protocol 2-220 - Chest Pain / Suspected Cardiac Event?
    - Aspirin within time goal?
    - 12-lead within time goal?
    - Scene time and landing zone time kept to a minimum?
    - Transported according to Protocol 2-220 - Chest Pain / Suspected Cardiac Event?
  - **Protocol 2-880 - Suspected Stroke**:
    - Treated according to Protocol 2-880 - Suspected Stroke?
    - Blood sugar checked?
    - NIHSS completed?
    - Last known well time documented?
    - Scene time and landing zone time kept to a minimum?
    - Transported according to Protocol 2-880 - Suspected Stroke?

Add feedback:

- Be specific, positive, and give them the benefit of the doubt.

Rating:

Rating	Followed protocol?	Patient care issues?	Met quality measures?
Poor *	No	Several minor or a few critical	NA
Fair	No	A few minor	NA
Good	Yes	None	Met goal
Very Good	Yes	None	Slightly exceeded goal

Excellent	Yes	None	Significantly exceeded goal

Send message:

- Send message for review by the documenter: Include their manager as a recipient of the message. Consider adding their partner, too.
- If "Poor" rating is given, include Clinical Chief as a message recipient. Refer to [Guideline 1-800-66 - Employee Remediation](#).

Change status:

- Mark "CLOSED."

Guideline 1-800-66 - Quality Improvement: Employee Remediation

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

Emergency medical staff shall maintain high levels of competence and when those levels drop below acceptable standards, procedures must be followed to identify causes, improve staff competence, and reduce future occurrences.

Purpose:

The purpose of this guideline is to establish procedures to identify causes of low clinical performance and suggest methods of improving performance.

Procedure:

Triggers for this guideline to be used include but not limited to:

- A "poor" rating is given during a clinical chart review (see Guideline 1-800-33 - Clinical Reviewer Reference Sheet).
- Recommendation by Manager or Chief.

Step 1: Identify the cause.

Step 2: Improve staff competence.

- "Support employee in decision" or "Investigate system cause" recommended from Just Culture Investigation:
    1. Develop a plan for follow-up and deadlines.
    2. Consider discussion with the Medical Director.
    3. Consider an agenda item in the next Manager Meeting.
    4. Consider an agenda item in the next Equipment Committee Meeting.
    5. Consider an agenda item in the next Protocol Committee Meeting.
- "Consider punitive action" or "Consider reassignment or termination" recommended from Just Culture Investigation:
    1. Consider progressive discipline to include coaching, DESK, written warning, or other actions with Human Resources Department.
    2. Consider assigning self-educational task such as research and recommendations for protocol or staff education. Establish a deadline for completion.
    3. Consider assigning a repeat of initial education (i.e. full 16-hour ACLS class). Establish a deadline for completion.
    4. Consider remediation shifts with FTOs, Crew Leaders, and/or Managers. Remediation shifts could be on the ambulance, in the ER, or other locations. Establish a deadline for completion.
    5. Consider scheduling one or more high-fidelity simulation labs to improve critical thinking and/or skills.
    6. Consider scheduling a review meeting with the Medical Director.
    7. Consider other items not included on this list.

Step 3: Reduce future occurrences.

- Consider adding additional surveillance or clinical review rules to monitor future occurrences.

Guideline 1-850 - Rescue Task Force

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

Purpose:

Procedure:

EMD:

- **Tier one incident (threat of MCI)**: Dispatch primary agency and notify secondary agency [Supervisors](#).
- **Tier two incident (incident with less than six casualties)**: Dispatch all in-county on-duty agency resources and notify all [Supervisors](#).
- **Tier three incident (MCI with six or more casualties)**: Dispatch on-duty agency resources, notify [Supervisors](#), and follow mutual aid protocols.

EMR:

- Responders do not have an obligation to put themselves in danger. It is the discretion of the crew to enter an unsafe scene in coordination with unified command. Available information, resources, situational awareness, and a risk-vs-benefit analysis should determine actions.
- Wear high-visibility and retro-reflective apparel when appropriate.
- **PREPARATION**:

- o Assemble Rescue Task Force (RTF). Minimum of one (1) Threat Elimination Specialist (TES) assigned to EMS, but four is preferable.
- o Gather the bare minimum equipment to perform lifesaving medical interventions and personal protective equipment.
- o Medical functions of the RTF shall conduct radio communications on **VTAC12**.
- **DIRECT THREAT CARE** (Hot zone - Immediate threat may exist):
  - o Instruct responsive TES to continue advancing toward eliminating the active threat and to provide self-aid.
  - o Instruct ambulatory casualties to move to cover and provide self-aid.
  - o Control massive hemorrhage with [Tourniquet](#).
  - o Consider moving unresponsive to cover and position to maintain airway.
- **INDIRECT THREAT CARE** (Warm zone - Secondary threats may exist):
  - o All weapons on the casualty should be rendered safe and secure.
  - o Establish casualty collection point(s) and perform hasty triage.
  - o Conduct abbreviated patient assessment and perform interventions to stabilize patient for extrication. Do not delay extraction for non-life-threatening interventions.
  - o **MARCH**:
    - ▪ **Major hemorrhage control**: Consider [Tourniquet](#) and/or [Hemostatic Agent](#).
    - ▪ **Airway management**: Positioning, [NPA](#)
    - ▪ **Respirations**: Consider vented occlusive dressing.
    - ▪ **Circulation**.
    - ▪ **Head/Hypothermia**: Treat life-threatening [Head Trauma](#) and prevent [MEDICAL CONTROL](#).
- **EVACUATION**:
- Reassess all patients and initiate transports as appropriate.

EMT:

- Ensure completion of applicable EMR items above.

AEMT:

- Ensure completion of applicable EMT items above.
- Consider IV LR fluid bolus after addressing active bleeding.

RN

Medic:

- Ensure completion of all applicable BLS items above.
- **MARCH**:
  - o **Major hemorrhage control**.
  - o **Airway management**: Consider [Intubation](#).
  - o **Respirations**: Consider [Decompression Needle](#).
  - o **Circulation**:
    - ▪ Consider IO LR fluid bolus after addressing active bleeding.
    - ▪ Consider TXA 1 g in 100 ml LR over 10 min if major injury AND signs of shock.
  - o **Head/Hypothermia**: Treat life-threatening [Head Trauma](#) and prevent [MEDICAL CONTROL](#).

- **If it will not delay extraction**: Refer to [Protocol 2-660 - Pain Control](#).

Guideline 1-850-25 - Mass Casualty

CMH EMS & MIH Protocols

Scope:

License	Volunteer	Career	CMH
EMD	NA	Yes	NA
EMR	Yes	Yes	NA
EMT	Yes	Yes	Yes
AEMT	Yes	Yes	Yes
RN	Yes	Yes	Yes
Medic	Yes	Yes	Yes
CP	Yes	Yes	Yes

Guideline:

A mass casualty incident is defined as an incident with six (6) or more patients or an incident that exceeds the resources available.

Purpose:

To allow resources to be attained and coordinated at a mass casualty incident.

Procedure:

I. A mass casualty incident is defined as greater than five (5) patients.
II. EMS responders should follow National Incident Management System (NIMS) guidelines and coordinate with Incident Command (IC) or participate with Unified Command (UC).
III. EMS scene communications should be conducted on **VTAC12**.
IV. Upon arrival and/or when determination that a mass casualty incident has occurred, EMS staff shall ensure potential receiving Emergency Rooms (ER) will be notified of potential patient surge.
V. Ambulance personnel should prioritize transporting patients to the ER and returning to the scene. On-scene and at-destination activities such as triage and treatment should be limited or eliminated.
   A. Ambulance staffing and ambulances should always be moving while patients remain on the scene. Only take an ambulance out of service for on-scene activities as a last resort.
   B. Consider not getting out of the ambulance. Patients should be directed and assisted into the ambulance quickly. Once the ambulance is full, initiate transport.

VI.   If appropriate, medical officers may be established. However, transport of mass casualty patients to the appropriate facilities should be a priority.

     A.   A medical command officer (sector chief) may be established to organize EMS response and interface with UC.
     B.   A triage officer may be established to prioritize patient treatment, transport, transport methods, and destination.
     C.   A transport officer may be established to facilitate and coordinate incoming and outgoing ground and air ambulances.
     D.   In the absence of one or more established officers, the following tasks should be completed by on-scene EMS staff:
          1.   Establish command, if none exists.
          2.   Size up the scene noting hazards and number of patients.
          3.   Ensure mitigation of hazards that might include power lines, hazardous materials, violent subjects, etc.
          4.   Communicate appropriate sizup information to incoming units and destination facilities.
          5.   If appropriate, utilize SALT triage method to sort patients into those needing treatment and transport first.
          6.   If appropriate, establish casualty collection points.
          7.   Facilitate rapid flow of patients from injury site to destination facilities.
          8.   Coordinate incoming and outgoing ground and air ambulances.
          9.   Attempt to document patient information (number, severity, treatments, and destination).
VII.   Ambulances sitting on the scene not being used as transport should be limited as much as possible. Consider loading ambulances with multiple patients with less emphasis on triaging on the scene to facilitate transporting more patient quickly to appropriate facilities. Patients waiting on transport by ambulance will likely find their own transport methods to destinations not capable to handle their needs.

Equipment – Backboard

Indications:

- Spinal Immobilization Clearance.

Contraindications:

- Spinal Immobilization Clearance.

Precautions:

- 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 and back in the original position of the deformity.

Procedure:

- Assess distal pulse, motor, and sensation.
- Maintain manual stabilization, measure, size, and secure cervical collar.
- Seated patient: Consider KED.
- If no posterior injuries suspected: Eight-person lift a few inches and slide board underneath or use scoop stretcher.
- 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.

Equipment – BAMM

Indications:

- As an adjunct to blind nasotracheal intubation in the patient with spontaneous respirations.
- As aid to re-confirming airway patency or re-assessing respiratory effort in the intubated patient with respiratory effort. This device is not to be used as the primary method for assessing airway patency in the intubated patient.

Contraindications:

- Apnea or inability to hear device during endotracheal tube insertion.

Precautions:

- An unobstructed endotracheal tube with its tip located in the pharynx can also produce the whistle sound, therefore, it is important to always confirm placement in the trachea.
- Due to the narrow aperture of the BAAM device, it is never to be left attached to the endotracheal tube for greater the 15 seconds at any time for assessment of the previously intubated patient. Partial airway obstruction, hypoxia and increased airway pressure can occur if left in place for prolonged periods of time.

Instructions:

- Attach the orange BAAM device to the 15 mm adaptor of the appropriate sized endotracheal tube, the device will attach only one-way to the tube.
- Pre-oxygenate and/or ventilate while preparing the patient for nasotracheal intubation.
- Perform nasotracheal intubation. As the ET Tube nears the larynx an audible increase in whistling will be heard from the device, indicating that the tip of the endotracheal tube is near the entrance to the trachea.
- Carefully advance the endotracheal tube through larynx into the trachea when device and airway sounds are at their peak. Confirm that successful intubation has occurred.
- Once intubated, quickly remove the BAAM device and begin ventilating the patient.
- Confirm tube placement by visualization, auscultation, and waveform Capnography.

Equipment – Bandage

Indications:

- For use in wound care and splinting.

Instructions:

- Use the desired product, either Coban, Kerlex, Kling, or triangle bandage to appropriately bandage patient injuries.

Equipment – Blood Pressure Cuff

Indications:

- Used to assess a patient's blood pressure.

Contraindications:

- None in the emergency setting.

Precautions:

- Do not pump cuff up to maximum pressure to avoid rupturing cuff.

Procedure:

- Select appropriately sized cuff for patient.
- Wrap cuff around patient's upper arm. (Alternative sites are lower arm, calf, and thigh.)
- Close valve to allow pump to fill bladder and increase pressure in the cuff.
- Measure blood pressure by use of a stethoscope placed in the antecubital space to auscultate korotkoff sounds.
- The first korotkoff sound heard as the cuff pressure reduces is the systolic pressure. (Alternatively the first radial pulse palpated at the cuff pressure, that is visualized while feeling a radial pulse, is the systolic pressure.)
- The second korotkoff sound hear is the cuff pressure reduces is the diastolic pressure.
- Fully deflate the cuff after the last sound is heard and remove the cuff from the patient's arm.

Equipment – Bougie

Contraindications:

- Age less than 8 years.
- Use of a 6.0 or smaller ET tube.

Procedure:

- Lubricate Bougie.
- Using a Laryngoscope and standard ET 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 positive hold up at the carina or in the right mainstem bronchia.
- Esophageal placement will yield the ability to advance Bougie completely without resistance.
- While maintaining the Laryngoscope and Bougie in position, an assistant threads an ET tube over the end of the Bougie. The assistant then holds the Bougie.
- Rotate ET tube one-quarter turn and advance through cords.
- Inflate ET cuff, remove Bougie and Laryngoscope.
- Confirm placement with auscultation and Capnography.

Equipment – BVM

Indications:

- The Ambu® SPUR® II resuscitator is a single patient use resuscitator intended for pulmonary resuscitation.
- The range of application for each version is:
    - Adult: Adults and children with a body weight more than 30 kg (66 lbs).
    - Pediatric: Infants and children with a body weight up to 30 kg (66 lbs).
    - Infant: Neonates and infants with a body weight up to 10kg (22 lbs).

Contraindications:

Precautions:

- Never override the pressure-limiting valve (if available) unless medical and professional assessment indicates the necessity. High ventilation pressures may cause lung rupture to certain patients. If the pressure-limiting valve is overridden in patients with a bodyweight less than 10 kg (22 lbs.), a manometer must be used to monitor the ventilation pressure to avoid the possibility of a lung rupture.
- For use by trained personnel only.
- The proper application of a facemask to obtain tight seal should be trained in particular.
- Always watch the movement of the chest and listen for the expiratory flow from the valve in order to check the ventilation efficiency.
- Insufficient, reduced, or no airflow may result in brain damage to the patient being ventilated.
- Do not use the resuscitator in toxic or hazardous atmosphere.
- For single patient use only. Use on other patients can cause cross infection.
- Do not soak, rinse, or sterilize this device as these procedures may leave harmful residues or cause malfunction of the device. The design and material used are not compatible with conventional cleaning and sterilization procedures.
- Never store the resuscitator in a deformed state other than as folded when delivered by the manufacturer, otherwise permanent distortion of the bag will occur which mayreduce the ventilation efficiency. The folding zone is clearly visible on the bag (only Adult and Pediatric versions may be folded).
- The O2 reservoir bag on the Adult and Pediatric resuscitators are permanently attached to the inlet valve assembly. Do not attempt to disassemble. Do not pull as tearing may occur. For the infant resuscitator, do not attempt to disassemble the reservoir bag attachment by pulling the bag as tearing may occur.

Procedure:

- If the resuscitator is packed in a compressed state, unfold by pulling on the patient valve and the inlet valve.
- If the facemask supplied with the resuscitator is wrapped in a protective pouch, the pouch should be remove before use.
- Fit the facemask and place all items in the plastic bag supplied with the resuscitator.
- The integrity of the kits issued for storage ready for use should be inspected at the interval established in the local protocol.
- Before use on the patient make a brief functional test as described in section 7.
- If connecting external devices to the resuscitator, make sure to test for functionality and consult the instructions for use accompanying the external device.

Patient use

- Clear the patient's mouth and airway using recommended techniques. Use recommended techniques to position the patient correctly to open the airway and to hold the mask firmly against the face.
- Slide you hand (Adult Version) or ring and middle finger (Pediatric version) under the support strap. The infant version does not have a support strap. Ventilation without using the support strap can be achieved by turning the bag.
- Ventilate the patient. During insufflation observe the rise of the patient's chest. Release the bag abruptly and listen for the expiratory flow from the patient valve and observe lowering of the chest.
- If the patient vomits during mask ventilation, immediately clear the patient's airway and then freely compress the bag a few times before resuming ventilation. If necessary wipe off the product with a swab containing alcohol and clean the splash guard with tap water.
- If continued resistance to insufflation is encountered, check the airway for obstruction or correct the backward tilt of the head.
- If the resuscitator is equipped with a pressure limiting valve, the valve is set to open at 40 cmH2O (4.0 kPa) 4.1 .
- If medical and professional assessment indicates a pressure above 40 cmH2O is required pressure limiting valve can be overwritten by pressing the override clip onto the valve 4.2 .
- Alternatively the pressure limiting valve can be overwritten by placing the index finger on the red button while squeezing the bag.

Best Practices for Use

- Two-person bag-valve-mask (BVM) ventilation is used whenever possible. Bag-valve-mask ventilation can be done with one person or two, but two-person BVM ventilation is easier and more effective because a tight seal must be achieved and this usually requires 2 hands on the mask.
- Unless contraindicated, a pharyngeal airway adjunct is used when performing BVM ventilation. An oropharyngeal airway is used unless the patient has an intact gag reflex; in such cases, a nasopharyngeal airway (nasal trumpet) is used. Bilateral nasopharyngeal airways and an oropharyngeal airway are used if necessary for ventilation.
- Characteristics that predict difficult bag ventilation (and can thus help troubleshoot if ventilation is difficult) are described by the mnemonic MOANS:
    - M – Mask seal: Facial hair or facial trauma can interfere with creating an adequate seal.
    - O – Obesity/Obstruction: Obesity can be a sign of increased soft tissue in the airway and thus may cause further occlusion when the patient is obtunded. Obstruction by other soft tissues or a foreign body can also prevent adequate ventilation.
    - A – Age: Extremes of age can predict who may be difficult to ventilate using a BVM due to anatomical changes.
    - N – No teeth. Performing BVM on a patient without teeth is usually ineffective; a supraglottic airway may be indicated.
    - S – Snoring: Snoring respirations can indicate that soft tissue, usually the tongue, is occluding the airway and that repositioning (eg, head-tilt, chin-lift. jaw thrust) is required.
- A positive end expiratory pressure (PEEP) valve may be used during BVM to improve oxygenation. PEEP can increase alveolar recruitment and thus oxygenation if oxygenation is compromised even with 100% oxygen due to atelectasis. PEEP has also been shown to prevent lung injury. However, PEEP should be used cautiously in patients who are hypotensive or pre-load dependent because it reduces venous return.

Relevant Anatomy for BVM Ventilation

- Aligning the external auditory canal with the sternal notch may help open the upper airway to maximize air exchange and establishes the best position to view the airway if endotracheal intubation becomes necessary.
- The degree of head elevation that best aligns the ear and sternal notch varies (eg, none in children with a large occiput, a large degree in obese patients).
- The sniffing position—only in the absence of cervical spine injury.

Position the patient supine on the stretcher.

Align the upper airway for optimal air passage by placing the patient into a proper sniffing position. Proper sniffing position aligns the external auditory canal with the sternal notch. To achieve the sniffing position, folded towels or other materials may need to be placed under the head, neck, or shoulders, so that the neck is flexed on the body and the head is extended on the neck. In obese patients, many folded towels or a commercial ramp device may be needed to sufficiently elevate the shoulders and neck. In children, padding is usually needed behind the shoulders to accommodate the enlarged occiput.

If there is concern for cervical spine injury:

- Position the patient supine or at a slight incline on the stretcher.
- Position yourself at the head of the stretcher.
- Avoid moving the neck and, if possible, use only the jaw-thrust maneuver or chin lift without head tilt to manually facilitate opening of the upper airway.

Step-by-Step Description of BVM Ventilation

- Insert an oropharyngeal airway (unless the patient has a gag reflex) or one to two nasopharyngeal airways prior to bag-valve-mask (BVM) ventilation.
- Select a mask that fits over the mouth and nose but spares the eyes.
- Do two-person BVM ventilation if possible. (NOTE: The accompanying video presents the one-person technique first.)
- Use waveform capnometry to monitor end tidal CO2 levels to assess adequacy of ventilations.

Two-person mask technique

- In the two-person technique, the more experienced operator handles the mask, because maintaining a proper mask seal is the most difficult task. The second operator squeezes the bag.
- Stand at the head of the stretcher and have the second operator stand to the side.
- Using both hands, hold the mask between your thumbs and index fingers placed on either side of the connector stem.
- Making sure not to place your hands or the mask on the patient's eyes, first place the nasal portion of the mask over the nose high enough to cover the bridge without air leaks. Next, lower the mask over the chin and allow it to seal along the 2 malar eminences. Cover the bridge of the nose, the 2 malar eminences, and the patient's lower lip by the mask to achieve a proper seal. Stretching the internal portion of the mask before placing it over the nose and mouth can help create a tighter seal.

- Traditional hand placement is the "C-E" grip, placing the middle, ring, and little fingers (the "E") under the mandible and pulling the mandible upward, while the thumbs and index fingers create a "C" and then press down against the mask.
- An alternative, often preferred, method (1, 2) can be used in which the thenar eminences (muscles at the base of the thumb) hold the mask to the face. Place the thenar eminences (the base of the thumbs in the palm) along each lateral edge of the mask. Then lower the mask onto the face and place the other 4 fingers under the mandible. Press the mask to the face with the thenar eminences while pulling the mandible upward with the fingers. Head tilt may be applied concurrently. This technique is easier to perform; allows the use of stronger hand muscles to maintain a proper seal, minimizing fatigue; and enables 4 fingers rather than 3 to lift the mandible (accomplishing chin lift and jaw thrust).
- If using the traditional hand placement, provide a head tilt–chin lift maneuver by pulling up on the mask and patient's face with your middle, ring, and little fingers while holding the mask onto the patient's face, to further open the airway. If your hands are large enough, place your little fingers behind the mandibular rami to do a jaw-thrust maneuver. This re-positioning helps to direct air into the trachea rather than into the esophagus and prevents gastric distention.
- Be sure to pull up only on the bony parts of the mandible, because pressure to the soft tissues of the neck or under the chin may obstruct the airway.
- Once a proper seal is achieved, have the second operator attach the bag to the mask and begin ventilation.

One-person mask technique

- Using one hand, hold the mask, with your thumb and index finger wrapped around the connector stem of the mask. Most operators use their nondominant hand to grasp the mask, but either hand can be used as long as a good mask seal can be maintained.
- Making sure not to place your hand or the mask on the patient's eyes, first place the nasal portion of the mask over the nose, and then lower the body over the patient's mouth. The bridge of the nose, the 2 malar eminences, and the mandibular alveolar ridge must be covered by the mask in order to achieve a proper seal.
- Now extend your middle, ring, and little fingers underneath the patient's mandible, and pull it upward into the mask. This maneuver is similar to that of the head tilt–chin lift technique and further opens the airway.
- While maintaining this upward traction on the mandible, press the mask downward onto the face to attain a tight mask seal. If your hand is large enough, place your little finger behind the mandibular ramus to do a jaw-thrust maneuver to further open the airway.
- Be sure to pull up only on the bony parts of the mandible, because pressure to the soft tissues of the neck or under the chin may obstruct the airway.
- Once a proper seal is achieved, use your other hand to begin ventilation.

Bag ventilation and oxygenation

- For each breath, steadily and smoothly squeeze the bag to deliver a tidal volume of 6 to 7 mL/kg (or about 500 mL for an average size adult) over 1 second, and then release the bag to allow it to reinflate. If using a 1000-mL volume bag, squeeze only halfway to obtain the correct tidal volume.
- In cardiac arrest cases, do not exceed 8 to 10 breaths per minute (ie, one complete breath every 6 to 7.5 seconds).

- Observe for proper chest rise during ventilations; in practice, you can use a tidal volume just large enough to cause the chest to rise.
- Monitor the patient, checking breath sounds and, if possible, end-tidal carbon dioxide and pulse oximeter. (Pulse oximetry may not be useful during cardiac arrest due to poor peripheral perfusion.) Assess if adequate ventilation is continuous and sustainable or is requiring too much physical effort. If available, use waveform Capnography, an excellent indicator of mask seal and proper ventilation.
- If oxygenation is inadequate despite proper form and use of 100% oxygen, attach a positive end expiratory pressure (PEEP) valve to recruit more alveoli for gas exchange. Set the PEEP valve initially at 5 and increase as needed to improve oxygen saturation. However, avoid PEEP in hypotensive patients.
- If ventilation or oxygenation is still not adequate, prepare for other airway maneuvers such as a supraglottic airway or endotracheal intubation.

Aftercare for BVM Ventilation

- Continue bag-valve-mask (BVM) ventilation until either a definitive artificial airway (eg, endotracheal tube) is achieved or spontaneous ventilation is adequate (eg, following naloxone administration for an opioid overdose).
- If a patient becomes more conscious or a gag reflex returns while doing BVM ventilation with an oropharyngeal airway in place, remove the oropharyngeal airway and provide continued treatment as appropriate. A nasopharyngeal airway may be better tolerated.
- If endotracheal intubation is necessary, ventilate using maximum FiO2 through a non-rebreather mask for 3 to 5 minutes before inserting the tube if feasible; if this is not feasible because intubation must proceed immediately, pre-oxygenate the patient by giving 5 to 8 vital capacity breaths using a PEEP valve.
- Neither excessive force nor rapid insufflation should be used to ventilate; doing so increases gastric distention, compromising ventilation.
- A nasogastric tube is inserted to help decompress the stomach when possible.

Equipment – Capnometer/ ETCO2 Filterline

Indications:

- All ALS patients with cardiac or respiratory complaints.

Contraindications:

- None.

Precautions:

- None.

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.

Equipment – Cardiac Monitor

Indications:

- Virtually all patient contacts.

Contraindications:

- If ALS is available, manual mode is preferred.
- Do not attempt blood pressures on injured extremities, side of previous mastectomies, or dialysis shunts.

Precautions:

- Exercise safety precautions.
- SpO2 accuracy is dependent upon adequate perfusion at probe site, bright ambient lighting, Poisoning, nail polish, and polycythemia.
- Cardiovert with extreme caution in patients on digitalis, beta-blockers, and calcium channel blockers.
- Do not place pacer electrodes directly over implanted pacemaker or AICD.

12-Lead and 15-Lead Acquisition 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. OR
- ST segment depression in V leads.
- Refer to Equipment ECG Interpretation Guide.
- Consider transmitting 12-lead to the receiving facility.

12-Lead Transmission procedure:

1. Ensure modem is plugged in the back.
2. Press "TRANSMIT" button.
3. Scroll to "REPORT" and select the correct 12-lead to send.
4. Scroll to "SITE" and select the correct destination.
5. Select "SEND" and wait for the confirmation print-out.
6. Call the receiving facility to discuss the transmission with medical control.

AED Procedure:

- Confirm patient is in Cardiac Arrest.
- Apply and connect combo-pads.
- Press "ANALYZE" or "CPR."
- Follow on-screen messages and voice prompts.

AED Indications:

- Protocol 2-198 - Cardiac Arrest.

AED Contraindications:

- Pulse.

AED Precautions:

- Wet skin or patients in water.
- Do not apply directly over internal pacemaker or medication patch.
- Manual Defibrillation is preferred to AED for children less than 8 yrs old. If manual Defibrillation 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 separated by at least 1 inch.

AED Procedure:

- Power on the device.
- Follow written or verbal instructions from the device.
- Refer to Equipment 8-018-01 - AED Agency Requirements for after use and maintenance procedures.

Manual Defibrillation Procedure:

- Verify patient is in Cardio-Pulmonary Arrest.
- Record baseline rhythm.
- Apply combo-pads (anterior-posterior is preferred).
- Select appropriate energy.
- Charge and clear patient.
- Call "CLEAR" and ensure patient is clear.
- Press "SHOCK."
- Reassess patient.

Synchronized Cardioversion Procedure:

- Explain procedure to patient.
- If time permits, consider Pain Control.
- Record baseline rhythm.
- Select lead with tallest R-wave.
- Apply combo-pads (anterior-posterior is preferred).
- Select appropriate energy.
- Synchronize ("SYNC") and observe markers on screen.
- 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.

Transcutaneous Pacing 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.
- 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.
- If conscious, consider Pain Control.

Equipment - ECG Interpretation Guide

CMH EMS & MIH Protocols

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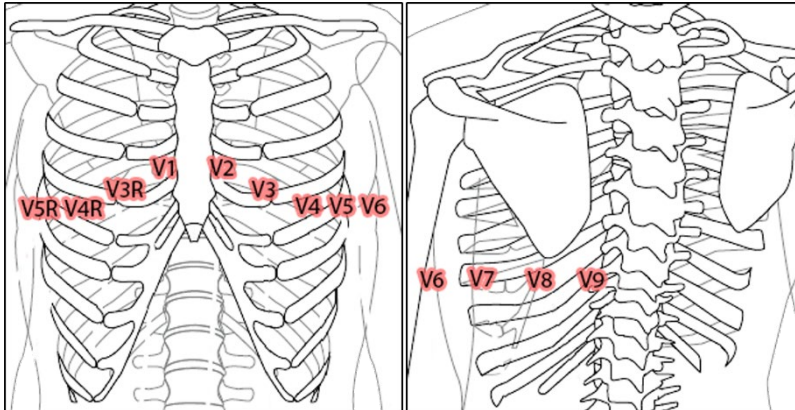
-
- **Lead I positive and aVR negative**: Good placement.

Interpret underlying rhythm.

- **Evaluate regularity**:
  - Regular, regularly irregular, or irregular?
- **Evaluate rate**:
  - Bradycardia, normal, or Tachycardia?
- **Evaluate P-waves**:
  - **Look for heart block**:
    - **PR greater than 200 ms**: First-degree.
    - **PR widening**: Second-degree, type I.
    - **Dropping P-waves**: Second-degree, type II.
    - **P-waves not associated**: Third-degree.
  - **Greater than 2.5 mm high**: Right atrial enlargement or PE.
  - **"M" shape**: Left atrial enlargement.
- **Evaluate QRS**:
  -

Adult	Pediatric
Greater than 120 ms with P-waves: Bundle branch block. Evaluate first deflection in QRS going right-to-left in V1:	**Greater than 90 ms with P-waves**: Bundle branch block. Evaluate first deflection in QRS going right-to-left in V1:

-
  - **Upward**: RBBB.
  - **Downward**: LBBB (LBBB or ventricular pacing, go to Sgarbossa).
- **QTc greater than 450**: Prolonged QT.
- **Peaked T-waves**: Hyperkalemia.

- o **Q-wave greater than 1/3 of R-wave height or width**: Pathological Q-wave (previous MI or late development of current MI).
- o **Q-wave greater than 35 mm as measured by combining V1 and V5**: Left ventricular hypertrophy.
- o **Q-wave greater than 7 mm in V1**: Right ventricular hypertrophy.
- o **Delta-wave (sloped R-wave) with PR less than 120 ms**: Wolff-Parkinson-White.

- **Evaluate axis**:
  - o **Between -30° and 90° (I+ and aVF+)**: Normal axis.
  - o **Between 90° and 180° (I- and aVF+)**: Right axis deviation. Could be caused by left posterior hemiblock, RBBB, right ventricular hypertrophy, pulmonary disease, or slender build.
  - o **Between -30° and -90° (I+ and aVF-)**: Left axis deviation. Could be caused by inferior MI, left anterior hemiblock, LBBB, left ventricular hypertrophy, obesity, or pregnancy.
  - o **Between -90° and -180° (I- and aVF-)**: Extreme right axis deviation. Probably caused by a STEMI.

Determine if Cath Lab should be activated.

- **Cath Lab activations (Basic)**:
  - o **ST elevation in all or most of the leads**: Pericarditis. Do not activate the Cath Lab.
  - o **ST elevation of 1 mm or greater in the following leads**:
    - ▪ **V3 and V4**: Anterior STEMI. Activate the Cath Lab.
    - ▪ **Two or more in II, III, and/or aVF**: Inferior STEMI. Activate the Cath Lab.
    - ▪ **Two or more in I, aVL, V5, and/or V6**: Left Lateral STEMI. Activate the Cath Lab.
    - ▪ **V1 and V2**: Septal STEMI. Activate the Cath Lab.
- **Cath Lab activations (Intermediate)**:
  - o **ST elevation of 0.5 mm or greater in the following leads**:
    - ▪ **V4R**: Right Lateral STEMI. Activate the Cath Lab.
    - ▪ **V8 and V9**: Posterior STEMI. Activate the Cath Lab.
  - o **LBBB or ventricular pacing**:
    - ▪ **ST ELEVATION of 1 mm or greater CONCORDANT with QRS in any lead**: Sgarbossa A criteria STEMI. Activate the Cath Lab.
    - ▪ **ST DEPRESSION of 1 mm or greater in any leads V1, V2, or V3**: Sgarbossa B criteria STEMI. Activate the Cath Lab.
    - ▪ **ST ELEVATION of 5 mm or greater DISCORDANT with QRS in any lead**: Sgarbossa C criteria STEMI. Activate the Cath Lab.
- **Cath Lab activations (Advanced)**:
  - o **Any amount of ST ELEVATION in both aVR and V1 with any amount of ST DEPRESSION in most other leads**:
    - ▪ **If found after a hypoxic episode**: Not cardiac-related. Do not activate the Cath Lab.
    - ▪ **If NO recent hypoxic episode**: Three Vessel Disease. Activate the Cath Lab.
  - o **T-waves 10 mm or taller with any amount of ST DEPRESSION in one or more leads V1 through V4**: DeWinters Anterior STEMI. Activate the Cath Lab.
  - o **T-waves that are downward and symmetric in one or more leads V1 through V6.**: Occurs between episodes of chest pain and goes away while pain is present. Wellens Syndrome. Activate the Cath Lab.

Equipment – Cervical Collar

Indications:

- Spinal Immobilization Clearance.

Contraindications:

- Spinal Immobilization Clearance.

Precautions:

- If used, C-collar MUST be properly sized.
- 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 and back in the original position of the deformity.

Procedure:

- Assess distal pulse, motor, and sensation.
- Maintain manual stabilization, measure, size, and secure cervical collar.
- Reassess distal pulse, motor, and sensation.

Equipment – Chest Compressor

Indications:

- Cardiac Arrest.

Contraindications:

- Patient is too large for the device to be secured.

Precautions:

- None.

Procedure:

- Open bag.
- Turn device on.
- Place back plate under the patient below the armpits.
- Remove device from bag and attach over the patient to the back plate.
- Position suction cup to touch the patient's lower sternum.
- Press "PAUSE" to lock the suction cup into place.
- Press "ACTIVATE CONTINUOUS" OR "ACTIVATE 30:2" to begin compressions.
- Attach stabilization strap under patient's neck.
- To PAUSE for pulse check or rhythm analysis push the "PAUSE" button and assess rhythm or pulse, treat rhythm or pulse per protocol and then press the "PLAY" button when CPR is needed.

Equipment – Chest Seal

Indications:

- Penetrating chest trauma.

Contraindication:

- Impaled object in chest.

Precautions:

Instructions for use:

- Use the red tabs to open the packaging. Remove chest seal and gauze from the package.
- Wipe any blood or debris away from wound.
- Grab the red tab to remove the clear liner from the dressing.
- Center the vent over the wound and firmly press seal against the skin and press all edges flat against the skin.
- Check the arm pit and posterior chest for additional wounds.
- Entrance and exit wounds could be anywhere on the body. Complete a full head to toe exam.

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Equipment – Cold Pack

Indications:

- Pain control. Reduce local swelling.
- Post Resuscitation

Contraindications:

- Hypothermic patient

Precautions:

- None

Procedure:

- "Pop" the pack to activate. Place cold pack on skin area that is in need of pain control or locations to induce targeted temperature management in Post Resuscitation protocol.

Equipment – Continuous Positive Airway Pressure

Indications:

- Pulmonary Edema

Contraindications:

- Less than 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 or Vomiting.
- Increasing ETCO2.

Precautions:

- CPAP is not mechanical ventilation.
- Blood pressure 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.
- Connect and turn on Oxygen to desired mgH20.
- 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. Adjust mask seal and mgH20 as necessary for patient condition.

Anxiety:

- Consider Versed 2.5 mg IV/IO/IM.
- An in-line bronchodilator Nebulizer may be placed in circuit, if needed.

Equipment – Cot

Indications:

- Need to move a non-ambulatory patient.

Contraindications:

- None.

Precautions:

- Always secure the patient using all restraint straps and keep side rails up.
- Utilize a minimum of 2 lifting persons when a patient is on the cot.
- Utilize four or more lifting persons, if possible, over rough terrain or bariatric patients.
- Do not allow the x-frame to drop unassisted (when using a manual cot)
- Practice changing height positions and loading the cot until operation of the product is fully understood. Improper use can cause injury.
- Inspect SMRT Paks for damage before every use.
- Do not allow untrained assistants to assist in the operation of the cot. Untrained technicians/assistants can cause injury to the patient or themselves.
- Ensure proper hand placement on hand grips. Hands should be clear of red safety bar pivots while loading and unloading the cot or whenever changing height position of the cot with two or more operators.
- Do not ride on the base of the cot. Damage to the product could occur, resulting in injury to the patient or operator.
- Transporting the cot sideways can cause the cot to tip, resulting in possible damage to the product and/or injury to the patient or operator. Transporting the cot in a lowered position, head or foot end first, minimizes the potential of a cot tip.
- When using a cot fastener, do not load the cot into the vehicle with the head section retracted. Loading the cot with the head section retracted may cause the product to tip or not engage properly in the cot fastener, possibly causing injury to the patient or operator and/or damage to the cot.

Generic Procedure:

- Consider Stair Chair.
- Utilize all provided safety restraint systems on every patient.
- To raise or lower cot, both ends must be lifted prior to squeezing handle.
- Use the appropriate number of people to lift based on the patient weight:
- 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.

Proper Lifting Techniques

- Keep your hands close to your body.
- Keep your back straight.
- Coordinate your movements with your partner and lift with your legs.
- Avoid twisting.
- Use large muscle groups such as your gluteus maximus and quadriceps when lifting.

Stryker Power Pro 6500 and 6506 Procedure:

- Read all labels and instructions on the cot before using the cot.
- Loading or unloading an occupied cot into a vehicle requires a minimum of two (2) trained operators.
- One or two operators can lift from the foot end of the cot. Stryker recommends that both operators are at the foot end to reduce the load on each operator
- Do not adjust, roll or load the cot into a vehicle without advising the patient. Stay with the patient and control the cot at all times.
- The cot can be transported in any position. Stryker recommends that the operators transport the patient in the lowest comfortable position to maneuver the cot until in the ambulance.
- Only use the wheel lock(s) during patient transfer or without a patient on the cot.
- Do not leave wheel lock(s) engaged while transporting the cot. Failure to do so may cause wheel damage.
- Always use the restraint straps.
- Use properly trained helpers, when necessary, to control the cot.
- When rolling the cot with a patient on it, position an operator at the foot end and one at the head end of the cot at all times.
- During transport, approach door sills and/or other low obstacles squarely and lift each set of wheels over the obstacle separately.
- You can raise or lower an unoccupied cot with one operator. If a patient is on the cot, a minimum of two (2) trained operators (one located at each end of the cot) are required to raise or lower the of the cot.

To raise or lower an unoccupied cot:

1. Operator 1 (Foot End) – Grasp the cot frame at the foot end and press either the extend (+) button on the control switch to raise the litter or the retract (–) button on the control switch to lower the litter to the desired position.

To raise or lower the cot with a patient:

1. Operator 1 (Foot End) – Grasp the cot frame at the foot end and press either the extend (+) button on the control switch to raise the litter or the retract (–) button on the control switch to lower the litter to the desired position.
2. Operator 2 (Head End) – Maintain a firm grip on the outer rail until the cot is securely in the desired position.

Note: If the extend (+) button on the control switch remains activated after reaching the set load height, the motor will remain halted until the operator releases the button. After the button is released, press the extend (+) button again to "jog" the cot height up further.

LOADING THE COT INTO A VEHICLE WITH TWO OPERATORS - POWERED METHOD

- Loading an occupied cot into a vehicle requires a minimum of two (2) trained operators. One or two operators can lift from the foot end of the cot. Stryker recommends that both operators are at the foot end to reduce the load on each operator.

- To load the cot into a vehicle with two operators:

1. Ensure that the retractable head section is fully extended and locked.

2. Place the cot in a loading position (any position where the load wheels meet the vehicle floor height).

3. Lift the vehicle bumper to the raised position (if equipped).

4. Roll the cot to the open door of the patient compartment.

5. Push the cot forward until the load wheels are on the compartment floor and the safety bar passes the safety hook.

6. For maximum clearance to lift the base, pull the cot back until the safety bar engages the safety hook.

7. Operator 2 – Verify that the safety bar engages the safety hook.

8. Load the cot either from the foot end or with one operator at the foot end and one on the side:

      With both operators at the foot end (preferred method):

- Both Operators – Grasp the cot frame at the foot end at the lower grip section.
  - Operator 1 – Press the retract (–) button until the undercarriage of the cot retracts fully
- With one operator at the foot end and one on the side:
  - Operator 1 – Grasp the cot frame at the foot end at the lower grip section and press the retract (–) button until the undercarriage of the cot retracts fully.
  - Operator 2 – Securely grasp the cot outer rail to stabilize the cot during retraction.

      9. Both Operators – Push the cot into the patient compartment until the cot engages the cot fastener (not included).

LOADING AN EMPTY COT INTO A VEHICLE WITH ONE OPERATOR - POWERED METHOD

- To load an empty cot into a vehicle with one operator:

1. Place the cot into a loading position (any position where the load wheels of the head section meet the vehicle floor height).

2. Lift the vehicle bumper to the raised position (if equipped).

3. Roll the cot to the open door of the patient compartment.

4. Push the cot forward until the load wheels are on the patient compartment floor and the safety bar passes the safety hook.

5. For maximum clearance to lift the base, pull the cot back until the safety bar engages the safety hook.

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6. Grasp the cot frame at the foot end at the lower grip section and press the retract (–) button, until the undercarriage of the cot retracts into its highest position.

7. Push the cot into the patient compartment until the cot engages the cot fastener.

UNLOADING THE COT FROM A VEHICLE WITH TWO OPERATORS - POWERED METHOD

- Unloading an occupied cot from a vehicle requires a minimum of two (2) trained operators. One or two operators can lift from the foot end of the cot. Stryker recommends that both operators are at the foot end to reduce the load on each operator.
- To unload the cot from a vehicle with two operators:

    1. Lift the vehicle bumper to the raised position (if equipped).

    2. Disengage the cot from the cot fastener.

    3. Unload the cot either from the foot end or with one operator at the foot end and one on the side:

- **With both operators at the foot end (preferred method):**
    o Both Operators – Grasp the cot frame at the foot end at the lower grip area. Pull the cot out of the patient compartment until the safety bar engages the safety hook.
    o Both Operators – Verify that the safety bar engages the safety hook.
    o Operator 1 – Depress the extend (+) button to lower the undercarriage to its fully extended position.
    o Note: You can use the manual release or a combination of the manual release followed by the extend (+) button. If the extend (+) button is used, you must ensure that the manual release is fully engaged before pressing the extend (+) button.
    o Operator 2 – Pull the safety bar release lever forward to disengage the safety bar from the safety hook in the patient compartment.
    o Remove the load wheels from the patient compartment of the vehicle.

- **With one operator at the foot end and one on the side:**
    o Operator 1 – Grasp the cot frame at the foot end. Pull the cot out of the patient compartment until the safety bar engages the safety hook.
    o Operator 2 - Verify that the safety bar engages the safety hook.
    o Operator 2 – Stabilize the cot during the unloading operation by securely grasping the outer rail.
    o Operator 1 – Depress the extend (+) button to lower the undercarriage to its fully extended position.
    o Note: You can use the manual release or a combination of the manual release followed by the extend (+) button. If the extend (+) button is used, you must ensure that the manual release is fully engaged before pressing the extend (+) button.
    o Operator 2 – Pull the safety bar release lever forward to disengage the safety bar from the safety hook in the patient compartment.
    o Remove the load wheels from the patient compartment of the vehicle.

To unload an empty cot from a vehicle with one operator:

1. Lift the vehicle bumper to the raised position (if equipped).
2. Disengage the cot from the cot fastener.
3. Grasp the cot frame at the foot end.

4. Pull the cot from the vehicle until the safety bar engages the safety hook.
5. Depress the extend (+) button to lower the undercarriage to its fully extended position.
6. Disengage the safety bar from the safety hook by pulling the safety bar release lever forward and roll the cot out of the vehicle.
7. Remove the load wheels from the patient compartment of the vehicle.
- CAUTION
  - When unloading the cot from the patient compartment, ensure that the caster wheels are safely set on the ground or damage to the product may occur.
  - Do not "jog" the cot past the established cot load height of the product when the safety bar engages the vehicle safety hook or damage may occur to the product.

USING THE MANUAL OVERRIDE

- In the event of loss of electrical function, the cot is equipped with a manual override to allow manual operation of the product until electrical functionality is restored. You can use the red manual back-up release handle to raise or lower the cot.
- The red manual back-up release handle (A) is located along the patient left side of the lower lift bar at the foot end of the cot as shown in Figure 36.
- To raise or lower the cot with the manual back-up release handle:
1. Both Operators – Lift the cot during the raise/lower operation to support the weight of the cot at each end.
2. Operator 1 (Foot End) – Pull the manual back-up release handle toward the lift bar. While the manual back-up release handle is pulled, raise or lower the cot to the desired position and then release the handle to lock the cot into position.

Notes:

- The operators must lift the cot weight slightly off of the wheels to use the manual extend or retract while a patient is on the cot.
- Activation of the manual back-up release handle may cause the cot to lower slowly if less than 50 lb (23 kg) are on the cot.
- Hydraulic fluid will become more viscous when the cot is used for extended periods in cold temperatures. When using the manual back-up release function to extend the base during unloading in cold weather conditions, hold the release handle for approximately one second after the cot wheels touch the ground to minimize sagging of the litter as the cot is removed from the ambulance.

To load the cot into a vehicle with two operators using the manual back-up release handle:

1. Place the cot in a loading position (any position where the load wheels meet the vehicle floor height).
2. Lift the vehicle bumper to the raised position (if equipped).
3. Roll the cot to the open door of the patient compartment.
4. Push the cot forward until the load wheels are on the patient compartment floor and the safety bar passes the safety hook.
5. For maximum clearance to lift the base, pull the cot back until the safety bar engages the safety hook.
6. Operator 2 – Verify that the safety bar engages the safety hook.
7. Operator 1 – Grasp the cot frame at the foot end. Lift the foot end of the cot until the weight is off of the cot base. Squeeze and hold the release handle as shown in Figure 36.

8. Operator 2 – Stabilize the cot by placing your hand on the outer rail. Grasp the base frame. After the foot end operator has lifted the cot and squeezed the release handle, raise the undercarriage until it stops in the highest position and hold it there.
9. Both Operators – Push the cot into the patient compartment, engaging the cot fastener.
   - Note: When operating the manual back-up release handle, avoid rapid lifting or lowering of the base or movement may appear sluggish; lift with a slow constant motion.

UNLOADING THE COT FROM A VEHICLE WITH TWO OPERATORS - MANUAL METHOD

- Unloading an occupied cot from a vehicle requires a minimum of two (2) trained operators. One or two operators can lift from the foot end of the cot. Stryker recommends that both operators are at the foot end to reduce the load on each operator.
  - WARNING
    - Two operators must be present when the cot is occupied.
    - Operators must be able to lift the total weight of the patient, cot and any items on the cot.
    - The higher an operator must lift the cot, the more difficult it becomes to hold the weight. An operator may need help loading the cot if he/she is too short or if the patient is too heavy to lift safely. The operator must be able to lift the cot high enough for the cot legs to unfold completely and lock when the cot is unloaded. A shorter operator needs to raise their arms higher to enable the undercarriage to unfold.
    - Ensure proper hand placement on hand grips. Hands should be clear of red safety bar pivots while loading and unloading the cot or whenever changing height position of the cot with two or more operators.
    - There must be a safety hook properly installed in the vehicle so that the bumper does not interfere with the front legs of the base frame.
    - Failure to install the safety hook can cause injury to the patient or operator.
    - To avoid injury, verify that the safety bar has engaged the safety hook before removing the cot from the patient compartment.
    - Do not pull or lift on the safety bar when unloading the cot. Damage to the safety bar could result and injury to the patient or operator could occur.
    - Do not press the extend (+) button until the safety bar has engaged the safety hook.
- **To unload the cot from a vehicle with two operators:**
1. Lift the vehicle bumper to the raised position (if equipped).
2. Disengage the cot from the cot fastener.
3. Unload the cot either from the foot end or with one operator at the foot end and one on the side:
- **With both operators at the foot end (preferred method):**
  - Both Operators – Grasp the cot frame at the foot end at the lower grip section.
  - Operator 1 – Pull the manual back-up release handle to lower the undercarriage to its fully extended position. Release the manual handle to lock the undercarriage. Pull the cot out of the patient compartment until the safety bar engages the safety hook.
  - Operator 2 – Verify that the safety bar engages the safety hook.
  - With one operator at the foot end and one on the side
  - Operator 1 – Grasp the cot frame at the foot end. Pull the manual back-up release handle to lower the undercarriage to its fully extended position. Release the manual handle to lock the

undercarriage. Pull the cot out of the patient compartment until the safety bar engages the safety hook.
- o Operator 2 – Verify that the safety bar engages the safety hook.
- o Operator 2 – Stabilize the cot during the unloading operation by securely grasping the outer rail.
4. Operator 2 – Pull the safety bar release lever forward to disengage the safety bar from the safety hook in the patient compartment.
5. Remove the load wheels from the patient compartment of the vehicle.

Performance-LOAD Considerations

- Do not allow untrained personnel to assist in the operation of Performance-LOAD. Untrained technicians/personnel can cause injury to the patient or themselves.
- Always use both hands when you handle the cot. Performance-LOAD is only an assisting device. Evaluate each situation to determine how to distribute and lift the weight that you are transporting.
- Always avoid extreme parking angles.
- Automatic charging will only occur with SMRT Pak batteries.
- The LED is solid green when the battery has a full charge or has an adequate battery power charge.
- The LED flashes amber when you need to charge or replace the battery
- The LED is a solid amber to indicate a battery error.

Performance-LOAD

- Unloading Usage Guidelines
  - o WARNING
    - Always load or unload an occupied cot into a vehicle with a minimum of two trained operators.
    - Always be ready to support the entire weight of the cot and patient when you unload a cot from the vehicle patient compartment.
    - Always check for sheets, restraints, or debris that may catch in the cot transport wheels or load wheels.
    - Do not extend the cot base while it is locked into Performance-LOAD.

Performance-LOAD

- Loading Usage Guidelines
  - o WARNING
    - Always load or unload an occupied cot into a vehicle with a minimum of two trained operators.
    - Always allow occupants to enter the vehicle patient compartment after the compatible cot has been loaded into the vehicle patient compartment.
    - Always check for sheets, restraints, or debris that may catch in the cot transport wheels or load wheels.
  - o CAUTION - Do not push the cot into the vehicle patient compartment until you fully retract the cot base.
- Lift the vehicle bumper to the raised position, if equipped.
- Fully extend and lock the cot retractable head section before you load the cot into the powered cot fastener.

- Place the cot in a loading position (any position where the loading wheels meet the vehicle patient compartment floor height).
- Roll the cot to the open vehicle patient compartment.
- Push the cot forward until the loading wheels are on the vehicle patient compartment floor and the safety bar passes the safety hook.
  - Note - For maximum clearance to lift the base, pull the cot out until the safety bar is connected to the safety hook.

For Model 6500, Model 6506, and Model 6516 with Performance-LOAD:

- Grasp the cot frame at the foot end.
- Lift the foot end of the cot and press and hold the retract (-) button on the cot control switch to fully retract the cot undercarriage.
- Note - The cot undercarriage will retract in less than three seconds.

For Model 6086 with Performance-LOAD:

- Operator 1 (foot end): Grasp the cot frame at the foot end. Squeeze and hold the cot manual release.
- Operator 2 (side): Grasp the outer rail to stabilize the cot. Then, grasp the base frame. After the foot end operator has lifted the cot and squeezed the cot manual release, retract the undercarriage with one hand and hold it in place.
- Operator 1 (foot end): Release the cot manual release to lock the undercarriage in the retracted position.
- Push the cot into the vehicle patient compartment until the cot locks into the cot fastener.
- Make sure that the cot is locked into the cot fastener by firmly pulling in and out and side to side on the foot end of the cot.

Power-LOAD Considerations

- Maximum working weight limit of 870 lbs this includes all items (cot, patient, equipment)
- Only cots with the Power-Load compatibility kit.
- One operator is required for an unloaded cot.
- Two operators are required for a loaded cot.
- All red locations indicate activation locations.
- The power buttons on the right side of the power load allow for loading and unloading a cot when the cot has a loss of power.
- Flashing green battery indicators indicated the battery is being charged.
- If the warning light is flashing this indicates the battery is low and needs charging.
- If the warning light is solid. Press the on/off button twice to reset the product. If the warning light remains solid then contact Stryker technical support.

Power-LOAD Operations

- With no cot on the trolley. To unload the trolley press the red release button at the center head area of the cot and raise the lifting arms while sliding the trolley out of the ambulance by pulling on the red lifting arms.
- Place the lifting arms in the down position and the LED indicators will flash amber.
- Loading

- o Guide the cot into the trolley loading position and the LED indicators will change from flashing amber to solid green. An audible click should be heard when this happens.
  - o Press the negative button on the foot end of the cot to raise the carriage of the cot and raise the cot.
  - o Guide the cot into the ambulance.
  - o Once the cot is in the ambulance the Power-LOAD will lower and lock.
- Unloading
  - o Press and hold the red release button at the foot end of the power-LOAD
  - o Pull the foot end of the cot to bring the cot out of the ambulance. The cot will raise slightly to bring the cot wheels off the ambulance floor.
  - o Guide the cot out until the head end LED indicators turn solid green indicating the cot is ready to be lowered to the ground.
  - o Press the positive button on the foot end controls to lower the cot out of the load position and lower the carriage wheels to the ground.
- To release the cot from the Power-LOAD there are two options
  - o Option 1: Press the small button above the negative and positive buttons on the control end of the cot to release the cot from the Power-LOAD.
  - o Option 2: Pull the red release lever on the Power-LOAD at the head end of the cot.

Equipment – Cricothyrotomy Kit

Indications:

- This procedure is a last resort when all attempts at ventilating the patient have failed.
- Airway: RSI

Contraindications:

- None in an emergency setting and all other airway options have been exhausted.

Precautions:

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

Surgical Procedure: To be used on patients 8 years and older

- If possible, call for MEDICAL CONTROL prior to attempting surgical cric.
- 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.
- Remove blade from trachea.
- Place Bougie with coude tip positioned anteriorly into trachea with a back-and-forth motion to feel tracheal clicking or stop at 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.
- Secured tube with strap or tape.

Needle Cric Procedure

- Use universal precautions and sterile technique. Cleanse the site.
- Attach a 3mL syringe to a 14 gauge IV catheter.
- Enter the cricothryoid membrane in it's inferior-central part, directing the needs downward at an angle of 45 degrees.
- Advance the needle while continuously applying negative pressure on the syringe, until the plunger pulls back indicating proper placement.
- Advance the catheter forward off the needle until its hub rests at the skin surface & remove the needle.
- Hold the catheter firmly in place at all times.
- Use a 3.5 mm ID ETT connector placed into the back of a 14 gauge catheter hub.

- Begin regular ventilation with I:E ratio 1:4 and respiratory rate 10 to 12 breaths/min in the patient without complete upper airway obstruction; in patients with complete upper airway obstruction: I:E ratio 1:8 or 1:10 respiratory rate 5 to 6 breaths/min.

Equipment – Dressing Hemostatic

Indications:

- Rescue Task Force
- Universal Patient Care

Contraindications:

- None.

Precautions:

- None.

Procedure:

- Apply gauze to open wound. Fill and tightly pack whole wound.
- Use direct pressure on gauze and wound for approximately three (3) minutes to help form clot.
- If bleeding continues, hold pressure for an additional three (3) minutes.
- Wrap over gauze for transport.

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Equipment – ET

Indications:

- Rescue Task Force
- Airway: RSI
- Cardiac Arrest
- Post Resuscitation

Contraindications:

- None.

Precautions:

- Can induce Hypertension and increase ICP in Head injured patients.
- Can induce Vagal response and Bradycardia.
- Can induce hypoxia-related arrhythmias.
- Cuffed ET tubes are preferred over un-cuffed for all tube sizes and patient ages.
- Routine use of cricoid pressure is not recommended for pediatric patients.

Procedure:

- Ensure adequate oxygenation.
- Assemble, check, and prepare equipment.
- Consider Neo-Synephrine (2-3 sprays in each nare) for nasal intubation.
- Consider iGel for backup airway.
- 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.
- **Adult:** Inflate cuff with 7-10 ml of air. If able, check inflation pressure between 20-25 cm H2O.
- **Pediatric:** Inflate only enough to stop air leakage. Balloon should be pliable and soft.
- 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:
  - Refer to Protocol 2-044 – Airway: RSI
- Consider Gastric Tube.

Equipment – ETT Depth @ Gum or Teeth

cmh

Age	Weight	Broslow / Handtevy	Laryngoscope	ET Size (age/4 + 4)	ET Depth (weight/2 + 8) or (age/2 + 13)	King Size	LMA Size	I-Gel Size
Preemie	2 kg		1	3.0	9.0 cm	0	1	1 (pink)
Newborn	4 kg		1	3.5	10.0 cm	1 (white)	1	1 (pink)
4 mo	6 kg	Pink	1	3.5	11.0 cm	1 (white)	1.5	1.5 (light blue)
6 mo	8 kg	Red	1	3.5	12.0 cm	1 (white)	1.5	1.5 (light blue)
1 yr	10 kg	Purple	1	4.0	13.0 cm	1 (white)	2	1.5 (light blue)
2 yr	12 kg	Yellow	2	4.5	14.0 cm	2 (green)	2	
3 yr	15 kg	White	2	5.0	14.5 cm	2 (green)	2	
4 yr	17 kg	White	2	5.0	15.0 cm	2 (green)	2.5	
5 yr	20 kg	Blue	2	5.0	15.5 cm	2 (green)	2.5	
6 yr	22 kg	Blue	2	5.5	16.0 cm	2 (green)	2.5	
7 yr	25 kg	Orange	2	6.0	16.5 cm	2.5 (orange)	2.5	2.5 (white)
8 yr	27 kg	Orange	2	6.0	17.0 cm	2.5 (orange)	2.5	2.5 (white)
9 yr	30 kg	Green	3	6.0	17.5 cm	2.5 (orange)	3	2.5 (white)
10 yr	35 kg	Green	3	6.5	18.0 cm	3 (yellow)	3	3 (yellow)
11 yr	40 kg	Green	3	7.0	18.5 cm	3 (yellow)	3	3 (yellow)
12 yr	50 kg	Green	3	7.0	19.0 cm	3 (yellow)	4	3 (yellow)

13 yr	60 kg	Green	3	7.0	19.5 cm	4 (red)	4	4 (green)
Small Adult	75 kg	Light Blue	4	7.5	20.0-21.5 cm	4 (red)	5	4 (green)
Large Adult	100 kg	Light Blue	4	8.0	21.5-23.0 cm	5 (purple)	5	5 (orange)

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Equipment – ETT Endotrol

Indications:

- Spontaneously breathing patient with need for intubation.

Contraindications:

- Inability to confirm tube placement by BAMM or waveform ETCO2.
- Basal skull fracture.

Precautions:

- Nasal intubation may cause bleeding and cause laryngospasm.

Procedure:

- Select nare that will be used for the procedure and apply 2-3 sprays of Neo-Synephrine or pharmacologically equivalent topical alpha agonist.
- If unsure of which nare will be used for the procedure apply Neo-Synephrine spray into both nares.
- Prepare properly sized Endotrol tube for patient size.
- Lubricate cuffed end of Endotrol tube.
- Attach BAMM to the BVM end of the ETT.
- Insert ETT with bevel toward the patient's nasal septum. Advance ETT posteriorly and not superiorly. ETT could be advanced along the floor of the nasal cavity in order to not make contact with the nasal turbinates.
- Do not force ETT through patient's nasal passages. Gentle rotation of the ETT can be used to help facilitate passage, but do not force ETT. If resistance is felt, switch to opposite nare.
- As the Endotrol tube enters the hypopharynx the BAMM whistle will increase in volume with each patient breath.
- Patient's own negative pressure breathing may "suck" ETT down their trachea and aid in placement of the device.
- Gentle traction on the tip control ring will aid in bringing the ETT tip into a more anterior than posterior position and will increase the BAMM whistle.
- Advancement into the esophagus will result in no BAMM whistle. If this happens then draw back on the ETT to remove it from the esophagus and then pull gentle traction on the tip control ring and advance the ETT again. A long BAMM whistle should be heard at this point.
- Inflate the endotrol cuff and BAMM whistle should be heard with every patient breath.
- Confirm tube placement as you would with any other advanced airway; chest rise and fall, absent epigastric sounds with ventilations, ETCO2 waveform indicating physiologically appropriate ventilations with patient condition, spo2 showing adequate oxygenation.
- Note tube depth and secure tube with tape the patient's nose/face.
- Reassess patient for patent airway.

Equipment – ETT Size

Age	Weight	Broslow / Handtevy	Laryngoscope	ET Size (age/4 + 4)	ET Depth (weight/2 + 8) or (age/2 + 13)	King Size	LMA Size	I-Gel Size
Preemie	2 kg		1	3.0	9.0 cm	0	1	1 (pink)
Newborn	4 kg		1	3.5	10.0 cm	1 (white)	1	1 (pink)
4 mo	6 kg	Pink	1	3.5	11.0 cm	1 (white)	1.5	1.5 (light blue)
6 mo	8 kg	Red	1	3.5	12.0 cm	1 (white)	1.5	1.5 (light blue)
1 yr	10 kg	Purple	1	4.0	13.0 cm	1 (white)	2	1.5 (light blue)
2 yr	12 kg	Yellow	2	4.5	14.0 cm	2 (green)	2	
3 yr	15 kg	White	2	5.0	14.5 cm	2 (green)	2	
4 yr	17 kg	White	2	5.0	15.0 cm	2 (green)	2.5	
5 yr	20 kg	Blue	2	5.0	15.5 cm	2 (green)	2.5	
6 yr	22 kg	Blue	2	5.5	16.0 cm	2 (green)	2.5	
7 yr	25 kg	Orange	2	6.0	16.5 cm	2.5 (orange)	2.5	2.5 (white)
8 yr	27 kg	Orange	2	6.0	17.0 cm	2.5 (orange)	2.5	2.5 (white)
9 yr	30 kg	Green	3	6.0	17.5 cm	2.5 (orange)	3	2.5 (white)
10 yr	35 kg	Green	3	6.5	18.0 cm	3 (yellow)	3	3 (yellow)
11 yr	40 kg	Green	3	7.0	18.5 cm	3 (yellow)	3	3 (yellow)
12 yr	50 kg	Green	3	7.0	19.0 cm	3 (yellow)	4	3 (yellow)

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13 yr	60 kg	Green	3	7.0	19.5 cm	4 (red)	4	4 (green)
Small Adult	75 kg	Light Blue	4	7.5	20.0-21.5 cm	4 (red)	5	4 (green)
Large Adult	100 kg	Light Blue	4	8.0	21.5-23.0 cm	5 (purple)	5	5 (orange)

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Equipment – EZ-IO

Indications:

- Any patient who needs IV access where IV attempts have failed or suspected to be unsuccessful. IV access is preferred over IO in all situations.

Contraindications:

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

Precautions:

- IV access is preferred over IO in all situations.
- Shelf life for the EZ-IO G3 Power Driver is ten years.
- Use hand placement of IO if patient is less than 3 months old
- In major chest or pelvic trauma consider only proximal humerus as IO site.

Procedure:

- Prepare equipment.
- Identify site:
  - Distal femur in adults
    - 2 fingers above the superior boarder of the patella midline with the femur and 90 degree to the bone.
  - Distal femur in children/infants
    - 1-2cm above the superior boarder of the patella and 1cm medial and 90 degree to the bone.
  - Proximal tibia in adults
    - 3cm or two finger breadths below the inferior boarder of the patella, 2cm medial, and 90 degrees to the bone
  - Proximal tibia in children/infants
    - 1-2cm below the inferior boarder of the patella and 1cm medial and 90 degree to the bone.
  - Proximal humerus adult only
    - The insertion site is on the most prominent aspect of the greater tubercle, 1 to 2 cm above the surgical neck. Point the needle set tip at a 45-degree angle to the anterior plane and posteromedial.
- Cleanse site.
- Stabilize site.
- 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 or LR 5-10 ml bolus.

- Connect tubing and begin administration. Apply pressure bag if necessary.
- Apply dressing.

Confirm lidocaine dose per institutional protocol

1. Prime EZ-Connect extension set with lidocaine Note that the priming volume of the EZ-Connect extension set is approximately 1.0 ml
2. Slowly infuse lidocaine over 120 seconds.
   a. Adults: Typical initial dose is 40 mg
   b. Infant/Child: Typical initial dose is 0.5 mg/kg, not to exceed 40 mg
3. Allow lidocaine to dwell in IO space 60 seconds
4. Flush with normal saline
   a. Adults: 5–10 ml
   b. Infant/Child: 2–5ml
5. Slowly administer an additional dose of lidocaine IO over 60 seconds. Repeat PRN
   a. Adults: Typical dose is 20 mg
   b. Infant/Child: Half the initial dose
6. Consider systemic pain control for patients not responding to IO lidocaine

Equipment – Glucometer

Instructions:

- Adhere to universal precautions when handling blood and body fluids
- Touch "Patient Test" to display the Patient ID screen
- Enter any number to indicate the patient contact you have had for the day then press the bottom right check mark.
- Touch the Checkmark on the bottom right of the screen to confirm this override because prehospital patient's do not have wrist bands on.
- Scan the AccuChek strip lot barcode found on the strip vial.
- After the strip lot has been validated by the glucometer.
- Slide the test strip into the test strip port as far as it will go in the direction indicated by the arrow on the test strip.
- Wait until the flashing drop appears on the screen before applying the blood.
- NOTE: Acceptable specimens for the AccuChek Inform II glucometer is either capillary, venous, arterial, or neonate whole blood.
- Cord blood is NOT acceptable, and CANNOT be used for testing on the glucometer.
- Clean the patient's fingertip with an alcohol wipe
- Allow the alcohol to dry before sticking.
- If the patient's finger is cold, apply warm cloth before sticking or you may massage the finger BEFORE sticking. DO NOT massage the finger after sticking.
- Use a "single use" lancet device to stick the finger on the side, not the tip of the finger nor the pad of the finger. Dispose of single use lancet in biohazard sharps container.
- Apply gentle pressure behind stick site to start the flow of blood.
- Using a clean cotton ball, wipe away the first drop of blood to avoid dilution by cell fluids.
- Keeping the device in a horizontal position, apply the second drop of blood to the front edge of the test strip.
- Do not apply blood to the top of the test strip
- Blood is pulled into the test strip by capillary action.
- The meter beeps, and an hourglass appears while the meter completes the test.
- When the test is completed, the result is displayed.
- Touch the lower right check mark to wirelessly send the result and return to the main menu.
- Remove the test strip and dispose in trash receptacle.
- Clean and disinfect the meter between each patient use. Please see "meter disinfection" instructions below.
- Always store the meter on the docking station when not in use to recharge the batteries. Ensure that the meter is charging before walking away.

Meter Disinfection Procedure

- Put on gloves. The gloves worn during cleaning and disinfecting should be removed and hand hygiene performed before testing the next patient.
- Remove visible soil and organic material prior to disinfecting. Meter is to be disinfected after each patient use. Keep the meter on a level surface with the power off.

- Use a fresh PDI Super Sani-Cloth Wipe to clean the meter. Then use a second, fresh PDI Super Sani-Cloth Wipe to disinfect the meter by gently wiping the outside of the meter and the meter display area three times horizontally and three times vertically and carefully wipe around the test strip port area, making sure no liquid enters the test strip port. The surface should remain wet for 2 minutes. (TIP to maintain wet surface: wrap the meter in the PDI Super Sani-Cloth Wipe). \
- If the meter is to be disinfected after use in an environment with special precautions requiring different cleaning methods, use a Clorox Healthcare Bleach Germicidal Wipe as the disinfecting second wipe and perform disinfecting method as outlined in number 3 of this section of the policy. The contact time for Clorox wipes is 3 minutes.
- Do not clean the meter while performing a patient or control test.
- Do not spray the meter directly with solutions as this could cause the solution to enter the case and damage electronic components
- Do not allow cleaning solution to get into the test strip port. Visually verify there is not liquid in this port.
- Check the metal electrical contacts on the back of the meter and make sure they are dry before placing the meter in the charging base unit.

Equipment – Hemostatic Agent (Celox Gauze)

Indications:

- Rescue Task Force
- Universal Patient Care

Contraindications:

- None.

Precautions:

- None.

Procedure:

- Apply gauze to open wound. Fill and tightly pack whole wound.
- Use direct pressure on gauze and wound for approximately three (3) minutes to help form clot.
- If bleeding continues, hold pressure for an additional three (3) minutes.
- Wrap over gauze for transport.

Equipment – Hot Pack

Indications:

- Hypothermia

Contraindications:

- Hyperthermic patient

Precautions:

- Protect patient's bare skin from direct contact to prevent skin burns on patient.

Procedure:

- "Pop" package by pulling on bag to allow chemical mixure to contact inside the bag and begin heating process.
- Apply hotpack to the following areas to be able to actively warm patient:
- One in each armpit,
- One in each femoral groin area (on top of legs),
- One to each side of the neck, AND
- One to the top of the head.

Equipment – i-Gel® Supraglottic Airway

Indications:

- Patients who are unable to maintain their own airway (i.e. GCS less than 8).

Contraindications:

- Conscious/semi-conscious patient.
- Trismus, limited mouth opening, pharyngo-perilaryngeal abscess, trauma, or mass.
- Do not use the gastric channel if:
    - There is an excessive air leak through the gastric channel.
    - There are osophageal varices or evidence of upper gastro-intestinal bleed.
    - In cases of osophageal trauma.
    - There is a history of upper gastro-intestinal surgery.
    - The patient has bleeding/clotting abnormalities.
- Nasogastric tube insertion in the presence of inadequate levels of anesthesia can lead to coughing, bucking, excessive salivation, retching, laryngospasm or breath holding.
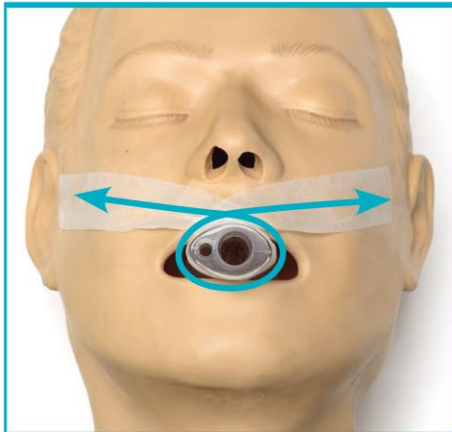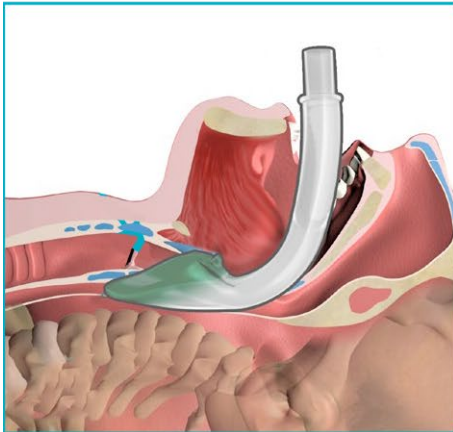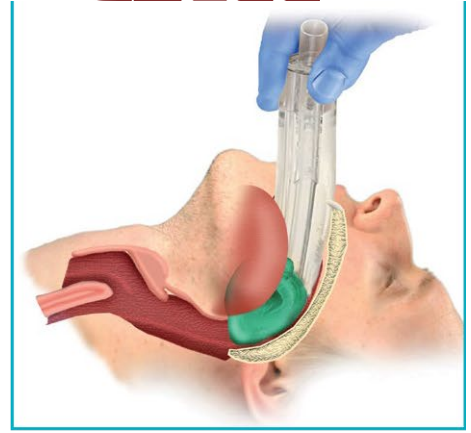
Precautions:

- Do not allow peak airway pressure of ventilation to exceed 40cm H2O.
- Do not use excessive force to insert the device or nasogastric tube.
- Must be lubricated according to the instructions for use.
- The patient should always be in the 'sniffing the morning air' position prior to insertion with the assistant helping to open the patient's mouth, unless head/neck movements are considered inadvisable or are contraindicated.
- The leading edge of the i-gel's tip must follow the curvature of the patient's hard palate upon insertion.
- If there is a failure to achieve complete insertion after utilizing the standard insertion technique and a jaw thrust, deep rotation or triple maneuver has also failed, then the device should be inserted under direct vision by laryngoscopy or one size smaller device should be used.
- After insertion, i-gel should be taped down from maxilla-to-maxilla.
- Excessive air leak during manual ventilation is primarily due to either sub-optimal depth of anesthesia or sub-optimal depth of i-gel insertion.
- Particular care should be taken with patients who have an ASA or Mallampati score of III and above, or who have fragile and vulnerable dental work, in accordance with recognized airway management practices and techniques.
- As with all supraglottic airways, it is important to ensure the correct size of device is used, lubrication is optimal, the device is inserted and positioned correctly and regularly checked intraoperatively in order to reduce the potential for nerve damage, tongue numbness, cyanosis and other potential complications.
- No attempt should be made to use i-gel as a conduit for intubation without fibre optic guidance.
- The i-gel is supplied in a protective cradle or cage pack to ensure the device is retained in the correct flexion prior to use and also acts as a base for lubrication. The i-gel must always be separated from the cradle or cage pack prior to insertion. The cradle and cage pack are not introducers and must never be inserted into the patient's mouth.
- : Do not apply excessive force on the device during insertion. It is not necessary to insert fingers or thumbs into the patient's mouth during the process of inserting the device. If there is early resistance

during insertion, a 'jaw thrust', 'Insertion with deep rotation' (Figure 24) or triple maneuver is recommended.

- In order to avoid the possibility of the device moving up out of position prior to being secured in place, it is essential that as soon as insertion has been successfully completed, the i-gel is held in the correct position until and whilst the device is secured in place.

Procedure:

- Pre-use check and preparation:
  - Select the appropriate size i-gel by assessing the patient's anatomy.
  - Inspect the packaging and ensure it is not damaged prior to opening.
  - Inspect the device carefully, check the airway is patent and confirm there are no foreign bodies or a BOLUS of lubricant obstructing the distal opening of the airway or gastric channel.
  - Open the i-gel package and on a flat surface take out the protective cradle containing the device.
  - Place a small bolus of a water-based lubricant, such as K-Y Jelly, onto the middle of the smooth surface of the cradle in preparation for lubrication. Do not use silicone based lubricants.
  - Grasp the i-gel along the integral bite block and lubricate the back, sides and front of the cuff with a thin layer of lubricant.
  - Place the i-gel back into the cradle in preparation for insertion.
- Insertion:
  - A proficient user can achieve insertion of the i-gel in less than five seconds.
  - Grasp the lubricated i-gel firmly along the integral bite block. Position the device so that the i-gel cuff outlet is facing towards the chin of the patient.
  - The patient should be in the 'sniffing the morning air' position with head extended and neck flexed. The chin should be gently pressed down before proceeding to insert the i-gel.
  - Introduce the leading soft tip into the mouth of the patient in a direction towards the hard palate.
  - Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt.
  - At this point the tip of the airway should be located into the upper osophageal opening and the cuff should be located against the laryngeal framework. The incisors should be resting on the integral bite-block.
  - I-gel should be taped down from 'maxilla to maxilla'.
  - If required, an appropriate size nasogastric tube may be passed down the gastric channel.
  - Gastric channel use:
  - Select the appropriate size of nasogastric (NG) tube.
  - If regurgitation is anticipated, then it is recommended that a nasogastric tube is passed through the gastric channel of the i-gel into the patient's stomach and the stomach emptied. The nasogastric tube can be left in situ.
- Removal:
  - Once consciousness is regained and protective reflexes such as coughing and swallowing have returned, gently suction around the airway device in the pharynx and hypopharynx.
  - Once the patient is awake or easily arousable with vocal commands, the i-gel can safely be removed by asking the patient to open his/her mouth wide, and replaced with an MC (medium concentration oxygen) mask.

  - DO NOT attempt to forcibly remove the device if the patient is biting on it. Wait until the patient, on vocal command, has fully opened their mouth or opens their mouth spontaneously.

Equipment – IV Catheter

Indications:

- Any patient requiring IV medications.

Contraindications:

- None.

Precautions:

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

Procedure:

- Inform patient of procedure.
- Apply Tourniquet.
- Select and clean site. Preferred needle size is 18 to 20. Preferred site is left AC or (secondary) right AC.
- 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 NS to ensure placement. Use pigtail extension.
- Secure with dressing.
- The following patients should have at least an 18 ga at the AC level or more proximal:
    - Calf pain, tenderness, or swelling,
    - Chest pain,
    - Hypotension,
    - Shortness of breath,
    - Syncope,
    - Tachycardia, or
    - Tachypnea.

Equipment – IV Pump

Indications:

- Patient requiring drip medications.

Contraindications:

- None.

Precautions:

- None.

Procedure:

- Cassette priming and loading:
- Make sure flow regulator is closed (white screw pushed in).
- Insert piercing pin with a twisting motion into medication.
- Fill drip chamber.
- Invert cassette. (blue luer lock oriented toward the ground/away from the medication)
- Turn flow regulator counterclockwise until a drop of fluid is seen in pumping chamber. (fill large circle in chamber halfway with fluid)
- Turn cassette upright and prime remainder of administration set. (blue luer lock will be oriented toward the medication)
- Push flow regulator closed.
- Make sure proximal clamp (above cassette) is open.
- Open cassette door and insert cassette.
- Close door.

- **Manual Infusion:**
- Set Rate of mL/hr. Set off of medication math done by paramedic to deliver the desired dose of medication to treat patient needs.
  o Set VTBI in mL. Size of medication bag to be administered.
  o Duration is calculated. Expected length of drug administration.

Drug Library Infusion:

- Turn on
- CCA Selection: EMS or ICU depending on drug needed
- Line A selection
- Drug List - page down until drug is found and selected
  - o program Volume To Be Infused
  - o program duration
- Pump will calculate dose and rate.
- Select Start
- Select Yes to confirm the program and begin infusion

IV **Pump Usage From Policystat**

- After turning on the infusion pump, the clinician will select a clinical care area (CCA) appropriate for their department/facility.
- When transferring a patient to a different CCA, the nurse that is accepting the patient will program for the new CCA.
- Each CCA has a drug library with programmed soft and hard limits, as well as the option "no drug selected." In emergent situations, "no drug selected" may be used with the intent of selecting the medication as soon as clinically feasible.
- A hard limit is an amount of medication that cannot be exceeded during programming.
- When a clinician encounters a hard limit while trying to administer a medication to a patient, it should be considered as a warning to the clinician to verify the medication is entered correctly.
- The following steps will be taken when a hard limit is encountered:
- Stop the administration of the medication.
- Double check the ordered medication, ordered calculation if possible, pump settings, and verify the right medication is being distributed with a second clinician.
- If the preceding are double checked and the dose attempted when the hard limit was reached is still considered to be correct, administer the medication as "No Drug Selected."
- If the medication is in question, do not administer and contact the physician to verify the order is placed correctly.
- A soft limit is a medication specific dose amount that when assigned to a medication can be overridden during programming. Each medication may have upper and/or lower soft limits associated. If a dose exceeding the soft limit is entered, an alert will be shown. When a soft limit alert is received, override the soft limit by confirming and starting the infusion or choose to go back and re-enter a different dose.
- The option of "no drug selected" may be used when the medication to be infused is not yet programmed into the CCA library. Please notify pharmacy if a medications needs to be programmed.
- IV pump alarms should be responded to promptly and corrective action taken. If a problem cannot be corrected, replace infusion pump, take the pump out of service, and send to BioMed for repair. Place a maintenance request tag on the pump listing the error code.
- If an IV infusion error occurs, the pump is to be pulled from service, tagged, and sent to BioMed until investigation of error is completed.
- If an IV infusion error occurs and safety features (i.e. drug library) were bypassed, this will be noted in event report.
- Compliance report data such as: bypass of drug library, overrides, or edits of soft limits, and hitting hard limits, etc., will be run on a routine basis and the data shared with unit staff.
- If the safety software is bypassed during an emergency, the clinician will capture the drug library in the safety software once the emergency is resolved. If the cautionary icon is displayed on the infusion pump indicating the safety software has been bypassed, the clinician will program the pump to capture the drug library.

Infusion Pump Operation and Guidelines

- The pumps are cassette based multi-function infusion systems.
- The IV pump allows two lines in (A primary, B secondary) and one line out.
- Certain medications shall not run concurrently including but not limited to insulin and vasoactive medications. This includes High Alert Medications, PHA06-02 and Titrating Medications, PHA03-12. This is because the medications will be mixed in one line from the pump to the patient.

- High Alert Medications, PHA06-02 shall not run as a secondary infusion, nor shall a secondary infusion be set up on a high alert medication.
- When 3 or more IV infusions must run to a single access site, a multiport connector shall be used rather than "chaining together" via lower y-site ports.
- Heparin IV infusions shall run on a dedicated line, to a dedicated access site.
- Insulin IV infusions may be connected by y-site behind continuous IV fluids ONLY, to a dedicated access site.
- There are three advanced programs of delivery:
    - Standard Program (Dose Calculation) – Allows programming dose rates in alternative units of measure. Dose calculation can be used in simple delivery, loading dose, and multi-step.
    - Loading Dose – Allows programming of an initial infusion rate for a specific volume, followed automatically by a maintenance rate from the same container (e.g., a fluid challenge). If Dose Calc is used, the loading dose and maintenance dose are in the same unit of measure, over the same period of time (microgram [mcg]/minute), from the same container.
    - Multi-step – Allows a sequential program to deliver up to ten steps; fluid volumes and delivery rates may be programmed for each step. The program may be entered based on Rate and Volume or Volume and Time. If Dose Calc is used, the delivery steps are in the same unit of measure, over the same period of time, from the same container.
- The pump is programmed to go to a keep vein open (KVO) rate when the VTBI completes. Post infusion rate option in simple and concurrent delivery modes should accommodate critical medications (e.g. vasoactives). With this option, the pump will still alarm at the completion of the VTBI and then will continue to infuse at the programmed rate until the solution in the container is depleted.

Titrating Medications

- Orders for medications that require titration shall include the desired state the prescriber wishes to achieve for the patient (i.e., titrate medication to achieve blood pressure [BP] of 125/70).
- Dosage adjustment increments and intervals between dose changes shall be specified by the provider to direct clinical staff how much to increase or decrease the medication and how frequently to re-assess the patient for potential dose adjustments(i.e. titration parameters) as attempts are made to achieve the "desired state" for the patient.
- Titration increments may vary depending on the patient's clinical status, comorbid conditions and other factors.
- The frequency of dose adjustments will vary and upward and downward adjustments may be unequal.
- Upward adjustments are governed by speed of onset and time to peak effect of the drug.
- Downward adjustments are generally related to the drugs half-life and duration.
- Medications ordered for titration shall be approved by the Pharmacy and Therapeutics Committee. Safe dose ranges for medications that are to be titrated shall be reviewed and approved by that committee. For titrated medications:
- A dose limit (maximum and minimum limits) at which the physician shall be called for each titrated medication will be set.
- Accepting orders for titration of medications without dose limits is unsafe. Therefore orders received for titrated medication without dose limits will not be prepared or dispensed. The pharmacist will contact the prescriber to obtain dose limits.

- If a titrated medication continues at or above the dose limit, the licensed independent practitioner ordering the titrated medication shall be contacted and approve the current dose at a minimum of 24 hours by writing specific orders with a new dose limit at which he/she should be contacted.
- Limits shall be clearly documented on each label of titrated solutions.
- Dose limits for titrated medications shall be included on prepared order sets, clinical practice guidelines or written protocols for titrated medications.
- Smart Pump drug library entries for titrated medications will include dose limits based on those limits approved by the Pharmacy and Therapeutics Committee.
- Clinical staff shall assess the patient frequently when titrating medications to detect potential problems as early as possible
- Nursing staff will follow protocols and administration instructions for titrateable medications as ordered by the physician.
- Titrateable medications must be initiated and titrated according to the protocol ordered by the physician.
- Any variance to the protocol, to include initiation rate or titrate adjustments, will be approved by the physician and documentation to support the variance reflected in the patient chart.
- Block charting may be utilized in urgent/emergent situations when rapid titration of medication is necessary. Documentation on the IV Spreadsheet will note a pause in the infusion and defer to block charting for narrative of event. IV will be resumed at new rate after patient has stabilized.
- In the event two medications are being used for the same indication and have similar titration parameters (ie. RASS for sedatives), the initial medication will be treated as a continuous infusion and held at its current rate. A provider order will be required to make additional adjustments. The second medication will be titrated per protocol.

Equipment – Kendrick Extrication Device

Indications:

- Spinal Immobilization Clearance.
- General Splint.

Contraindications:

- Patients with easy access requiring rapid extrication.

Precautions:

- None.

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.

Equipment – Laryngoscope Blade

Minimum requirements for emergency intubation

1. BVM with adjuncts
2. Pre-oxygenation / Nitrogen washout for 3 minutes
3. Laryngoscope with both straight and curved blades (light working or screen on)
4. ET tube with backup tube size
5. Stylet
6. 10mL syringe
7. Suction on and backup available
8. Bougie
9. Supraglottic airway
10. Surgical airway equipment
11. Waveform [Capnography]

Failed Airway Options

- Minimum requirements for emergency intubation:
    o BVM with adjuncts
    o Magill forceps
    o Supraglottic airway
    o Surgical airway kit

Airway Evaluation

- Time permitting, the first step in preparation is to perform an airway evaluation, which includes a history of intubation and difficult intubations. Evaluation of the external anatomy may be predictive of a difficult airway. Patients with restricted cervical motion, obesity, and facial or neck trauma may present as difficult airways, and providers should anticipate alternative modes of intubation in these situations.
- LEMON check to predict a difficult airway
    o "Look" externally for signs of trauma, facial hair, neck masses, large tongue, or dentures.
    o "Evaluate" the 3-3-2 rule. Less than three fingers between the incisors, three fingers between the hyoid bone and the mental protuberance, and two fingers between the hyoid bone and the thyroid cartilage (Adam's Apple) may be representative of a difficult airway.
    o "Mallampati" class greater than or equal to 3 is predictive of difficult intubation.
    o "Obstruction" or obesity may restrict visualization of the vocal cords.
    o "Neck" mobility and any restriction of it can contribute to difficulty passing the endotracheal tube.
- HEAVEN Criteria to predict decreased first pass success rate and increase oxygen desaturation
- One or more of the following criteria will indicate lower intubation success rates and an increase risk of oxygen desaturation than with no criteria present. The more criteria present the lower the chance of first pass success rate and higher likelihood of oxygen desaturation.
    o Hypoxemia – oxygen saturation value ≤93% at the time of initial laryngoscopy

- Extremes of size – pediatric patient (≤8 years of age) or clinical obesity, defined by the operator as anticipated to interfere with either bag-valve-mask ventilation and/or visualization of glottic structures during laryngoscopy
- Anatomic challenge – any structural abnormality that is anticipated to limit laryngoscopic view; this may include trauma to the airway structures themselves, limited oral aperture, large tongue, short neck, mass lesion or swelling, foreign body, or external structure that limits laryngoscopy or obstructs visualization
- Vomit/blood/fluid – clinically significant fluid noted in the pharynx/hypopharynx prior to laryngoscopy that is anticipated to interfere with either bag-valve-mask ventilation and/or visualization of glottic structures during laryngoscopy
- Exsanguination – suspected anemia, either chronic (based on past medical history) or acute (based on chief complaint, mechanism of injury, or examination findings), raising concerns about limiting safe apnea times.
- Neck mobility issues – limited cervical range-of-motion

Proper Patient Positioning

- Although ramping the patient's torso to 30 degrees is beneficial for several reasons: decreased aspiration risk, reducing ICP, and allowing bariatric patient neck and chest tissue to be displaced inferiorly to allow increased oxygenation and ventilation during the pre-intubation phase.
- Flextension position should be done with intubations were cervical spine injuries are not suspected.
- The key with flextension is to turn the patient's face to be parallel to the ceiling once the patient has been moved into the ear slightly above sternal notch position.
  1. Stand behind the patient
  2. Lift their head
  3. Push their head towards their feet (causing base of neck flexion) until their ear holes (external auditory meatus) are at or higher than the level of their sternal line (sternal notch to xiphoid process)
  4. Keep the face plane to stay parallel to the ceiling
  5. Pad under head & shoulders until this position is maintained

Wide View Laryngoscopy

- Keep your own eyes up and away from the patient's face. Although some would argue that true binocular vision does not always occur or is not always necessary, the "heads up" position generally provides optimum vision because it increases the focal distance to the cords. The importance of focal distance is illustrated when intubating patients while sitting on the floor and behind the patient's head; keeping your own head up and away from the patient provides an optimum focal distance and visual field for intubation. The other advantage of the "wide view" ("heads up") position is that it allows the intubator to see more than the cords in the visual field – an important concept in managing most emergency intubations in uncontrolled conditions.

Incremental Laryngoscopy

- Emergency airway management generally involves unscreened patients with a variety of anatomical variations, including the "ugly airway." In this technique, the laryngoscope is progressively and carefully moved through the pharynx in increments, identifying anatomical landmarks and variations along the way ("walking the tongue"). When the epiglottis has been identified, the tip of the blade is then placed in the vellecula. Finding anatomical landmarks and proper placement of the laryngoscope blade should not be

hurried, and should be expected to take at least 5-10 seconds in most unscreened patients. Only after landmarks have been identified, and the blade optimally placed in relation to the epiglottis, should any significant pressure be applied to open the airway with the laryngoscope blade. If the cords are then sufficiently visible enough to confidently pass the ETT or bougie, one of these is then passed and the intubation is completed.

Bimanual Laryngoscopy

- Use both hands to find the cords. While one hand holds the laryngoscope, the other should be kept free to move the laryngeal tissue. During RSI, BURP maneuver is generally applied by an assistant. If the view of the cords still needs to be improved, that can best be done by the intubator him/herself, again as long as the second hand remains free. External Laryngeal Manipulation (ELM) can be done by the intubator to improve the glottic opening view. Once optimal glottic view is obtained, the assistant then takes over BURP positioning in the "new and improved" position. "Hand over hand" is a variation of this technique to maintain glottis opening best view.
- Left the head off of the bed to improve glottis view
- If you are unable to displace the larynx forward, use two hands to move the laryngoscope. Then lock left arm to the body to maintain the position.
- Scoop epiglottis with blade instead of pulling out to switch to miller blade.
- Pull Back if you are unable to view glottic structures in order to bring them into view in the top 1/3 of your video screen.

The point is to take the necessary time to identify landmarks, and proceed carefully in increments when challenged by a truly difficult emergency airway.

Bougie Tips and Perspectives

- The gum elastic bougie (Eschmann, "tube changer," etc.) is a practical and effective first-line device for securing extremely difficult airways, particularly in the presence of blood, vomitus, or anatomic deformities. It can generally be placed by direct vision easier than a cuffed ET tube, and can often be placed by "feel" of the tracheal rings even when anatomic structures are obscured. If the ET tube cannot be quickly and confidently passed through the cords under direct vision, it is generally best to first pass the bougie to secure tracheal placement, then pass the ET tube over the bougie.
  - Shape the bougie
  - Bougies tend to take on the shape of their packaging. When coiled in a small pack, for example, the bougie will need to be appropriately shaped before use. Note that bougies all have "short term memory" and can be re-shaped quickly and easily.
  - Rotate to feel rings
  - Tracheal rings are usually easy to identify when the bougie is in the trachea, with the coude' tip angled anteriorly, toward the front of the trachea. However, sometimes it is necessary to rotate the bougie tip through 180 degrees to get the best "feel" of the rings, even when the bougie is correctly placed.
  - Even when correctly placed in the larynx, the bougie can still hang up on anatomical structures. When encountering an obstruction, back the bougie a bit, and rotate gently ("back and roll") to walk the tip past the obstruction.

Troubleshoot with laryngoscope

- The laryngoscope can be used as a "troubleshooting tool" for a variety of situations during intubation. When difficulties occur in passing the bougie through the cords, particularly when passing the bougie by feel in a "blind" procedure, the laryngoscope can often be used to help provide some helpful orientation to the position of glottic structures and to the position of the bougie tip, even if the cords themselves cannot be seen.

- The tip of the gum elastic bougie (and its plastic variations) is generally considered to be an atraumatic tip if handled gently and carefully. After the trachea is identified, place the bougie deep into the trachea. This prevents flipping the tip out of the trachea and into the esophagus when the ET tube is guided "around the corner" of the pharynx.

- It is generally best to afterload the bougie with an ET tube, after it is placed and confirmed in the trachea. Preloading might save a few seconds, but that kind of time savings is not generally significant. More importantly, preloading the ET tube interferes with the proper "feel" of the bougie tip on the tracheal rings, and also interferes with rotation of the bougie tip.

- If the bougie tip were to be placed just beyond the cords, it would be necessary to use the second hand at the mouth to firmly stabilize bougie in the trachea when loading the ET tube. This makes afterloading the ET tube difficult, since the proximal end of the bougie is not well stabilized. If the patient is sedated and paralyzed during RSI, however, and the bougie is placed deep in the trachea ("bury the bougie"), the second hand can adequately stabilize the bougie at the proximal end. This makes loading the ET tube much faster and easier.

- Once the ET tube is loaded over the bougie, it must now be guided around the angle of the pharynx at the base of the tongue. Straightening the airway makes this step much easier and quicker. The airway can be straightened with the second hand by using a laryngoscope, or by simply lifting the tongue and jaw with the thumb of a gloved hand.

- Even when properly placed, the ET tube can still hang up on anatomic structures, much the same as the bougie. As with the bougie, the tip of the ET tube can sometimes be moved back and rotated ("back and roll") to clear the obstruction. As with any type of cuffed tube, a gentle rotation of the ET tube 90 degrees may aid the ET tube passing through the cords.

- Whether or not a bougie is used first for placement, the passing of the ET tube cuff through the larynx can generally be felt by the assistant who is holding cricoid pressure.

Equipment – LUCAS Device

Indications:

-

Contraindications

- Patient is too large for the device to be secured.
- Patient is too small for the device to be secured.

Precautions

- Ensure neck strap is used.

Procedure

- Open bag.
- Turn device on.
- Place back plate under the patient below the armpits.
- Remove device from bag and attach over the patient to the back plate.
- Position suction cup to touch the patient's lower sternum.
- Press "ACTIVATE CONTINUOUS" OR "ACTIVATE 30:2" to begin compressions.
- Attach stabilization strap under patient's neck.
- Assess the device for movement, reposition as necessary, and treat any device alarms.

Equipment – MAD Nasal Device

Indications:

- Need to administer intranasal medications without the need of intravenous access.
- Atomized nasal medications are the optimal size for rapid absorption across mucosal membranes into the bloodstream, avoiding first-pass metabolism.

Contraindications:

- None in the emergency setting

Precautions:

- Mucus, blood and vasoconstrictors may reduce absorption.
- Suction nostrils or consider alternate drug delivery method in these situations.
- Use the appropriately concentrated drug.
- Follow drug manufacturer directions.

Instructions:

1. Using the draw needle of your choice aspirate the proper volume of medication required to treat the patient (including medication to account for the dead space in the device).
2. Attach the MAD Nasal Device to the syringe via the luer lock connector.
3. 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).
4. Briskly compress the syringe plunger to deliver half of the medication into the nostril.
5. Move the device over to the opposite nostril and, repeating steps 6 and 7, administer the remaining medication into the nostril if indicated.

Equipment – Magill Forceps

Indications:

- Need to manipulate or remove any material in the mouth of a patient.

Contraindications:

- Inability to visualize the distal tip of the magill forceps because a laryngoscope is unavailable.

Precautions:

- The device can be used with multiple hand positions.

Instructions:

- Multiple hand positions are available, but one study showed that the superior hand position was optimal for foreign body airway removal.
- The superior hand positioning when using Magill forceps is grasping the handles with the right hand in a handshake position, with the angle of the forceps superior to the hand.
- This technique allows for a better control of the forceps, without effecting the field of vision or the laryngoscope when rotating the grasping end.

1. **Superior Hand Method:**
   - The forceps are grasped from with the right thumb and middle finger, with the right hand in a handshake position, and the angle of the forceps superior to the hand.
   - This positioning allows for horizontal orientation of the grasping end at the glottic opening, therefore minimizing the risk of damage to the epiglottis during removal.
   - The field of vision is clear with the hand below the angle of the forceps.
   - Additionally, the hand can be easily rotated 180 degrees, so that the grasping end can be oriented vertically if needed, without interference from the laryngoscope.

2. **Overhand Method:**
   - A common pre-conceived notion is that the angle of the forceps should be aligned with the natural curvature of the airway.
   - However, this is incorrect, as the bend in the Magill forceps does not actually enter the airway.
   - With this positioning, the angle does not assist with visualization or the extraction of the foreign body.
   - The forceps are grasped by the right thumb and middle finger, with the right hand in a handshake position, but the angle of the forceps is inferior to the hand.
   - This positioning causes the grasping end of the forceps to be positioned vertically within the airway.
   - For foreign bodies in the hypopharynx, this method may yield success.
   - However, if the foreign body is located near the glottic opening, there is a higher risk of epiglottis trauma during a removal attempt.
   - Additionally, the range of rotation is limited to 90 degrees in this position, offering poor maneuverability.
   - Rotating the forceps in a counterclockwise manner causes interference with the laryngoscope.

3. **Underhand Method:**
   - The final method also has the angle of the forceps inferior to the hand.
   - In this case, the hand was in varied positions: supine, pronated, or flexed, as seen below.

- Each of these three positions used a similar backhanded wrist motion to insert the forceps, therefore they were grouped together and denoted as the "underhand method."
- In each of these positions, the grasping end of the forceps are oriented horizontally relative to the glottic opening.
- The ability to rotate the forceps is impaired by the laryngoscope and rotation limits the field of vision, thus making this an inferior method for foreign body removal.

Equipment –Meconium Aspirator – New born only

INDICATIONS FOR USE:

- Meconium Aspirator is intended for use as a suction device to aspirate meconium from a newborn's upper airway.

DIRECTIONS FOR USE:

1. Connect barbed end of Meconium Aspirator to suction line.
2. Set the suction pressure at 80mm Hg or less.
3. Intubate patient with proper ET tube.
4. Connect 15mm I.D. end of Neotech Meconium Aspirator to 15mm O.D. ET tube adapter.
5. Block thumb port with thumb to begin suctioning.
6. Suction for two seconds or less at a time until meconium is full removed. Suction meconium intermittently.
   a. Note: For intermittent suctioning, unblock thumb port to stop suctioning. Block thumb port again to continue suctioning.
7. Continue to suction while ET tube is withdrawn.
8. Discard after use.

Updated 6/11/25 - Version 25.10

Equipment – MegaMover

Indications:

- Need to move non-ambulatory patient that is unable to sit upright.

Contraindications:

- Patient exceeds the weight of the device or the limitation of the staff available to move the patient.
- The unit is damaged, frayed, cut, or soiled.

Precautions:

- Recommended to use at least four people to provide safe transport/transfer, thus reducing the possibility of accident or injury.
- Grab handles in line with the people lifting on opposite side of the unit - DO NOT "CROSS-HANDLE".

Instructions:

- Patients must not exceed 454kg or 1000lbs.
- The unit must be placed so the handle support straps are to the side opposite the patient. The MegaMover portable transport unit is for use by professional staff for lifting and transporting/transferring patients.
- It is recommended to use at least four people to provide safe transport/transfer, thus reducing the possibility of accident or injury.
- Grab handles in line with the people lifting on opposite side of the unit - do not "Cross-Handle". The MegaMover Portable Transport Unit is not designed for use when there is need for spinal stabilization or traction of the patient being transported.
- The MegaMover Portable Transport Unit is intended for limited use. If the unit is damaged, frayed, cut or soiled replace with new unit.
    - Do NOT use if MegaMover is punctured, torn, frayed, or excessively worn.
    - Do NOT Machine Wash or Dry.
    - Avoid contact with sharp objects.
    - Clean solid MegaMover with damp cloth. Soap, detergent, or disinfectant can be used.
    - Only use handle for lifting.
    - Use care to ensure grip is secure prior to lifting.
    - Do NOT store in contact with heat source greater than 200 degrees Fahrenheit.
    - Avoid dragging over rough surfaces.
    - Use minimum of four people to life patient.
    - Do NOT attach to mechanical lifts.

Equipment – Morgan Lens

Indications:

- Eye Trauma.

Contraindications:

- Penetrating eye injury.

Precautions:

- None.

Procedure:

- Pain: Consider topical anesthetic (Tetracaine 1-2 drops)
- Attach LR 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 500 ml 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.

Morgan Lens Instructional Chart
Instructions for using the Morgan Lens for continuous medication or lavage to the cornea and conjunctiva.

STEP 1:
INSERTION
Instill topical ocular anesthetic, if available.
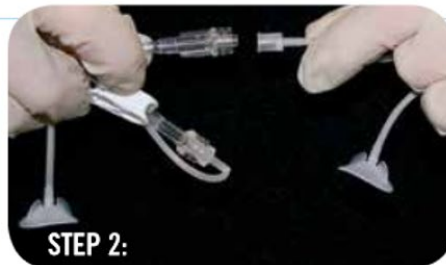
STEP 2:
Attach a Morgan Lens Delivery Set (or a syringe or an I.V. set-up) using solution and rate of choice*; **START FLOW.**

STEP 3:
Have patient look down, insert Morgan Lens under upper lid. Have patient look up, retract lower lid, drop lens in place.

STEP 4:
Release the lower lid over Morgan Lens; adjust flow. Tape tubing to patient's forehead to prevent accidental lens removal. Absorb outflow with the Medi-Duct (for best results, tape to head as shown). **DO NOT RUN DRY.**

STEP 5:
REMOVAL
CONTINUE FLOW.
Have patient look up, retract lower lid—hold position.
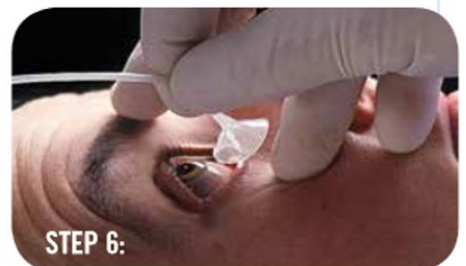
STEP 6:
Slide Morgan Lens out.
TERMINATE FLOW.

Equipment – Nasal Cannula

Indication:

- Need to provide oxygen at flow rate 0.5-15 Lpm by nasal cannula.
- Typical flow rate is 0.5-6 LPM

Contraindication:

- None in the emergency setting.

Precautions:

- High flow nasal cannula at 15 Lpm is only to be used on sedated patients during pre-oxygenation/nitrogen washout prior to intubation.
- ETCO2 nasal cannula flow rate has a recommended maximum at 5 Lpm.

Procedure:

- Apply nasal cannula with nasal prongs curved down towards feet not up towards head.
- Loop cannula tubing around ears and slide tubing collar up toward the patient's neck to secure the tubing to the patient's face to prevent cannula from becoming displaced.
- Select desired flow rate for patient needs.
- Monitor SPO2, airway patency ,and mental status.
- If patient oxygen needs increase a different airway device may be needed such as a non-rebreather mask or a BVM.

Updated 6/11/25 - Version 25.10

Equipment – Nebulizer

Indications:

- Medications requiring nebulization.

Contraindications:

- None.

Precautions:

- None.

Procedure:

- Select correct medication.
- Confirm orders, dosage, and expiration.
- Check patient allergies.
- Add medication to reservoir of Nebulized. 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.

Equipment – Needle Decompression

Indications:

- Rescue Task Force
- Chest Pain / Suspected Cardiac Event

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.

ARS / SPEAR Procedure:

- Select site:
    - Fifth intercostal space on anterior axillary line OR
    - Second intercostal space on mid-clavicular line.
- Cleanse site.
- Remove red cap from case with twisting motion and remove needle from case.
- Insert needle through skin targeting the rib below the level of intended insertion site.
- Direct needle superiorly over rib and into thoracic cavity ensuring perpendicular position relative to thoracic cavity.
- Ensure needle entry is not medial to nipple line and not directed toward heart.
- Release catheter from needle by 1/4 turn and advance catheter. Remove needle only when catheter has been fully inserted.
- If tension pneumothorax returns, repeat procedure.

Turkel Procedure:

- Select site:
    - Fifth intercostal space on anterior axillary line OR
    - Second intercostal space on mid-clavicular line.
- 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.

Catheter Procedure:

- Select site:
    - Fifth intercostal space on anterior axillary line OR
    - Second intercostal space on mid-clavicular line.

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- Clean area with antiseptic.
- Insert Catheter 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.

Equipment - NG-Tube

Indications:

- Airway: RSI
- Endotracheal Tube (ET)
- iGel

Contraindications:

- Epiglottitis or Croup.
- Use orogastric route when facial trauma or basilar skull fracture.

Precautions:

- None.

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 20-60 ml of air.
- Tape tube in place and connect to low Suction if needed.

Equipment – Non-rebreather Mask

Indication:

- Need to provide oxygen at flow rate 10-15 Lpm

Contraindication:

- None in the emergency setting.

Precautions:

- Ensure bag is full of oxygen before being applied to the patient for oxygen delivery.
- Ensure patient's minute ventilation does not exceed the ability of the bag to refill between patient breaths.

Procedure:

- Attached to oxygen source at desired flow rate. (10-15 LPM)
- Hold your finger over the valve between the mask and bag to allow the bag to rapidly fill.
- Secured the head strap around the patient's head in order to secure mask to the patient's face.
- Monitor SPO2, airway patency, and mental status.
- Ensure patient's minute ventilation does not exceed the ability of the bag to refill between patient breaths.
- If patient oxygen needs increase a different airway device may be needed such as a BVM.

Equipment – NPA (Nostril to Earlobe)

Indications:

- Patients unable to control their airway.

Contraindications:

- Suspected basal skull fracture

Precautions:

- None.

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.
- Insert horizontal to the hard palate and in a nostril to earlobe direction, not inserted in an upward direction to avoid causing trauma to nasal turbinates.
- Reassess airway.

Equipment – OG Tube

Indications:

- Airway: RSI
- Endotracheal Tube (ET)
- iGel

Contraindications:

- Epiglottitis or Croup.
- Use orogastric route when facial trauma or basilar skull fracture.

Precautions:

- None.

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 20-60 ml of air.
- Tape tube in place and connect to low Suction if needed.

Equipment –OPA (Teeth to Angle of Jaw)

Indications:

- Unconscious or unresponsive.

Contraindications:

- Gag reflex.

Precautions:

- None.

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.

Equipment – Pelvic Binder

Indications:

- Suspected pelvic instability.
- Mechanism of injury to indicate possible pelvic fractures where pelvic binder application would reduce blood loss into the pelvis.

Contraindications:

- Children under 50 lbs (23kg) may be too small to obtain the 6 inch gap needed for closure.

Precautions:

- Single use only
- Obese patient requires T-POD, two belts may be affixed together using one power unit as an extender and the other as the pulley.
- T-POD could be replaced when soiled or after 24 hours of use.

Procedure:

- Slide belt under supine patient and into position under the pelvis.
- Center of the belt MUST be located over the greater trochanter of the femurs, not over the iliac crest.
- Trim the belt or fold belt, leaving a 6-8" gap over the center of the pelvis.
- Apply Velcro-backed mechanical advantage pulley system to each side of the belt.
- Slowly draw tension on the pull tab, creating simultaneous, circumferential compression.
- Amount of compression may vary per patient. 6-8" gap may close with compression.
- Secure the Velcro-backed pull tab to the belt.
- Record the date the time of application on the space provided.
- Circumferential compression should be released every 12 hours to check for skin integrity and provide wound care, as necessary. To re-tighten, draw Velcro-backed pull tab, secure and attach to belt.
- T-POD release time should be noted on the label.

Equipment – Physical Restraint

Indications:

- Behavioral.

Contraindications:

- None.

Precautions:

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

Procedure:

- [MEDICAL CONTROL](#) **must be contacted prior to or immediately following patient restraint.**
- 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.
- **DO NOT KEEP PATIENT IN PRONE POSITION OR TRANSPORT PATIENT IN PRONE POSITION.**
- Proper body alignment and patient comfort must be addressed.

Equipment – PICC Line and Central Line Access

Indications:

- Express request by the patient to utilize established access instead of starting an IV.
- Any patient who needs IV access, two attempts at IV access have failed, IO contraindicated or conscious patient, and at least one of the following:
- ALOC or GCS less than 8,
- Hemodynamic instability,
- Extreme respiratory compromise, OR
- Full Arrest.

Contraindications:

- Site and/or device looks infected

Precautions:

- Use at least 10 mL syringe.

Procedure:

- 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/LR. Use at least a 10 ml syringe using a push-pause method. Remove flush while maintain pressure on syringe plunger.
- Attach appropriate IV fluids.

Equipment – Port Access Kit

Indications:

- Express request by the patient to utilize established access instead of starting an IV.
- Any patient who needs IV access, two attempts at IV access have failed, IO contraindicated or conscious patient, and at least one of the following:
- ALOC or GCS less than 8,
- Hemodynamic instability,
- Extreme respiratory compromise, OR
- Full Arrest.

Contraindications:

- Inability to obtain/maintain sterile field.

Precautions:

- Sterile technique must be utilized.

Procedure:

- 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/LR. Use at least a 10 ml syringe using a push-pause method.
- Stabilize needle with dressing, occlusive dressing, and/or tape. Document date, time, and your initials on external dressing.

Equipment – Pressure Infuser Bag

Indications:

- Need to infuse IV medications or fluids rapidly.

Contraindications:

- Infiltrated IV/IO site.

Precautions:

- Monitoring of vascular access patency must be maintained during infusion and stop infusion if infiltration occurs.

Instructions:

1. Slide IV bag between mesh and pressure bladder.
2. Feed cloth hanger loop through the top opening of the IV bag.
3. Set stopcock lever on inflation bulb to inflation position (A).
4. Pump inflation bulb until gauge indicates desired pressure.
5. To maintain pressure, point stopcock lever away from the inflation bulb (B).
6. To deflate, point stopcock lever toward inflation bulb (C).

Equipment – Scoop Stretcher

The stretcher is for professional use by a minimum of two trained operators.

Instructions:

- Adjusting the Stretcher Length
- The stretcher length can be adjusted to the patient's height by moving the telescoping foot section to one of four locking positions.
- To determine if length adjustment is needed, position the stretcher beside the patient and align the headrest area with the patient's nose.
- Adjust the foot section to extend a little beyond the bottom of the patient's feet.
- Adjust the length of the stretcher before uncoupling the halves.
- This ensures equal adjustment to both halves.

TO LENGTHEN OR SHORTEN THE STRETCHER

1. Move the lock-pin lever on each side of the frame to the unlocked position.
1. Note: When the stretcher is lying face-up on a flat surface, the locked position is "down" and the unlocked position is "up".
2. Pull the foot section outward to the desired length, stopping near one of the locking positions located at the holes along the foot-section frame.
3. Return both lock-pin levers to the locked position.
4. Push or pull the foot section a little until it locks into place.
5. Make sure both sides are securely locked.

Applying the Stretcher

To apply the stretcher to a patient, separate the stretcher halves and use local protocols when carefully moving the stretcher under the patient as follows:

1. Lay the stretcher next to the patient and adjust the length to the patient's height.
2. Unfasten the restraints (if stored on stretcher).
3. To separate the stretcher halves, unlock the Twin Safety Lock® coupling at each end of the stretcher. To unlock a coupling, press both levers of the Twin Safety Lock® and pull the coupling halves away from each other.
4. Position half of the stretcher on each side of the patient, aligning the center of the headrest area with the patient's nose.
5. Carefully work the stretcher halves under the patient until the end couplings meet. Note: Use care to avoid pinching or pulling the patient's skin, hair, or clothing while working the stretcher halves into place.
6. To rejoin the stretcher halves, align the right and left halves of the head and foot couplings and push them together until the Twin Safety Locks® engage.
7. Check that the Twin Safety Locks® at both ends of the stretcher are fully engaged. To test for proper lock engagement, pull the coupling halves away from each other without pressing on the lock levers. The couplings will remain securely joined if the locks are fully engaged.
8. Fasten and tighten all patient restraints.

Equipment – Splint General

Indications:

- Bites and Envenomations.
- Extremity Trauma.
- Pain Control.
- Universal Patient Care.

Contraindications:

- None.

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.

General 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.
    - Hand: In position of function.
- Assess distal pulse, motor, and senses before and after splinting.

Evac-U-Splint 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.

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- o   Secure head using adhesive tape.
- o   Assess patient's respiratory and neurovascular status.

Equipment – Stair Chair – Adult Only

Indications:

- Patient movement down or up stairs.

Contraindications:

- Full spinal motion restriction required.

Precautions:

- Patient's with decreased mental status, or those unable to sit up right without assistance may require alternative movement methods.

Procedure:

- Remove stair chair from the ambulance.
- Extend the upper control hand and put it over your shoulder to carry the stair chair.
- Extend the upper control handle to match your height or extend to maximum length for going down steps.
- Lock wheel locks so the chair is secured for the patient transfer.
- Unfold the chair to the locked position.
- If the upper control handle is not fully extended, you can extend it now.
- Unfold the foot rest.
- Open the restraints to be free and clear of the chair frame.
- Use minimum two person lift to get patient to the stair chair.
- Secure the restraints snug, but not overly tight. (three vertically held fingers between the strap and the patient is considered snug)
- Release the wheelocks to move the patient.

Moving Down Stairs

- Have head-end upper control handle is fully extended.
- Put stairtread device into the down and locked position.
- Extend both footend handles and lock them into place.
- Inform the patient they will be tipped backwards.
- Move the chair to the edge of the stair.
- The EMT at the head will face the patient and will need to apply slight downward pressure on the upper control handle in order to orient the chair to the proper angle of the stair.
- The EMT at the foot end of the chair will face the patient and step backwards down the stairs.
- Communicate openly between chair occupant and other chair operators.

Moving Up Stairs

- Lock upper handles into the open position.
- Lock the stairtread device in the up and locked position.
- Operator behind the patient's head will face the chair and walk backwards up the stairs.
- Operator at the patient's feet will extend the foot end handles and face the patient and walk up the stairs.
- The patient is lifted in the chair and no chair contact is made with the stairs.

- Do not use the stair treads to move patient up the stairs.

Transferring from stair chair to the cot.

- Place height of the cot at the same height of the stairchair.
- Unfasten the stair chair securement straps and assist the patient to stand and pivot to the ambulance cot.

Equipment – Stylet

Indications:

- Used to provide shape and support for endotracheal tubes (ETT)

Contraindications:

- None in the emergency setting.

Precautions:

- Do not allow the stylet to extend past the end of the ETT to prevent the stylet from injuring the patient's trachea during intubation.
- Lubricate stylet prior to insertion into the ETT to ensure easy removal after ETT has been placed.

Procedure:

- Select the appropriately sized stylet for the ETT it will be used with.
- Lubricate the distal end of the stylet.
- Insert the stylet into the ETT and stop insertion at the level of the murphy eye of the ETT.
- Bend the proximal end of the stylet over the 15mm BVM adaptor to prevent the stylet from extending past the end of the ETT.
- Bend the stylet to the desired shape for the required intubation so that the ETT will maintain this shape for the procedure.
- After intubation-
    - Anchor the ETT to the corner of the mouth by holding the ETT with one hand and remove the stylet with the other hand so that the removal of the stylet does not extract the ETT.

Equipment – Suction Bulb Syringe

Indications:

- Infant needing oral or nasal secretions cleared.

Contraindications:

- None in the emergency setting.

Precautions:

- Thick secretions may require saline to loosen secretions.

Instructions:

1. Squeeze the air out of the bulb. Keep the bulb squeezed.
2. Gently place the tip of the squeezed bulb into the mouth or nostril that needs clearing.
3. Let go of the bulb to let the air back into it. This will pull the mucus out of the nose and into the bulb.
4. Squeeze the mucus out of the bulb and onto a tissue.
5. Suction the other nostril the same way as the first.
6. If mucus is too thick to suction, you can thin it with saline.

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Indications:

- Endotracheal/nasotracheal suctioning when the patient has audible secretions in the upper airways, is showing signs of inadequate ventilation due to secretion build-up and routine airway maintenance.
- ETCO2 indicated reduction in ventilation. Goals of suctioning are to maintain a patent airway by removing secretions, which helps to facilitate ventilation.

Contraindications:

- Lack of secretions and patients who are hemodynamically unstable.

Precautions:

- Hazards of suctioning include hypoxia, deterioration of hemodynamic status, tracheitis, damage to mucosal membrane, occlusion of airway with catheter and sudden death.

Procedure:

IF TRACHEOSTOMY TUBE IS PLUGGED. EMERGENCY REMOVAL OF THE TRACHEOSTOMY TUBE MAY NEED TO BE DONE AND BVM MASK STOMA INITIATED WHILE TRACHEOSTOMY TUBE IS CLEARED AND CAN BE REPLACED.

1. Locate proper size suction catheter for patient and equipment being suctioned size.
2. Preoxygenate patient to prevent hypoxia. However, hypoxia may be due to secretions in the airway device and this procedure may be required to correct the problem.
3. Removed any devices attached to the ETT or Tracheostomy tube.
4. For thick secretions 2-5ml of NS may be used to mobilize secretions.
5. Gently insert suction catheter into the tube until resistance is felt.
6. Suction in a rotating motion while withdrawing the catheter. Suction no longer than 10 seconds. Monitor patient's cardiac rhythm and oxygenation saturation level during the procedure.
7. Reattach ventilation device and resume ventilation and oxygenation.
8. Confirm patent airway with waveform ETCO2.

Equipment – Suction OG/NG

Indications:

- Need to decompress stomach of air or fluids to facilitate more efficient ventilation and oxygenation.

Contraindications:

- Suspected basal skull fracture.

Precautions:

- Nasogastric insertion - Nasal passages may bleed if alpha agonist spray is not used. Blood on vocal cords may cause laryngospasm.
- Orogastric insertion - If patient has intact gag reflex the patient may vomit and aspirate.

Procedure:

- **Nasogastric Insertion -**
  - Explain procedure to patient.
  - Use alpha agonist nasal spray 2-3 sprays in the nare the NG tube will be inserted into.
  - Measure tube from xiphoid process to ear to nose for proper length. Mark tube length before insertion with tape.
  - Lubricate tube with water-soluble jelly.
  - Advanced tube along nasal floor. Aiming from the nose to the ear.
  - Advance the tube into the stomach.
  - Auscultate the patient's/resident's epigastric area approximately 3" below the sternum with the stethoscope. Gently insert 20-30 milliliters (ml) of air into the tube, using a large bore (Toomey) syringe. For pediatric insertions, an air bolus of 5-10 ml should be used during the verification process.
  - When you hear the air bubble entering the stomach, gently draw back on the piston of the syringe to aspirate gastric contents.
  - The appearance of gastric contents implies that the tube is patent and in the stomach. If no gastric contents appear when you draw back on the syringe, the tube may be in the esophagus, and advancement of the tube may be necessary to aspirate gastric contents.
  - After placement is confirmed. Tape tube to the patient's nose.
  - Connect to low pressure suction and remove stomach contents.
- **Orogastric Insertion -**
  - Explain procedure to patient.
  - Measure tube from xiphoid process to ear to mouth for proper length. Mark tube length before insertion with tape.
  - Lubricate tube with water-soluble jelly.
  - Advanced tube into mouth.
  - Advance the tube into the stomach.
  - Auscultate the patient's/resident's epigastric area approximately 3" below the sternum with the stethoscope. Gently insert 20-30 milliliters (ml) of air into the tube, using a large bore (Toomey) syringe. For pediatric insertions, an air bolus of 5-10 ml should be used during the verification process.
  - When you hear the air bubble entering the stomach, gently draw back on the piston of the syringe to aspirate gastric contents.

- The appearance of gastric contents implies that the tube is patent and in the stomach. If no gastric contents appear when you draw back on the syringe, the tube may be in the esophagus, and advancement of the tube may be necessary to aspirate gastric contents.
- After placement is confirmed. Tape tube to the patient's mouth.
- Connect to low pressure suction and remove stomach contents.

Equipment – Suction Rigid Catheter

Indications:

- Need to suction oral airway.

Contraindications:

- None in the emergency setting.

Precautions:

- EMT-B should only suction what they are able to visualize.
- EMT-P and above may suction using the SALAD technique in order to optimize decontamination of the airway.

Procedure:

- Attach the rigid suction catheter to the flexible suction tubing and suction patient as needed.
- Adjust suction regulator to patient size. Either adult or pediatric regulator settings.

Equipment – Suction Unit

Indications:

- Any patient with liquid airway obstruction.

Contraindications:

- None.

Precautions:

- Avoid or use caution in patients with a gag reflex.

Procedure:

- EMR and EMT: Only suction the upper airway.
- AEMT: Only suction the upper airway, unless the patient is already intubated, then tracheobronchial suctioning is permitted.
- Leave suction unit connected to wall charging port. (Should operate for 30-45 minutes on a full charge)
- 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.
- Two position regulator provides either >525mmHg or 120mmHg +/- 15%
- In order to provide lower pressure suctioning to pediatric patients pull out on the white regulator valve.
- Attach desired suctioning device to suction machine and suction with appropriate technique for that suctioning device.

Equipment – Thermometer

Indications:

- Universal Patient Care.
- Fever/Sepsis

Contraindications:

- None.

Precautions:

- Prehospital thermometers should only be used to measure a patient's temperature in the oral, axillary, or rectal body sites unless specifically designed for other locations by the manufacturer.
- Do not take a patient's temperature without using a Welch Allyn disposable probe cover. Doing so can cause patient discomfort, patient cross contamination, and erroneous temperature readings.
- **Oral Temperature Procedure:**
    - Using Probe with Blue Ejection Button and Blue Probe Well.
    - When used correctly, the SureTemp Plus thermometer accurately measures an oral temperature in approximately 4–6 seconds. The ability of the SureTemp Plus thermometer to take an accurate oral temperature requires correct user technique.
    - Holding the probe handle with your thumb and two fingers on the indentations of the probe handle, withdraw the probe from the probe well.
    - Verify that the oral model icon is selected by observing the flashing head icon on the instrument's display. If this icon is not flashing, press the Mode Selection button until the head icon appears.
    - Load a probe cover by inserting the probe into a probe cover and pressing the probe handle down firmly. The probe handle will move slightly to engage the probe cover. Use only Welch Allyn probe covers. The use of other manufacturer's probe covers or no probe cover may produce temperature measurement errors and/or inaccuracy.
    - With the Oral Mode indicator flashing, quickly place the probe tip under the patient's tongue on either side of the mouth to reach the rear sublingual pocket. Have the patient close his/her lips around the probe. Hold the probe in place, keeping the tip of the probe in contact with the oral tissue throughout the measurement process. Rotating "walking" segments appear on the display, indicating that measurement is in progress.
    - The unit will beep three times when the final temperature is reached. The measurement site, temperature scale, and patient temperature will display on the LCD. Final temperature will remain on the display for 30 seconds.
    - If you cannot correctly measure the patient's temperature in Normal Mode, the unit will automatically enter Monitor Mode. In this mode, measurement time is extended. Either repeat the temperature measurement in Normal Mode in the opposite sublingual pocket or keep the probe in place for three minutes in Monitor Mode. The thermometer will not beep to indicate a final temperature. Record the temperature before removing the probe from the site, as the temperature reading is not maintained in memory.
    - Long-term continuous monitoring beyond three minutes is not recommended in the Oral Mode.
    - After the temperature measurement is complete, remove the probe from the patient's mouth. Eject the probe cover by firmly pressing the ejection button on the top of the probe.
    - Return the probe to the probe well. The LCD display will go blank.

- o Patient actions may interfere with accurate oral temperature readings. Ingesting hot or cold liquids, eating food, chewing gum or mints, brushing teeth, smoking, or performing strenuous activity may affect temperature readings for up to 20 minutes after activity has ended.
- **Axillary Temperature Procedure:**
  - o Using Probe with Blue Ejection Button and Blue Probe Well.
  - o When used correctly, the SureTemp Plus thermometer accurately measures an axillary temperature for pediatric patients (ages 17 and younger) in approximately 10–13 seconds and for adult patients (ages 18 and older) in approximately 12–15 seconds.
  - o Ensure that the axillary probe (blue ejection button) and the blue probe well are installed.
  - o Holding the probe handle with your thumb and two fingers on the indentations of the probe handle, withdraw the probe from the probe well.
  - o Verify that the axillary mode is selected by observing the correct flashing axillary icon on the instrument's display. If this icon is not flashing, press the Mode Selection button to select the Adult Axillary or Pediatric Axillary icon is displayed.
  - o To ensure optimal accuracy, always confirm that the correct axillary mode is selected.
  - o After a temperature is taken and the probe is returned to the probe well, the instrument reverts to the original measurement site mode.
  - o Do not take an axillary temperature through patient's clothing. Direct contact between patient's skin and the probe is required.
  - o Load a probe cover by inserting the probe into a probe cover and pressing the probe handle down firmly. The probe handle will move slightly to engage the probe cover.
  - o Use only Welch Allyn probe covers. The use of other manufacturer's probe covers or no probe cover may produce temperature measurement errors and/or inaccuracy.
  - o With the correct axillary mode indicator flashing, lift the patient's arm so that the entire axilla is easily seen. Place the probe as high as possible in the axilla. Do not allow the probe tip to come into contact with the patient until the probe is placed in the measurement site. Before this, any contact between the probe tip and the tissue or other material may cause inaccurate readings.
  - o Verify that the probe tip is completely surrounded by axillary tissue and place the arm snugly at the patient's side. Hold the patient's arm in this position and do not allow movement of the arm or probe during the measurement cycle. Rotating "walking" segments appear on the display, indicating that measurement is in progress.
  - o The unit will beep three times when the final temperature is reached. The measurement site, temperature scale, and patient temperature will display on the LCD. The final temperature will remain on the display for 30 seconds.
  - o If you cannot correctly measure the patient's temperature in Normal Mode, the unit will automatically enter Monitor Mode. In this mode, measurement time is extended. Either repeat the temperature measurement in Normal Mode in the opposite sublingual pocket or keep the probe in place for three minutes in Monitor Mode. The thermometer will not beep to indicate a final temperature. Record the temperature before removing the probe from the site, as the temperature reading is not maintained in memory.
  - o Long-term continuous monitoring beyond five minutes is not recommended in the Axillary Mode.
  - o After the temperature measurement is complete, remove the probe from the patient's axilla. Eject the probe cover by firmly pressing the ejection button on the top of the probe.
  - o Return the probe to the probe well. The LCD display will go blank.
  - o Probe contact with electrodes, bandages, etc., poor tissue contact, taking a temperature over clothing, or prolonged exposure of axilla to ambient air can cause inaccurate temperature readings.
- **Rectal Temperature Procedure:**

- o Using Probe with Red Ejection Button and Red Probe Well.
- o When used correctly, the SureTemp Plus thermometer accurately measures rectal temperature in approximately 10–13 seconds.
- o Ensure that the rectal probe (red ejection button) and the red probe well are installed. The instrument will only operate in Rectal Mode when the red rectal probe and probe well are installed.
- o Holding the probe handle with your thumb and two fingers on the indentations of the probe handle, withdraw the probe from the probe well.
- o Observe the flashing lower-body icon on the unit's display. Load a probe cover by inserting the probe into a probe cover and pressing the probe handle down firmly. The probe handle will move slightly to engage the probe cover.
- o With the Rectal Mode indicator flashing, separate the patient's buttocks with one hand. Using the other hand, gently insert the probe only 1.5 cm (5/8 in.) inside the rectum (less for infants and children). The use of a lubricant is optional.
- o Incorrect insertion of probe can cause bowel perforation.
- o Tilt the probe so that the tip of the probe is in contact with tissue. Keep the hand separating the buttocks in place, and hold the probe in place throughout the measurement process. Rotating "walking" segments appear on the display, indicating that measurement is in progress.
- o The unit will beep three times when the final temperature is reached. The measurement site, temperature scale, and patient temperature will display on the LCD. The final temperature will remain on the display for 30 seconds.
- o If you cannot correctly measure the patient's temperature in Normal Mode, the unit will automatically enter Monitor Mode. In this mode, measurement time is extended. Either repeat the temperature measurement in Normal Mode in the opposite sublingual pocket or keep the probe in place for three minutes in Monitor Mode. The thermometer will not beep to indicate a final temperature. Record the temperature before removing the probe from the site, as the temperature reading is not maintained in memory.
- o Long-term continuous monitoring beyond three minutes is not recommended in Rectal Mode.
- o After the temperature measurement is complete, remove the probe from the patient's rectum. Eject the probe cover by firmly pressing the ejection button on the top of the probe.
- o Return the probe to the probe well. The LCD display will go blank.
- o Wash your hands. Washing hands greatly reduces the risk of cross-contamination and Nosocomial Infection.

Normal Temperature Ranges

Age	Oral	Rectal	Axillary	Ear	Core
0 - 2 yr	NA	97.9 - 100.4 °F	94.5 - 99.1 °F	97.5 - 100.4 °F	97.5 - 100.0 °F
3 - 10 yr	95.9 - 99.5 °F	97.9 - 100.4 °F	96.6 - 98.1 °F	97.0 - 100.0 °F	97.5 - 100.0 °F
11 - 65 yr	97.5 - 99.5 °F	98.6 - 100.6 °F	95.4 - 98.4 °F	96.6 - 99.7 °F	98.2 - 100.2 °F
Over 65 yr	96.4 - 98.6 °F	97.0 - 99.1 °F	95.9 - 97.3 °F	96.4 - 99.5 °F	96.6 - 98.8 °F

Equipment – Tourniquet

Indications:

- Rescue Task Force.
- Extremity Trauma.
- Universal Patient Care.

Contraindications:

- None.

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.

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.
- HIGHLY preferred to place tourniquets on the upper arms or leg to compress one bone instead of two in distal limbs.
- STANDARD USE GUIDELINES
- When applied in accordance with directions, the Combat Application Tourniquet® CAT is a safe and effective device for controlling life-threatening extremity bleeding. The CAT has a Maximum Operating Circumference of 35in (88.9cm). The use of any tourniquet for longer than 2 hours may lead to permanent neurological or muscular damage. If you cannot be sure or cannot take the additional time to examine where the bleeding is coming from based on the situation, the CAT can be effectively applied over clothing as high on the arm or leg as possible. The CAT must NOT be applied over solid objects within the clothing. As soon as the situation permits, the injured limb should be evaluated and then re-positioned 2"-3" above the injury directly to the skin. The CAT should be stored in a cool, dry place away from direct sunlight. Re-use of this single use device may introduce risk of infection. Dispose of used CAT in accordance with local regulations for biomedical waste. Please report all serious incidents in relation to the manufacturer and appropriate regulatory authority.

CAT Instructions for Use

1. a. Two-Handed Application: Route the band around the limb, pass the red tip through the slit of the buckle, and position 2-3" above the bleeding site directly to the skin.
1. b. One-Handed Application: Insert the injured limb through the loop in the band and position 2-3" above the bleeding site directly to the skin.
2. Pull band tightly and fasten it back on itself all the way around the limb, but not over the rod clips. Band should be tight enough that tips of three (3) fingers cannot be slid between the band and the limb. If the tips of three (3) fingers slide under band, retighten and re-secure.
3. Twist the rod until bleeding has stopped.

4. Secure the rod inside a clip to lock it in place. Check for bleeding and distal pulse. If bleeding is not controlled, or distal pulse is present, consider additional tightening or applying a second above and side-by-side to the first. Reassess.
5. Route the band between the clips and over the rod. Secure rod and band with TIME strap. Record time of application.

- 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 Pain Control after bleeding control, fluid administration, and TXA administration (if given).
- If prolonged transport time, consider Tourniquet removal if ALL of the following are met:
    o Not in circulatory shock,
    o Stable vitals,
    o Enough personnel and resources, AND
    o Not an amputated Extremity.
- Contact MEDICAL CONTROL to request orders to loosen tourniquet, if applicable:
- Apply pressure dressing and loosen Tourniquet (leave in place).
- Re-tighten Tourniquet if significant bleeding returns.

Storing the CAT in the Quick Launch Configuration

1. Pass the red tip through the slit in the buckle. Pull 8" of band through, fold it back and adhere the band to itself.
2. Flatten the loop formed by the band. Place the buckle in the middle of the flattened band.
3. Fold the CAT in half placing the buckle at one end. Make sure the TIME strap is open and in ready position; as shown in the illustration.

Equipment – Ventilator: Hamilton T1

Technical support 24-hour Hotline 1-800-426-6331

Indications:

- Invasive ventilation of an intubated or supraglottic airway patient.
- Noninvasive ventilation with the use of mask.
- Noninvasive high flow oxygen with humidified oxygenation

Contraindications:

- Patient's weighing less than 10kg.
- ***DO NOT USE THE FOLLOWING MODES***: APRV, ASV, SPONT, DuoPAP

Precautions:

1. Always check the status of the oxygen cylinders or other supply before using the ventilator during transport.
2. Ensure adequate oxygen supply prior to long distance transports using the formula listed below.
3. MRI UNSAFE. Keep away from magnetic resonance imaging (MRI) equipment.
4. Have a BVM available at all times in case of ventilator failure.
5. If there is damage to any part of the ventilator, do not use the device. Technical service is required.
6. Do NOT block the holes at the back and side of the ventilator. These holes are vents for the fresh air intake and the cooling fan.
7. Check the battery charge level before ventilating a patient and before unplugging the ventilator for transport or other purposes.

8. Ventilating with an iGel may not be effective with Ppeak > 20cmH2O.
9. Interfacility transports may require the following modes and will require consultation from sending physician and RT to be utilized: PSIMV+, APVsimv, HiFlowO2
10. To ensure the ventilator's safe operation, always run the preoperational check before using the ventilator on a patient.
11. Select the desired mode prior to entering the correct patient data so that patient data is saved with the mode selected.
12. Changing the patient height after ventilations have started does not change the Vt or rate settings. The ventilator must be put in standby mode, select new patient, mode selected, height set, and then "Start ventilation" selected.
13. Entering the correct patient data ensures safe ventilation settings for startup, Apnea backup, and Safety ventilation/Safety mode.
14. When using NIV modes use a mask size specific to the patient with the goal of V Leak % < 30
15. When using active humidification, prevent water accumulation in the flow sensor by ensuring that the flow sensor is positioned at a ≥ 45° angle relative to the floor. Excess water can affect the flow sensor measurements and lead to inaccurate volume delivery, potentially resulting in hypoventilation.
16. As a precaution, while noninvasive ventilation is in use, you must be prepared to provide an advanced airway and start invasive ventilation at any time.
17. Alarm messages may not pinpoint a problem exactly; the exercise of clinical judgment is necessary.
18. Additional independent monitoring devices, including pulse oximeters measuring SpO2 and CO2 sensors MUST be used during mechanical ventilation.

Daily Checks:

The ventilator shall be left in operational readiness with circuit connected to ventilator with flow sensor adaptor left in the clear flow sensor hose connection, HME filter in place, and red cap on circuit end.

In the event of needing to use the T1 with the H900, remove the tested circuit and exhalation valve and store in a new patient belongings bag to be replaced back on the T1 after H900 HiFlow use.

At the beginning of each shift the following Pre-Op checks shall be completed.
- Leak Test
- Flow Sensor Test

The following items need to be stocked on the ambulance in addition to the pre-checked ventilator that has filter and circuit ready for patient use:

- Breathing circuit
- HME filter
- ETCO2 adapter
- CPAP Extra Large mask
- CPAP Large mask
- CPAP Medium mask
- CPAP Small mask

Monthly Checks:

On first of each month of the following Pre-Op checks shall be completed by the on-duty crew while doing monthly drug checks.
- O2 Sensor Test: Connect ventilator to high pressure oxygen source and press the "O2 Sensor" button. The machine will run the test and show passed or failed.

Procedures:

Begin ventilating every patient from the Quick Start menu access.
Choose the mode the patient requires: INV-APVcmv, NIV-ST, or CPR.
Ensures the following settings match the below guidelines.
1. Select the mode.

2. Set patient height or IBW.
3. Confirm controls.
4. Begin ventilation.

Adult: INV-APVcmv Mode

Controls:	Alarm Maximums:
- Vt: 6-8ml/kg IBW - PEEP: 5-10cmH2O (Contact Medical Control for PEEP > 12cmH2O) - Plimit: 30 cmH2O - RR: 12-20 (Contact Medical Control for RR >26) - Ti: 1 second - FiO2: 21-100% based on patient needs	- Pressure High: *40 cmH2O* - Pressure Low: *5 cmH2O* - ExpMinVol High: *20 L/min* - ExpMinVol Low: *3 L/min* - fTotal High*: 20 bpm* - fTotal Low: *12 bpm* - Vt ml High: 50% above IBW Vt - Vt ml Low: 50% below IBW Vt - Apnea time: 20 seconds

Pediatric: INV-APVcmv Mode

Patient height maximum of 64 inches. Patient height above 64 inches refer to Adult settings. Patient minimum weight of 10kg.

Controls:	Alarm Maximums:
- Vt: *6-8ml/kg IBW* - PEEP: *5-10cmH2O* (Contact Medical Control for PEEP > 12cmH2O) - Plimit: 20 cmH2O - Child 10kg-29kg or Purple, Yellow, White, Blue, Orange, or 30-51 inches *RR: 20-30* - Child Ti: *0.5-0.6 second* - Adolescent 30kg-60kg or Green or 52-64 inches *RR: 12-20* - Adolescents Ti: *0.8-1 second* - FiO2: 21-100% based on patient needs	- Pressure High: 3*0 cmH2O* - Pressure Low: *5 cmH2O* - ExpMinVol High: *14 L/min* - ExpMinVol Low: *1 L/min* - fTotal High*: 30 bpm* - fTotal Low: *12 bpm* - Vt ml High: 50% above IBW Vt - Vt ml Low: 50% below IBW Vt - Apnea time: 20 seconds

Adult: NIV-ST Mode

Contraindications:
- Less than 18 years old
- Patient unable to protect their airway
- Need for immediate intubation
- Ventilatory failure

- Gastric distension (GI bleeding)
- Trauma (pneumothorax)
- Tracheostomy
- Altered LOC
- Do not secure straps if Nausea of Vomiting
- Increasing ETCO2

Precautions:
- CPAP is not mechanical ventilation
- Blood pressure may drop due to increased intrathoracic pressure
- Patient may not improve (must reassess)
- Patient may not accept mask (claustrophobia)
- Risk of pneumothorax
- Risk or corneal drying
- Large Oxygen demand

Anxiety:
- Refer to Protocol 2-110- Behavioral
- An in-line bronchodilator nebulizer may be placed in circuit with the blue T piece adapter placed between the breathing circuit and the flow sensor.

Controls:	Alarm Maximums:
- Plimit: 25cmH2O - ΔPsupport 8cmH2O (Titrated to patient 6-8ml/kg of IBW Vt, not to exceed PEEP+Psupport of 25cmH2O) - RR: 12 - Ti: 0.8-1 second - PEEP: 8 cmH2O (5-12) - FiO2: 21-100%	- Pressure High: 35cmH2O - Pressure Low: 5cmH2O - ExpMinVol High: 50% above VTE (10 L/min) - ExpMinVol Low: 50% below VTE (4L/ min) - fTotal High: 40 bpm - fTotal Low: 5 bpm - Vt high: 50% above VTE - Vt low: 50% below VTE - Apnea: 20 seconds

Using CPAP Mask bag to size CPAP Mask

Place the cutouts on the edge of the CPAP mask bag on the patient's face. Place the upper part of the cutout on the bridge of the patient's nose and the lower portion of the cutout under the bottom lip. Use the mask size indicated by the size under the hole that fits the patient best.
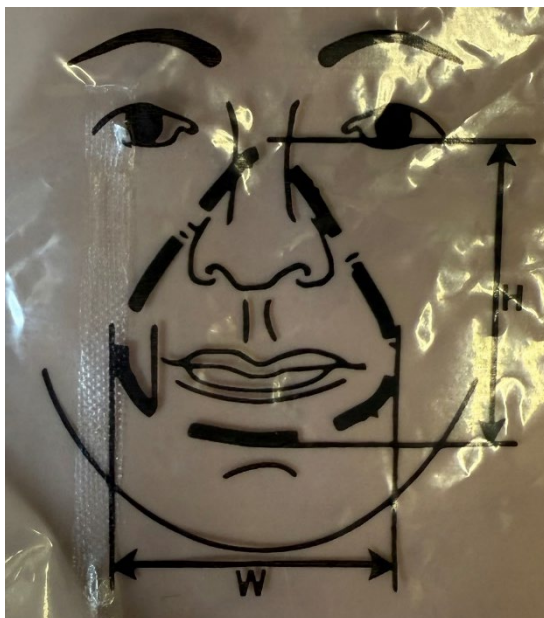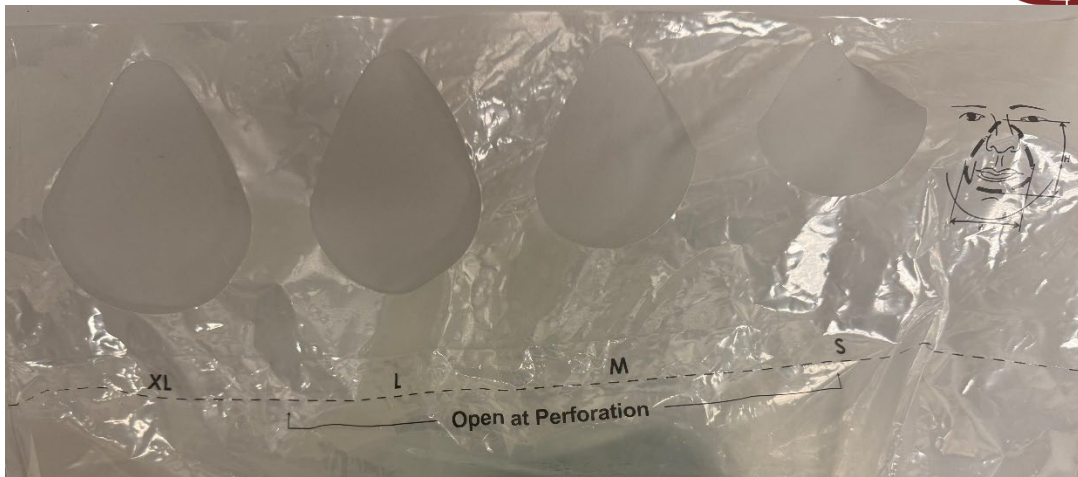
CPR Mode

ONLY FOR PATIENTS 18 years or older.
Titrate Pcontrol up to maximum of 30cmH20 to achieve IBW tidal volumes during rhythm checks.
If the patient achieves ROSC the patient needs to be ventilated with APVcmv mode.

Controls:	Alarms:
- Vt: 6-8ml/kg IBW - Plimit: 40 cmH2O - Pcontrol: 20cmH2O - PEEP: 0 cmH2O	- Pressure High: 55cmH2O - Pressure Low: 5cmH2O - ExpMinVol High: 50L/min - ExpMinVol Low: 0.1L/min

Updated 6/11/25 - Version 25.10

• Ti: 1.0 Second • Rate: 10/min	• fTotal High: 99bpm • fTotal Low: 0bpm • Vt High: 3000mL • Vt Low: 10mL • Apnea time: 20 seconds

Troubleshoot Alarms with the D.O.P.E.

Dislodged: Check ETCO2, Lung sounds, Epigastric sounds, SpO2

Obstruction: Suction the tube, check for kinked tubing, ETCO2, SpO2

Pneumothorax: Check lung sounds, chest rise and fall, blood pressure, SpO2

Equipment: Check cuff inflation, circuit connections

Hamilton H900 Heated High FlowO2 Protocol

1. Warm up the Hamilton H900 by plugging it in.
2. **Hamilton H900: Set to HiFlow AUTO mode**. Leave Exp. Temp set to 2.0.
3. Hamilton H900: Fill the fluid chamber with sterile water through drip tubing.
4. Hamilton H900: Be sure not to over fill the chamber past the MAXIMUM line.
5. Hamilton T1: Modes select HiFlowO2
6. Hamilton T1: set L/min flow.
7. Hamilton T1: set oxygen percentage.
8. Hamilton T1: attach vent to oxygen source.
9. Hamilton H900: Connect the left side / short circuit limb to the inhalation port on Hamilton T1. Match the inhalation head icons. (See pictures below for use with or without 90 degree elbow.)
10. No exhalation valve or equipment from normal vent circuit is required.
11. A 15/15mm adapter may be required to length the ventilator limb or patient limb with hospital supplied extension tubing.
12. Hamilton H900: Connect the right side / long circuit limb to the nasal cannula hose on the patient. This connection has a temperature symbol on it.
13. **Hamilton H900 must be at the same level or below the Hamilton T1 during use.**

Patient inhalation pictures are to match from the white circuit connection to the inhalation port on the Hamilton T1.

No exhalation port is needed.

The longer circuit limb that has a temperature symbol connects to the patient's nasal cannula.

HAMILTON-H900 Quick Guide Overview

Applies to software version 1.10x and later

Temperature monitoring window button
1. Press to show temperature
   - At Y-piece
   - At chamber exit
   - Difference between the two above
2. Press for 5 s to enable Night display

Auto mode button
- Press for default settings*
  - Invasive mode: 37°C
  - Noninvasive mode: 31°C
  - HiFlow: 35°C
  - Temperature gradient: + 2°C
    (+ 3°C for infant breathing set)

* Factory default settings listed here

Power/Standby key
1. ON: Long-press > 3 s
   - Device starts in Invasive mode
   - Briefly press to (de)activate Standby
2. OFF: Long-press > 3 s
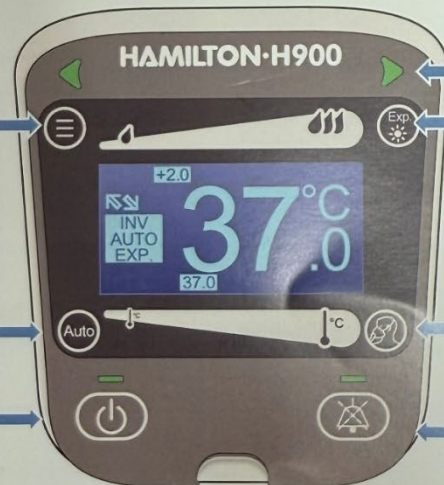
Limb connection status indicators
- **Green**: The limb is inserted correctly
- **Orange**: The humidifier is testing the connection
- **Red**: The connection is either faulty or nonexistent

Exp. temp increase button*
- ON by default
- Increases the temperature in the WHITE expiratory limb to reduce condensation
- Press to stop extra heating

*Dual limb, single use breathing circuits only

INV/NIV/HiFlow mode button
- Press to switch between Invasive, Noninvasive, and HiFlow modes

Audio pause key
- Press (if appropriate for alarm)
  - Audible alarm paused for 2 min

Alarms and troubleshooting

See the *HAMILTON-H900 Instructions for use* for detailed information.

High-priority alarms
Indicated by an audible, repeating alarm sound and a flashing visual red alarm indicator

Temperature high
- ▶ Check if the breathing circuit is covered by the patient's bed covers
- ▶ Check if the breathing circuit or the humidifier chamber is directly exposed to sunlight
- ▶ Replace the breathing circuit

Water level high
- ▶ Empty humidifier chamber to reduce the water level
- ▶ Replace humidifier chamber
- ▶ Operate humidifier at an angle < 10° relative to the floor

Humidifier tilt
- ▶ Check the mounting of the humidifier
- ▶ Check the ventilator trolley
- ▶ Operate humidifier at an angle < 10° relative to the floor

Medium-priority alarms
Indicated by an audible, repeating alarm sound and a flashing visual yellow alarm indicator

Temperature low
- ▶ Wait until system heats up completely (approx. 30 min)
- ▶ Verify that all settings are correct
- ▶ Avoid direct air flow from air conditioner and the like to the humidifier and breathing circuit

Water level low
- ▶ Check water bottle and refill tubing
- ▶ If the water bottle is empty, connect a new water bottle
- ▶ Refill or exchange empty humidifier chamber
- ▶ Operate humidifier at an angle < 10° relative to the floor

Check left or right limb
- ▶ Insert or reseat breathing circuits correctly
- ▶ Replace breathing circuit set
- ▶ Connect the BLUE humidifier inspiratory limb to the ventilator *To patient* inspiratory port

Check water chamber
- ▶ Insert a new humidifier chamber and connect the breathing circuit

Use the following to calculate oxygen and transport capabilities.

1. Liters per minute (LPM) or *O2 consumption*: Found in the "System" tab. Calculated after the patient has been connected to the ventilator for at least 2.5 minutes. This changes as settings are changed. Calculations will need to be redone.
2. Tank PSI
3. Tank size:
   a. M tank use conversion factor 1.56.
   b. D tank use conversion factor 0.16.

Equation for M tank calculation.

$$Minutes\ available\ for\ transport = \frac{(\text{Tank PSI} - 200)X\ 1.56}{(\text{O2 consumption X 1.5})}$$

Example for M tank calculation.

$$Minutes\ available\ for\ transport = \frac{(2000 - 200)X\ 1.56}{(7\ X\ 1.5)}$$

$$267\ minutes = \frac{2808\ Liters}{10.5\ LPM}$$

- After completing the above equation ensure transport time is less than available oxygen supply in minutes.
- The above equation calculates needing 50% more liters for the transport in the event of a delay or increase in required LPM.
- To serve as backup oxygen supply, there should be 3 full D tanks on each ambulance.

Calculate additional O2 consumption use with the nebulizer:

- 8 LPM X (I:E ratio patient is breathing at) = LPM required for nebulization per minute X transport time in minutes = total LPM required to power nebulizer during transport
  - Example: for I:E ratio of 1:4 (8 LPM X 0.25) X 45 minute transport= 90 liters to nebulize during transport
- For total O2 use with nebulizer the normal O2 consumption will also need to be added the O2 required to nebulize.
  - Example: 90 liters required to nebulize during transport + (O2 consumption LPM X (1.5 X minutes of transport) = total liters required for transport

The Hamilton T1 Operators Manual can be found in the Additional Materials section of the Handtevy App, see the full manual for more details.

- For details turning the ventilator On and Off: Section 2.3
- Connecting a power source: Section 3.2
- Connecting oxygen supply: Section 3.3
- Calculations for oxygen during transport: Section 3.4
- Setting up the breathing circuit: Section 3.5
- Setting up Nebulization: Section 4.6
- Preoperational check, tests, and calibration: Section 5.4
- Understanding settings and alarms: Section 5
- Volume-targeted modes: Section 7.2 APVcmv/ (S)CMV+
- Pressure-controlled modes: Section 7.3 PCV+, PSIMV+, PSMIV+ with PSync
- Noninvasive modes: Section 7.5 NIV or NIV-ST

Physical Descriptions:

2.2.1 About the ventilator

Figure 2-2. Front view, ventilator
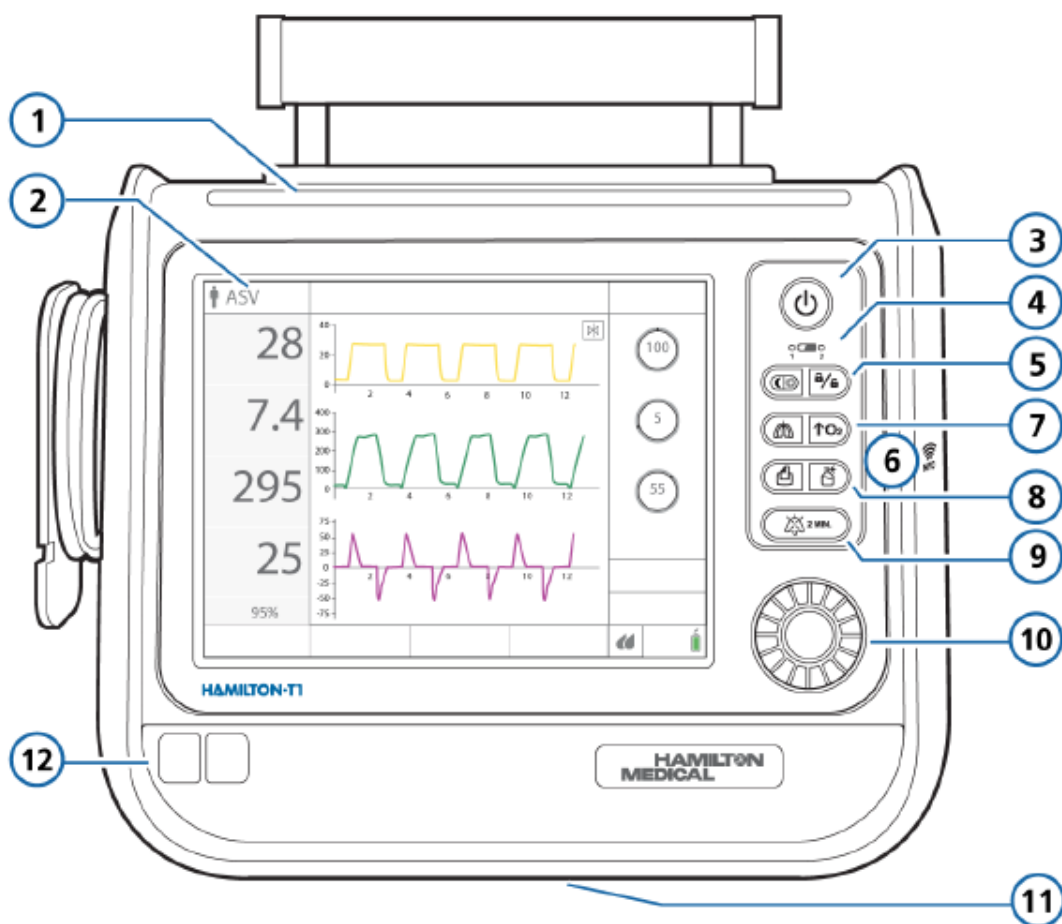
#		#	
1	Alarm lamp	7	Manual breath key/O2 enrichment key
2	Touch screen display	8	Print screen key/Nebulizer key
3	Power/Standby key	9	Audio pause key
4	Battery charge indicator	10	Press-and-Turn (P&T) knob
5	Day/Night key[1]/Screen lock/unlock key	11	Expiratory valve bleed port (under the ventilator) *Do not obstruct*
6	Near-field communication (NFC) connection area[2]	12	Front cover and battery

Figure 2-3. Rear view, ventilator
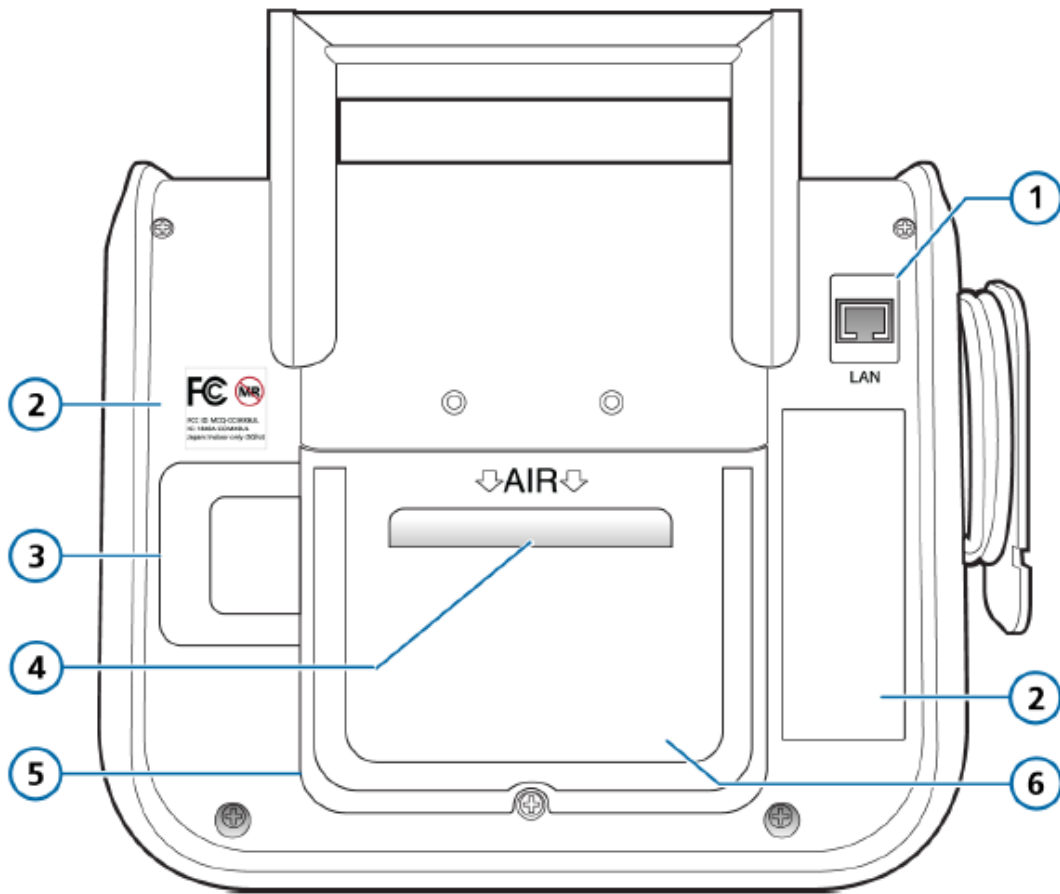
1	RJ-45 Ethernet connector (under the cover)	5	Rear cover
2	Device labels	6	HEPA filter (under the cover)
3	O2 sensor (under the cover)		
4	Air intake and dust filter *Do not obstruct*		

Figure 2-4. Side view, with breathing circuit connections
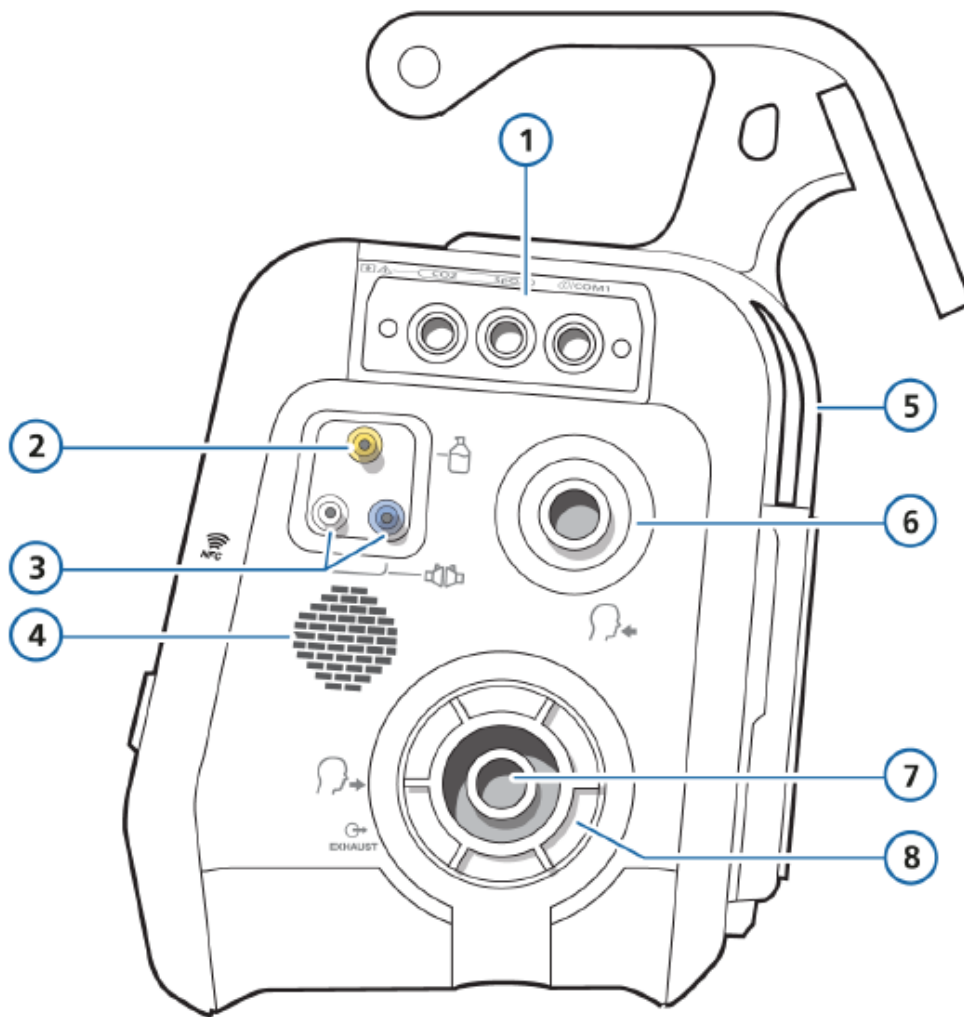
1		Communication board (optional)	5		Cooling air outlet
2		Pneumatic nebulizer port	6		*To patient* inspiratory port
3		Flow sensor connection ports	7		*From patient* expiratory port
4		Loudspeaker	8		Expiratory valve set

Figure 2-5. Side view, with gas connections
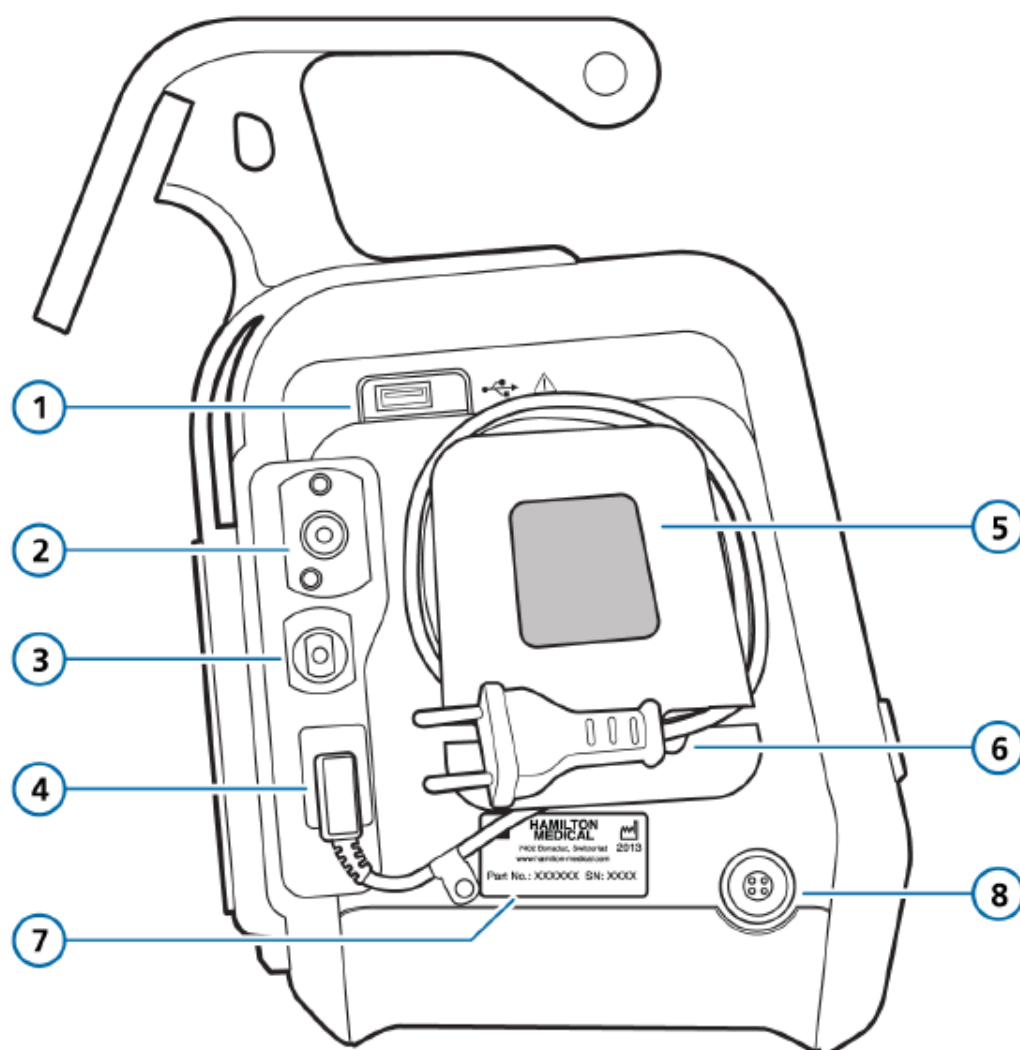
1	USB port (under the cover)	5	Cooling air intake and dust filter
2	High-pressure oxygen DISS or NIST inlet fitting	6	AC power cord with retaining clip
3	Low-pressure oxygen connector	7	Serial number label
4	AC Power socket	8	DC power socket

2.2.2 About the main display

Figure 2-6. Main display
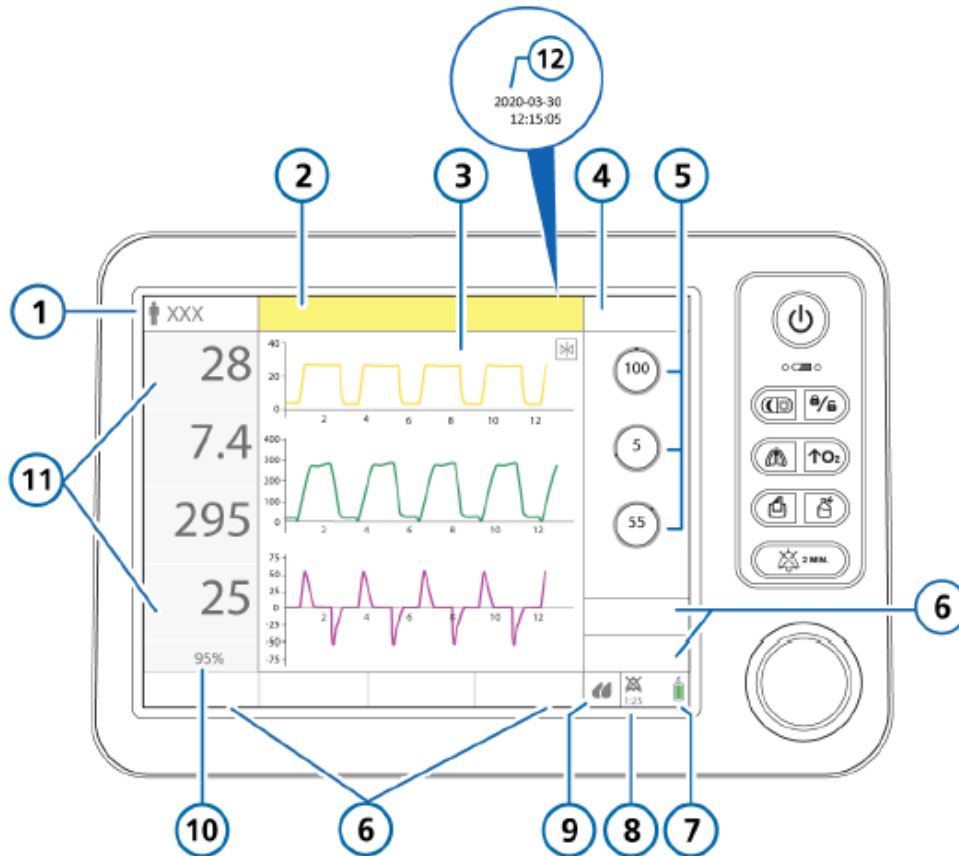
1	Patient group symbol and active mode	7	Power source and battery status
2	Message bar (color coded)	8	Audio pause indicator and countdown timer**
3	Configurable graphic display (full-length waveforms shown)	9	Humidifier quick access icon
4	Modes button	10	Measured SpO2 value*
5	Main controls for the active mode	11	Main monitoring parameters (MMP)
6	Window buttons: Alarms, Controls, Monitoring, Tools, Events, System	12	Date and time

* When SpO2 monitoring is enabled.
** When Audio pause is active, the connectivity icons are not displayed. See Table 2-3.

2.2 Connecting a coaxial breathing circuit
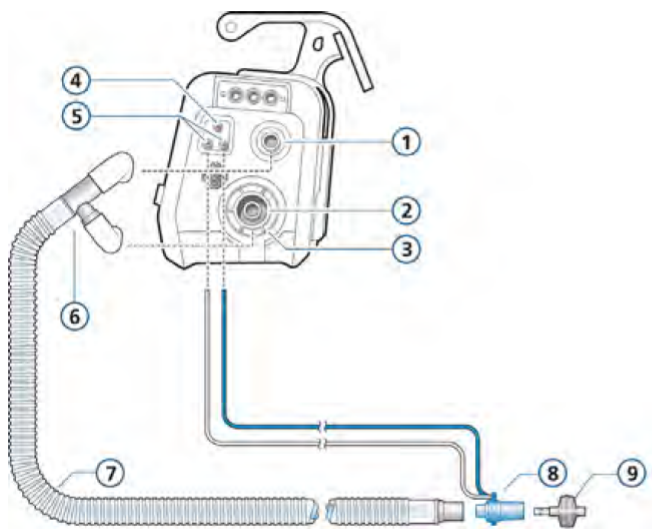
1 To patient (inspiratory port)
2 From patient (expiratory port)
3 Adult/pediatric expiratory valve set
4 Nebulizer outlet
5 Flow sensor connectors
6 Limb connector
7 Coaxial inspiratory/expiratory limb
8 Flow sensor
9 HMEF

Connect the breathing circuit to the inspiratory and expiratory ports **(1, 2)** and the flow sensor tubes to the flow sensor connectors **(5)**.

Use either a bacteria filter or a combined heat-moisture exchanger and filter (HMEF).

Preop Check

1. Insert a flow sensor into the breathing circuit in front of the patient connection (Figure 3-7).See also the breathing circuit diagrams in Section 2.2.3.

Figure 3-7. Connecting the flow sensor to the Y-piece or circuit

Adult/Ped, flow sensor connection – dual limb circuit, Y-piece

Adult/Ped, flow sensor connection – coaxial circuit

Neonatal, flow sensor connection – dual limb circuit, Y-piece
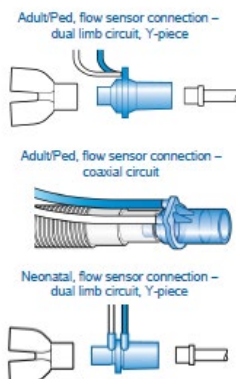
2.
3. Attach the blue and clear tubes to the flow sensor connection ports on the ventilator (Figure 3-4).The blue tube attaches to the blue connection port. The clear tube attaches to the white connection port.
4. Calibrate the flow sensor and perform the Leak test. See Section5.4

5.4 Performing the preoperational check, tests, and calibrations

The tests and calibrations described in this section help verify the safety and reliability of the ventilator.

If a test fails, troubleshoot the ventilator as indicated or have the ventilator serviced. Make sure the tests pass before you return the ventilator to clinical use.

The test results are stored in memory, including when the ventilator is turned off. This allows the ventilator to be checked and kept in storage, ready for use.

The time and date of the last test is displayed in the System > Tests & calib. window. Ensure the last performed preoperational test is valid for your patient.

The audible alarm is paused during calibration, and for 30 seconds thereafter.

Table 5-2. When to perform tests and calibrations

Test or calibration	When to perform
Preoperational check	Before connecting a new patient to the ventilator.
Flow sensor/circuit calibration and Leak test	After connecting a new breathing circuit or component (including a flow sensor or pressure-monitoring line).
O2 sensor calibration, if needed	After installing a new O2 sensor or when a related alarm occurs.
CO2 sensor/adapter zero calibration (mainstream/sidestream)	Required after connecting a CO2 sensor or when a related alarm occurs. Recommended after switching between different airway adapter types.
Alarm tests	As desired

To access tests and calibration functions

1. Do either of the following:
   – Touch **System** > **Tests & calib**.
   – In the Standby window, touch **Preop check**.
2. Touch the button for the desired operation.

Figure 5-2. System > Tests & calib window

1 System
2 Tests & calib
3 Leak test (shown uncalibrated)
4 Circuit or Flow sensor, depending on selected mode
5 O2 sensor
6 CO2 sensor
7 Time and date of last test/calibration
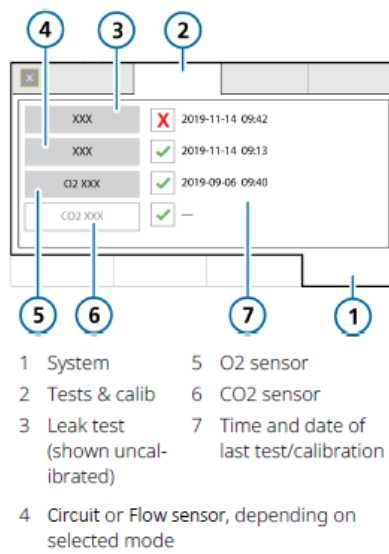
Table 5-4. Preoperational check, overview

	Do or observe...	Verify ...
1	Connect ventilator to primary power and an oxygen supply.	
2	Assemble the patient breathing circuit.	The breathing circuit is assembled correctly.
3	Turn on the ventilator.	During the self test, the alarm lamp flashes yellow and red in sequence.
4	With the ventilator in Standby, touch **Preop check** in the Standby window.	The System > Tests & calib window opens.
5	Perform the Leak test.	The test passes. See Section 5.4.2.
6	Calibrate the flow sensor.	The calibration is successful. See Section 5.4.3.
7	If necessary, run the O2 sensor calibration.	The calibration is successful. See Section 5.4.4.
8	If necessary, run the CO2 sensor zero calibration.	The zero calibration is successful. See Section 5.4.5.

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Do or observe...	Verify ...
9 Generate test alarms.	The corresponding alarm message is displayed in the message bar. See Section 5.4.6.
	Note that patient alarms are suppressed in Standby.

Corrective action

☑ indicates the component is calibrated and ready. ☒ indicates the calibration was unsuccessful.

If the ventilator does not pass the preoperational check, have it serviced.

5.4.2 Performing the breathing circuit Leak test

Before proceeding, review the safety information in Chapter 1.

To perform the Leak test

1. Set up the ventilator for ventilation, complete with breathing circuit and flow sensor.
2. Touch **System** > **Tests & calib**.
3. Touch **Leak test**.

   The text Disconnect patient is now displayed.
4. Disconnect the breathing circuit at the patient side of the flow sensor. Do not block the open end of the flow sensor.

   The text Block breathing circuit is now displayed.
5. Block the opening (wearing a glove is recommended). See Figure 5-3.

Ensure the opening is fully blocked. Failure to do so may result in test failure.

The text Reconnect breathing circuit is now displayed.

6. Connect the patient.
7. When the test is complete, verify that there is a checkmark ☑ in the Leak test checkbox.

Figure 5-3. Block the flow sensor opening when prompted
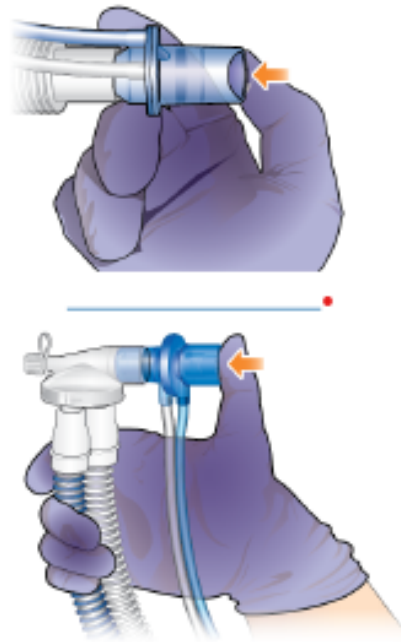
To cancel the test while it is in progress

▶ Touch **Leak test** again.

In case of test failure

If the test fails, ☒ is displayed in the Leak test checkbox.

Ensure that you have performed all steps of the test correctly. If so, perform the following checks, repeating the Leak test after each one, until the test is successful:

- Check the breathing circuit for a disconnection between the ventilator and the flow sensor, or for other large leaks (for example, breathing circuit, humidifier).
- Check that the flow sensor and expiratory valve set are properly seated.
- If the test still fails, replace the expiratory valve set.
- If the test still fails, replace the breathing circuit.

If the problem still persists, have the ventilator serviced.

5.4.3 Calibrating the adult/pediatric flow sensor

This calibration checks and resets the calibration points specific to the flow sensor in use, and measures the circuit resistance. The measured value determines the required resistance compensation during ventilation.

Ensure you are using the correct flow sensor for the selected patient group. If there is a mismatch, calibration fails.

For details about calibrating a neonatal flow sensor, see Section 6.2.1.

When to perform

After connecting a breathing circuit or component.

Flow sensor calibration involves three components:

- Flow sensor
- Component in the breathing circuit directly following the flow sensor
- Calibration adapter

To calibrate an adult/pediatric flow sensor

1. Calibrate the flow sensor in Standby, with *no* patient connected.
2. Connect the flow sensor to the breathing circuit (Figure 5-4).
3. Connect the *next* component in the circuit to the flow sensor (Figure 5-5).

   Depending on your setup, this could be, for example, an HMEF, nebulizer, CO2 sensor, or the flex tube.

   Do *not* connect any more components at this time. You will be prompted to connect the calibration adapter once the calibration process starts.
4. In the Standby window, touch **Preop check**.

   The System > Tests & calib window is displayed.
5. Touch **Flow sensor**.

   A help guide is shown on the display, providing an overview of the calibration process.
6. Touch **Start** to begin calibration.

   To close the guide without starting calibration, touch **Cancel**.

7. When prompted on the display, attach the calibration adapter to the component connected to the flow sensor and flip all three of them together 180° so the adapter is directly connected to the breathing circuit (Figure 5-6).
8. When prompted, flip the flow sensor/component/adapter 180° again, so the flow sensor is directly connected to the breathing circuit, and remove the calibration adapter (Figure 5-7).
9. When calibration is complete, verify that there is a checkmark ☑ in the Flow sensor checkbox.
10. When successful, finish assembling the breathing circuit, and continue with other tests or ventilation.

Figure 5-4. Connect the flow sensor

Figure 5-5. Connect the next component
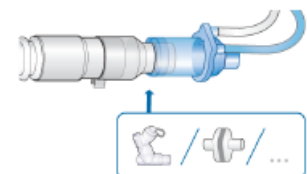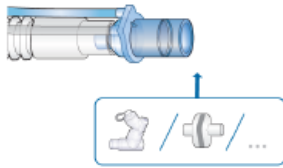

Figure 5-6. Attach adapter, flip components

Figure 5-7. Flip components, remove adapter

To cancel an ongoing calibration

▸ Touch **Flow sensor** again.

In case of calibration failure

If the calibration fails, ⊠ is displayed in the Flow sensor checkbox.

Ensure that you have performed all steps of the test correctly. If so, perform the following checks, repeating the calibration after each one, until calibration is successful:

- Ensure that the flow sensor is appropriate for the selected patient group.
- Check the breathing circuit for a disconnection between the ventilator and the flow sensor, or for other large leaks (for example, breathing circuit, humidifier).
- Check that the flow sensor and expiratory valve set are properly seated.
- If the calibration still fails, replace the flow sensor.
- If the calibration still fails, replace the expiratory valve membrane.
- If the calibration still fails, replace the expiratory valve set.

If the problem persists, have the ventilator serviced.

5.4.4 Calibrating the O2 sensor

⚠ **CAUTION**

When using an oxygen supply < 99% (HPO) or low pressure oxygen (LPO), calibrate the O2 cell at 21%. This information is displayed in the Calibration window.

NOTICE

When using LPO, disconnect the oxygen supply during calibration.

Calibrate the O2 sensor if either of the following occur:

- ⊠ is displayed in the O2 sensor checkbox (Figure 5-2)
- The O2 sensor calibration needed alarm is generated.

To perform O2 sensor calibration

1. Using the information in Table 5-5, set the Oxygen control as appropriate to calibrate the sensor using either 21% or 100% oxygen.

   For example, to calibrate during active ventilation with 100% oxygen, ensure the Oxygen control is set to 22% or higher.

2. Touch **System** > **Tests & calib.**

3. Touch **O2 sensor.**

4. When calibration is complete, verify that there is a checkmark ☑ in the O2 sensor checkbox.

Table 5-5. Oxygen concentration during O2 sensor calibration

Standby or active ventilation	Gas source connection status	Set Oxygen to ...
100% oxygen calibration[1]		
Standby	HPO Connected	any
Active ventilation[2]	HPO Connected	> 21%
21% oxygen calibration		
When the oxygen supply is less than 99%, you must disconnect the oxygen supply before calibration.		
Standby	LPO Disconnected	21%
Active ventilation	HPO Connected	21%
Active ventilation	LPO Disconnected	21%

3.5.2 Working with the expiratory valve set

This section describes how to assemble/install, and remove/disassemble the expiratory valve set.

Be sure to install the correct expiratory valve for the selected patient group.

Figure 3-5. Comparison between the Adult/Ped and Neonatal expiratory valves (differences highlighted in blue)
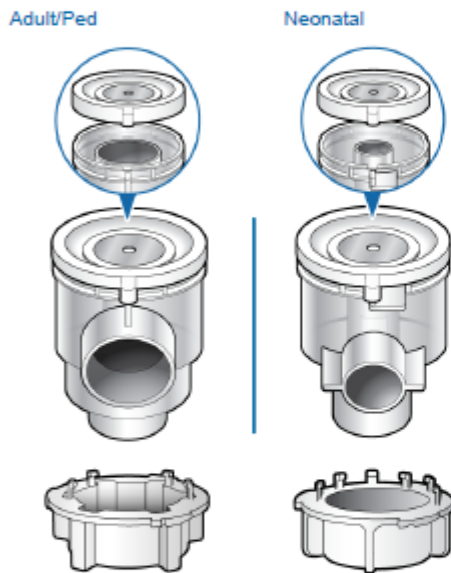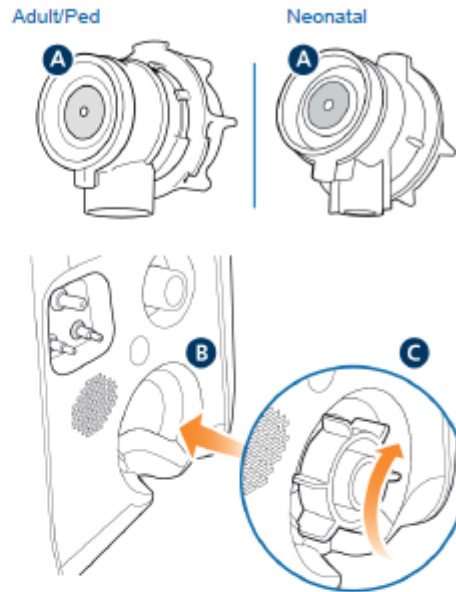

To assemble/install the expiratory valve set

Refer to Figure 3-6.

1. Remove the safety cover.
2. Ensure the membrane is properly aligned with the expiratory valve housing and the metal plate faces up (**A**).
3. Position the expiratory valve set in the expiratory port (**B**) and twist the locking ring clockwise until it locks into place (**C**).

Figure 3-6. Installing the expiratory valve set

To remove and disassemble the expiratory valve set

1. Remove the expiratory valve set from the expiratory port on the ventilator.
2. Holding the expiratory valve housing, remove the silicone membrane (**A** in Figure 3-6) by lifting it up.

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Patient Circuit with HME filter

5.1 Monitoring patient data using the dynamic lung

The dynamic lung shows compliance (Cstat) and resistance (Rinsp) breath-by-breath relative to "normal" values for the patient's height.
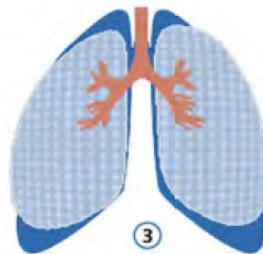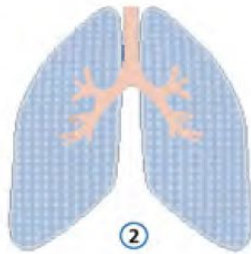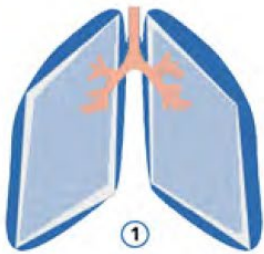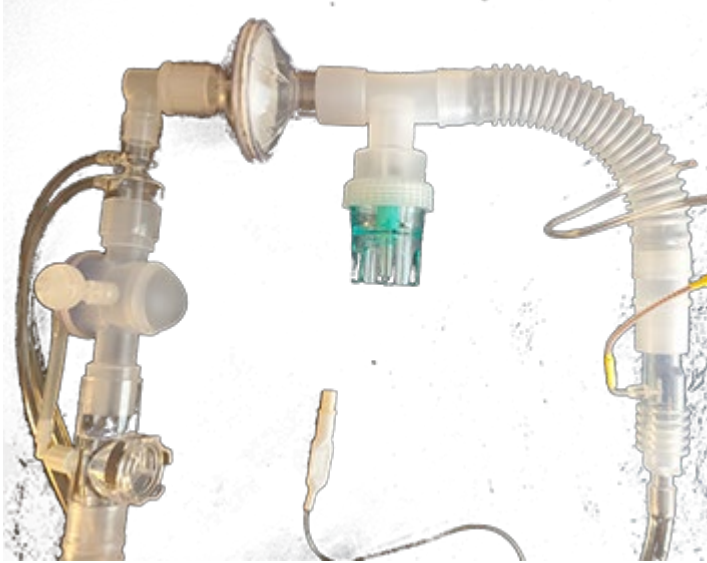

1 Low compliance
2 Normal compliance
3 High compliance
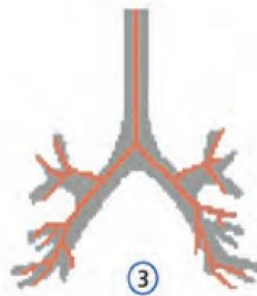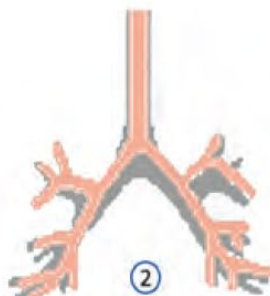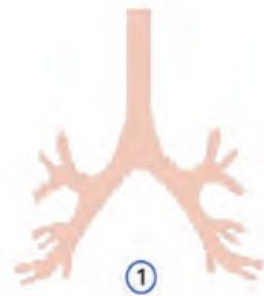
1 Normal resistance
2 Moderately high resistance
3 High resistance

O-Two Ventilator Procedures

Circuit Layout

Ventilator	Elbow	Filter	Optional	EtCO2	Patient
			see optional below		

Optional		
Nebulizer	Spacer	Adapter (Jesus Piece)

Modes of Operation

Patient Description	Procedure	
[Cardiac Arrest](#)	**Mode**	CPR
	Set PEEP	0 cm H2O
	Set Trigger	- (none)
	Set PMax	60 cm H2O
	ROSC	After ROSC, refer to RSI settings below.
[Pulmonary Edema](#) (CPAP/BiPAP)	**Mode**	CPAP or CPAP with PSV (same as BiPAP, do not use BiLVL)
	Adjust CPAP (expiratory support)	5-15 cm H2O
	Adjust PSV (inspiratory support)	0-15 cm H2O
	Adjust Trigger	P (patient)
[Pulmonary Edema](#) (intubated)	**Mode**	A/CV
	Set Vt (tidal volume)	See tables below
	Set BPM (rate)	Titrate to [EtCO2](#) and patient comfort: • Infant: 20-40 BPM • Child: 12-25 BPM • Adult: 10-20 BPM
	Set PEEP	10-24 cm H2O
	Adjust Waveform	Use FLOW waveform to see if breath stacking or spontaneous breathing.
	Sedation and Paralysis	Refer to [Protocol 2-044 - Airway: RSI](#) for continued sedation and paralysis during the transport.

Patient Description	Procedure

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	Mode	A/CV
	Set Vt (tidal volume)	See tables below
	Set BPM (rate)	Titrate to [EtCO2](#): • <u>Infant</u>: 20-40 BPM • <u>Child</u>: 12-25 BPM • <u>Adult</u>: 10-20 BPM
[RSI](#) or [DSI](#)	**Set PEEP**	5-15 cm H2O (refer to Pulmonary Edema above, if applicable)
	Adjust I:E ratio	Longer exhalation to prevent air-trapping (i.e. Asthma patients) (1:2 = normal) (1:4 = long exhalation)
	Adjust Ti (inspiration time)	0.8-1.0 seconds
	Adjust Waveform	Use FLOW waveform to see if breath stacking or spontaneous breathing.

	Mode	A/CV
	Set Vt (tidal volume)	See tables below
	Set BPM (rate)	Copy from RT ventilator OR Titrate to [EtCO2](#) and patient comfort: • <u>Infant</u>: 20-40 BPM • <u>Child</u>: 12-25 BPM • <u>Adult</u>: 10-20 BPM
[Transfer](#) (COVID)	**Set PEEP**	Adjust PEEP to match FiO2 and PEEP goals: <table><tr><th>PEEP goal</th><th>60% FiO2</th><th>100% FiO2</th></tr><tr><td>lower PEEP</td><td>10 cm H2O</td><td>18-24 cm H2O</td></tr><tr><td>higher PEEP</td><td>20 cm H2O</td><td>22-24 cm H2O</td></tr></table>
	Adjust Ti (inspiration time)	0.8-1.0 seconds
	Adjust Waveform	Use FLOW waveform to see if breath stacking or spontanious breathing.

Patient Description	Procedure	
	Sedation	Ensure patient is fully sedated prior to movement to ambulance cot. Refer to [Protocol 2-924 - Universal Patient Care](#) for Ketamine dosage. #sedatewhatyouintubate
	Paralysis	Refer to [Protocol 2-044 - Airway: RSI](#) for continued sedation and paralysis during the transport.

Patient Description	Procedure	
[Transfer](#) (non-COVID)	**Copy settings**	From RT ventilator
	Sedation	Ensure patient is fully sedated prior to movement to ambulance cot. Refer to [Protocol 2-924 - Universal Patient Care](#) for Ketamine dosage. #sedatewhatyouintubate
	Paralysis	Refer to [Protocol 2-044 - Airway: RSI](#) for continued sedation and paralysis during the transport.

Tidal Volume Based on Ulnar Length

Start with the middle tidal volume (in **Bold**) and adjust up or down within the range indicated.

Ulnar Length	Female (less than 65 yr old)	Female (greater than 65 yr old)	Male (less than 65 yr old)	Male (greater than 65 yr old)
19 cm	**290** (240-330) ml	**250** (210-290) ml	**320** (270-370) ml	**300** (250-350) ml
20 cm	**300** (250-350) ml	**270** (230-310) ml	**350** (300-400) ml	**330** (280-390) ml
21 cm	**320** (270-370) ml	**290** (240-330) ml	**350** (300-400) ml	**350** (300-400) ml
22 cm	**340** (280-390) ml	**320** (270-370) ml	**400** (300-450) ml	**350** (300-450) ml
23 cm	**350** (300-450) ml	**350** (250-400) ml	**400** (350-500) ml	**340** (280-390) ml
24 cm	**400** (300-450) ml	**350** (300-450) ml	**450** (350-500) ml	**400** (350-500) ml
25 cm	**400** (300-500) ml	**350** (300-450) ml	**450** (350-550) ml	**450** (350-500) ml
26 cm	**400** (350-500) ml	**400** (300-500) ml	**500** (400-550) ml	**450** (350-550) ml
27 cm	**450** (350-500) ml	**400** (350-500) ml	**500** (400-600) ml	**450** (350-550) ml
28 cm	**450** (350-550) ml	**450** (350-500) ml	**550** (450-650) ml	**500** (400-600) ml

29 cm	**450** (350-550) ml	**450** (350-550) ml	**550** (450-650) ml	**500** (400-600) ml
30 cm	**500** (400-550) ml	**500** (400-550) ml	**600** (450-700) ml	**550** (450-650) ml
31 cm	**500** (400-600) ml	**500** (400-600) ml	**600** (500-700) ml	**550** (450-650) ml
32 cm	**500** (400-600) ml	**500** (400-600) ml	**600** (500-700) ml	**600** (450-700) ml

Tidal Volume Based on IDEAL Body Weight (7 ml/kg)

Start with the middle tidal volume (in **Bold**) and adjust up or down within the range indicated.

Height	Pediatric		Adult Female		Adult Male	
	Weight	Tidal Volume	Weight	Tidal Volume	Weight	Tidal Volume
	2 kg					
	4 kg					
4 mo old (Broslow: Pink)	6 kg	**40** (30-50) ml				
6 mo old (Broslow: Red)	8 kg	**60** (40-70) ml				
1 yr old (Broslow: Purple)	10 kg	**70** (60-80) ml				
2 yr old (Broslow: Yellow)	12 kg	**80** (70-100) ml				
3 yr old (Broslow: White)	14 kg	**100** (80-120) ml				
4 yr old (Broslow: White)	16 kg	**110** (90-130) ml				
4 yr old (Broslow: White)	18 kg	**130** (100-150) ml				
5 yr old (Broslow: Blue)	20 kg	**140** (120-160) ml				
6 yr old (Broslow: Blue)	22 kg	**150** (130-180) ml				
7 yr old< (Broslow: Orange)	24 kg	**170** (140-200) ml				
7 yr old< (Broslow: Orange)	26 kg	**180** (150-210) ml				
8 yr old (Broslow: Orange)	28 kg	**200** (160-230) ml				
9 yr old (Broslow: Green)	30 kg	**210** (180-240) ml				
9 yr old (Broslow: Green)	32 kg	**220** (190-260) ml				
10 yr old (Broslow: Green)	34 kg	**240** (200-280) ml				

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10 yr old< (Broslow: Green)	36 kg	250 (210-290) ml				
11 yr old (Broslow: Green)	38 kg	270 (220-310) ml				
11 yr old (Broslow: Green)	40 kg	280 (240-320) ml				
11 yr old (Broslow: Green)	42 kg	290 (250-340) ml				
4'-8"			36 kg	250 (210-290) ml		
4'-10"			41 kg	290 (240-330) ml	45 kg	320 (270-370) ml
5'-0"			46 kg	320 (270-370) ml	50 kg	350 (300-400) ml
5'-2"			50 kg	350 (300-450) ml	55 kg	400 (300-450) ml
5'-4"			55 kg	400 (300-450) ml	59 kg	400 (350-500) ml
5'-6"			59 kg	400 (350-500) ml	64 kg	450 (350-550) ml
5'-8"			64 kg	450 (350-550) ml	68 kg	500 (400-550) ml
5'-10"			69 kg	500 (400-550) ml	73 kg	500 (400-600) ml
6'-0"			73 kg	500 (400-600) ml	78 kg	550 (450-650) ml
6'-2"			78 kg	550 (450-650) ml	82 kg	600 (450-700) ml
6'-4"			82 kg	600 (450-700) ml	87 kg	600 (500-700) ml
6'-6"			87 kg	600 (500-700) ml	91 kg	650 (500-750) ml
6'-8"			92 kg	650 (500-750) ml	96 kg	650 (550-800) ml
6'-10"					101 kg	700 (600-850) ml

Troubleshooting

General Guidelines:

- Remember to click twice when changing settings. #dontgettrickedjustclick
- Use 60% FiO2 whenever the patient condition allows.
- Ventilator takes approximately 8-10 breaths or 30 seconds to meet settings entered.
- Set P-Max 10 cm H20 above Paw (peak airway pressure).

P-Max alarm above 35 cm H2O: Stiff lung.

Dislodged: Check EtCO2, lung sounds, epigastium, SpO2.

Obstructed: Check suction need, kinked tubing, SpO2, EtCO2.

Pneumothorax: Check lung sounds, blood pressure, SpO2.

Equipment: Check cuff inflation, circuit connections.
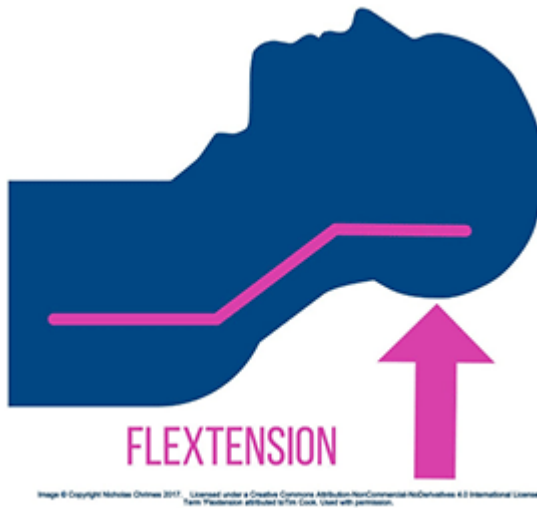
Equipment – Video Laryngoscope

Indications:

- Airway: RSI
- McGrath MAC for routine or difficult airways
- McGrath X-blade for difficult or extreme airways
- To evaluate difficult airway check LEMON and difficulty with the following checks indicates the anticipation of a difficult airway that will require more effort to establish the intubation.
- Look externally (feel cricothyroid membrane to check for possible need to cric patient as the worst case scenario failed airway) Inability to find cric anatomy means BVM and supraglotic airway may be only backup airway if intubation attempts fail.
- Evaluate 3-3-2 (3 fingers between upper and lower teeth, 3 fingers between mandible and neck, 2 fingers between mandible and thyroid) This anticipates a normal airway. Inability to pass these minimum finger spacing indicates an anterior airway or narrow mouth open.

- Mallampati (Have patient open their mouth and evaluate airway)
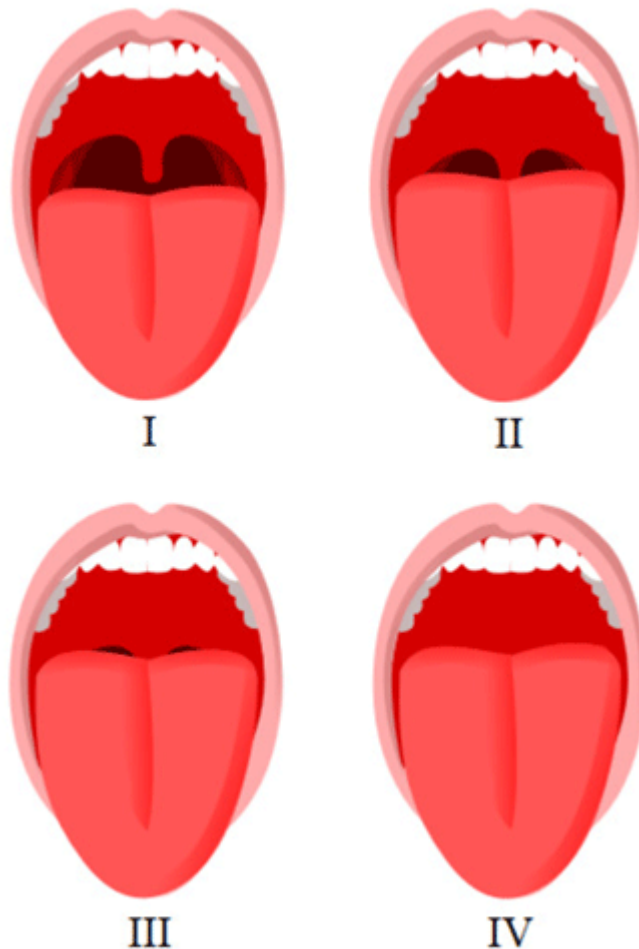
Mallampati Score Visual

- Obstruction or Obese (Last trimester Pregnancy) Neck or mouth goiters/tumors. Difficulty in positioning patient due to obesity and difficulty in providing positive pressure due to excess chest mass or third trimester pregnancy.

- Neck mobility (Neck needs to be able to be positioned for best view into sniffing position) Patient's ear should be in-line with their sternal notch. If the patient's neck can not move into this position the airway viewing angles will be less than optimal.

FLEXTENSION

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Contraindications:

- None

Precautions:

- Correctly sized blade must be used

Procedure:

- General Preparation
- Remove the McGrath videoscope from its packaging container
- Remove the camera cover off from the distal end of the CameraStick
- Activate the device by pushing the power button on the left side of the handle
- Slide the selected blade onto the CameraStick, until the blade clip locks into the blade retaining clip
- Angle the screen for best viewing
- After use, dispose of the blade according to infection control policies
- After each patient use, remove the battery and clean the handle with a quaternary ammonium + isopropyl alcohol wipe (Sani-Cloth or equivalent)

McGrath MAC blade

- A stylet or bougie can be used with the MAC blades
- Insert into the right side of the mouth, and sweep the tongue to the left
- Move into midline position as the blade inserts into the vallecula

- Once the epiglottis is visible, lift as you would with direct laryngoscopy to expose the glottis

- Insert tube on the right side of the mouth and once the tube becomes visible on the camera screen, advance through the cords to the appropriate depth
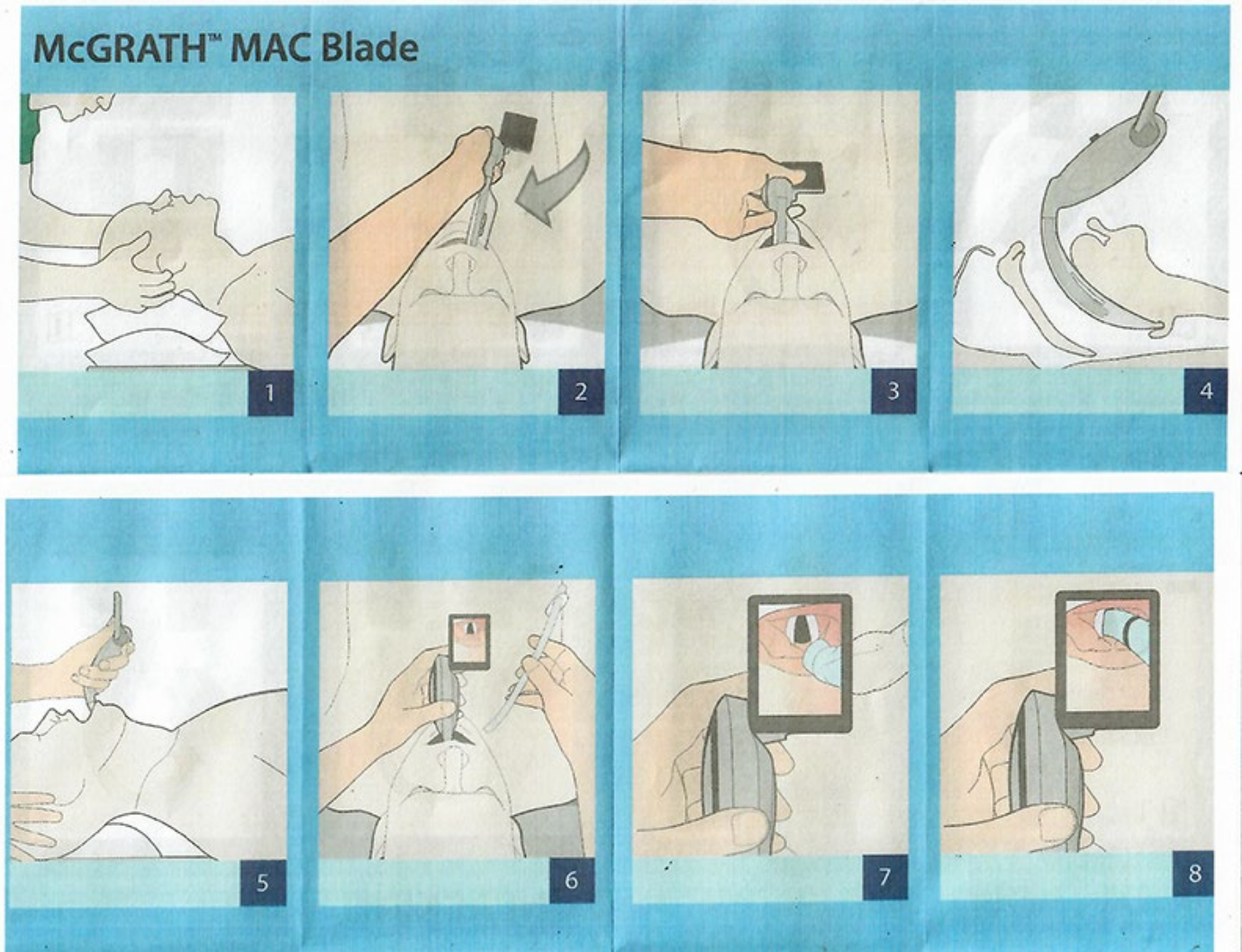

McGrath X blade

- Endotracheal tube needs to be shaped to the same curve as the X blade, using a stylet. A bougie is not recommended to be used with this blade
- Insert the blade into the mouth, using a midline approach, and move the anterior surface of the blade along the tongue until placed in the vallecula
- Tilt the handle with minimal pressure until the glottis is exposed
- Insert the tube at a 90 degree angle to the blade, and slowly rotate until the tube is visualized on the screen

- I Insert through the vocal cords, gently advance the tube off off the stylet, and then roll the stylet forward out of the end of the tube

McGRATH™ X Blade

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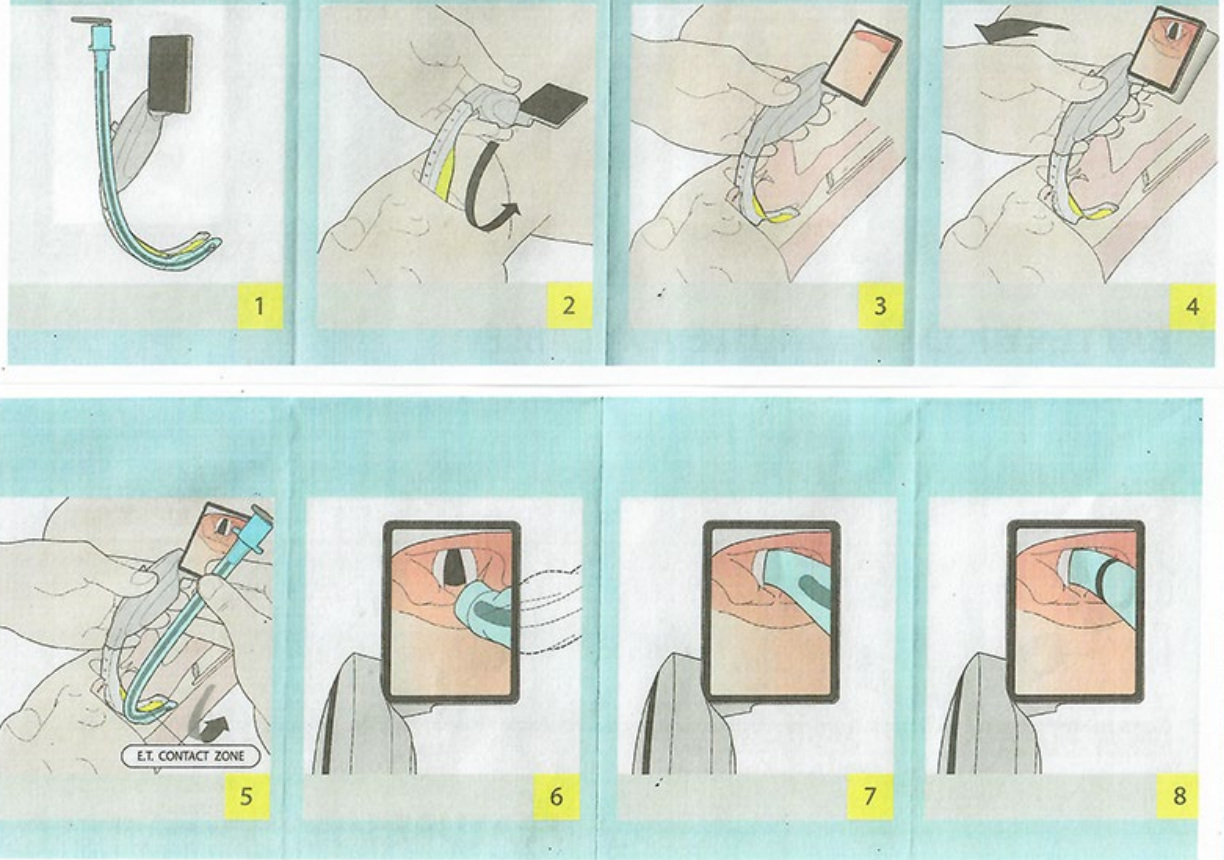
Equipment – Warming Blanket

Indications:

- Any trauma patient that needs to be kept warm.

Contraindications:

- Covering of the airway for any length of time because the blanket is nonporous and will not allow air flow through it.

Precautions:

- Blanket is not strong enough to be used as a movement tarp/device.

Instructions for use:

- Remove blanket from packaging. Unfold blanket and place on patient in a fashion that is best suited for the patient's clinical needs.