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2441 MI MEDIC 415 FINAL

General Pre-Hospital Care

Patient care should be initiated at the patient's side prior to patient movement or transport for most medical conditions. EVERY PATIENT CONTACT BEGINS WITH THIS PROTOCOL

1. Pediatric patients (≤ 14 years of age or up to 36 kg) are treated under pediatric protocols when applicable.
    a. Refer to MI MEDIC cards for medication dosing and equipment sizes.
2. Assess scene safety and use appropriate personal protective equipment.
3. For trauma refer to **General Trauma-Treatment Protocol**
4. A patient exhibiting any signs of a life-threatening illness or injury shall not be required to move on their own. This includes patients with illnesses of unknown etiology.
5. If applicable, refer to **Adult or Pediatric Crashing Patient/Impending Arrest-Treatment Protocol**.
6. Complete primary survey.
7. When indicated, implement airway intervention per the **Airway Management-Procedure Protocol.**
8. When indicated, administer oxygen, and assist ventilations per the **Oxygen Administration-Procedure Protocol.**
9. Assess and treat other life-threatening conditions per appropriate protocol.
10. Obtain vital signs including pulse oximetry if available or required, approximately every 15 minutes, or more frequently as necessary to monitor the patient's condition (A minimum of 2 sets are required for all patient transports. Two sets are suggested for patient refusals and treat and release patients.)
11. Perform a secondary survey consistent with patient condition.
12. Follow specific protocol for patient condition.
13. Document patient care according to the **Documentation and Patient Care Records Protocol**.
14. Establish vascular access per **Vascular Access & IV Fluid Therapy-Procedure Protocol** when fluid or medication administration may be necessary.
15. Apply cardiac monitor and treat rhythm according to appropriate protocol.
16. If applicable, obtain 12-lead ECG (Per MCA selection, may be a BLS or Specialist procedure) see **12 Lead ECG-Procedure Protocol**. Provide a copy of the rhythm strip or 12-lead ECG to the receiving facility, be sure to place patient identifiers on strip.
17. Use capnography/capnometry as directed per **End Tidal Carbon Dioxide Monitoring-Procedure Protocol**

NOTE: When possible, provide a list of the patient's medications or bring the medications to the hospital.

Abdominal Pain (Non-traumatic)

1. Follow **General Pre-hospital Care-Treatment Protocol**.
2. Conduct physical exam of abdomen including assessment of central and bilateral distal pulses.
3. If symptoms of shock present refer to **Shock-Treatment Protocol**.
4. Position patient in a position of comfort if pain is non-traumatic. If trauma related, refer to **General Trauma-Treatment Protocol**
5. Do not allow patient to drink or eat anything (does not include ODT medications)
6. If patient is experiencing nausea and vomiting refer to **Nausea and Vomiting-Treatment Protocol**.
7. Treat pain per **Pain Management-Procedure Protocol**.
8. Consider 12 Lead (Per MCA selection, may be a BLS or Specialist procedure) follow **12 Lead ECG-Procedure Protocol**.

Initial Date: 8/24/2012
Revised Date: 07/19/2023

Section 1-3

Nausea & Vomiting

1. Follow **General Pre-hospital Care-Treatment Protocol**.
2. Consider underlying causes of nausea and vomiting (i.e., stroke, trauma, cardiac, etc.) and further evaluate according to appropriate protocol.
3. Pediatric patients (≤ 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
4. Isopropyl alcohol – Consider allowing patient to inhale vapor from isopropyl alcohol wipe 3 times every 15 minutes as tolerated
5. For patients ≥ 30 kg that are not actively vomiting, administer **ondansetron** (i.e., Zofran) 4mg ODT(availability and licensure level per MCA selection).
   a. Contraindications: Patients with Phenylketonuria (PKU)

ODT **ondansetron** included?
(●) YES ( ) NO

Per MCA Selection
☑ EMT
☑ Specialist

6. For signs of dehydration, administer **NS** or **LR** IV/IO fluid bolus (refer to **Vascular Access and IV Fluid Therapy-Procedure Protocol**).
   a. Adults: up to 1 liter.
   b. Pediatrics: up to 20 ml/kg
7. Hypotensive patients should receive additional IV/IO fluid boluses, as indicated by hemodynamic state.
   a. Adults: repeat IV/IO fluid bolus to a maximum of 2 liters.
   b. Pediatrics: repeat dose of 20 ml/kg to a maximum of 40 ml/kg
   c. Monitor for pulmonary edema.
   d. If pulmonary edema presents, stop fluids and contact Medical Control for direction.
8. Administer **ondansetron** IV/IM if ODT not already administered or if patient vomited post ODT administration. (Per MCA selection, may be a Specialist skill)

Ondansetron IV/IM
☑ Specialist

   a. Adults 4mg IV/IM
   b. Pediatrics refer to MI MEDIC cards.
   c. i. If MI MEDIC cards are not available administer 0.1 mg/kg IV/IM, maximum dose of 4 mg

9. Repeat **ondansetron** (may be Specialist skill if selected above)
   a. Adults: 4mg IV/IM
   b. Pediatrics: 0.1 mg/kg IV/IM, maximum dose of 4 mg
   c. Total maximum dose **ondansetron** (all/any route) for pediatrics or adults 8 mg
10. Consider **diphenhydramine** when previous medications have been ineffective or are contraindicated.
   a. Adult: 12.5-25 mg IV/IM. Maximum dose 25 mg.
   b. Pediatric (>2 years of age AND > 12 kg): 1.0 mg/kg IV. Maximum dose 25 mg.

Medication Protocols
Diphenhydramine
Ondansetron

Syncope

1. Assess for mechanism of injury, if trauma sustained, refer to **General Trauma-Treatment Protocol.**
2. Follow **General Pre-Hospital Care-Treatment Protocol.**
3. Pediatric patients (≤ 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
4. Position patient
   A. If third trimester pregnancy, position patient left lateral recumbent.
   B. Supine for all other patients
5. Check blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**)
6. If altered mental status perform stroke assessment and evaluate for stroke per **Stroke/Suspected Stroke-Treatment Protocol**
7. If altered mental status, refer to **Adult or Pediatric Altered Mental Status-Treatment Protocol**.
8. For signs of dehydration or hypotension, administer **NS** or **LR** IV/IO fluid bolus (refer to **Vascular Access and IV Fluid Therapy-Procedure Protocol**).
   A. Adults: up to 1 liter
   B. Pediatrics: up to 20 mL/kg
9. Hypotensive/dehydrated patients should receive additional IV/IO fluid boluses, as indicated by hemodynamic state.
   a. Adults: repeat IV/IO fluid bolus to a maximum of 2 liters.
   b. Pediatrics: repeat dose of 20 ml/kg to a maximum of 40 ml/kg
   c. Monitor for pulmonary edema.
   d. If pulmonary edema presents, stop fluids and contact Medical Control for direction.
10. Obtain 12-lead ECG (Per MCA selection, may be a BLS or Specialist procedure) follow **12 Lead ECG-Procedure Protocol**. If ECG indicates cardiac event or dysrhythmia, refer to appropriate Cardiac Protocol.
11. Contact medical control for additional IV fluids.

Shock

1. Assessment: Consider etiologies of shock and refer to specific types of shock/injury first if known: **Anaphylaxis/Allergic Reaction-Treatment Protocol, Hemorrhagic Shock-Treatment Protocol, Pulmonary Edema/Cardiogenic Shock-Treatment Protocol**
2. Follow **General Pre-hospital Care-Treatment Protocol**.
3. Pediatric patients (≤ 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
4. Control major bleeding per **Bleeding Control (BCON)-Procedure Protocol**.
5. Remove all transdermal patches using gloves.
6. Prompt transport per MCA Transport Protocol.
7. Special consideration
   a. If 3rd trimester pregnancy, position patient left lateral recumbent.
8. Obtain vascular access (in a manner that will not delay transport).
9. Administer **NS** or **LR** fluid bolus IV/IO (refer to **Vascular Access and IV Fluid Therapy-Procedure Protocol**).
   a. Adults: up to 1 liter wide open,
   b. Pediatrics: up to 20 ml/kg based on signs and symptoms of shock
   c. Fluid should be slowed to TKO when SBP greater than 90 mmHg.
10. Consider establishing a second large bore IV of **NS** or **LR** enroute to the hospital.
11. Obtain 12-lead ECG, if suspected cardiac etiology. (Per MCA selection, may be a BLS or Specialist procedure) follow **12 Lead ECG-Procedure Protocol**.
12. If accompanying head injury, refer to **Head Injury-Treatment Protocol**.
    a. Maintain SpO2 ≥ 90%
    b. Maintain SBP > 90 mmHg < 140 mmHg
    c. Do NOT hyperventilate.
13. Hypotensive patients should receive additional IV/IO fluid boluses, as indicated by hemodynamic state (consider preparing **epi** push dose while administering second bolus)
    a. Adults: repeat IV/IO fluid bolus to a maximum of 2 liters.
    b. Pediatrics: repeat dose of 20 ml/kg to a maximum of 40 ml/kg
    c. Monitor for pulmonary edema.
    d. If pulmonary edema presents, stop fluids and contact Medical Control for direction.
14. If hypotension persists after IV/IO fluid bolus, administer **epinephrine** IV/IO by push dose (dilute boluses) while administering second fluid bolus.
    a. Prepare (**epinephrine** 10 mcg/mL) by combining 1mL of 1mg/10mL **epinephrine** in 9mL **NS**, then
       a. Adults:
          i. Administer 10-20 mcg (1-2 mL **epinephrine** 10 mcg/mL) IV/IO
          ii. Repeat every 3 to 5 minutes
          iii. Titrate SBP greater than 90 mm/Hg.

b. Pediatrics:
   i. Administer 1 mcg/kg (0.1 mL **epinephrine** 10 mcg/mL) IV/IO
   ii. Maximum dose 10 mcg (1 mL)
   iii. Repeat every 3-5 minutes

Medication Protocols
Epinephrine

Anaphylaxis/Allergic Reaction

A. Initial
   a. Follow **General Pre-Hospital Care-Treatment Protocol**.
   b. Pediatric patients (< 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
   c. Ensure ALS response
   d. Determine if anaphylaxis/severe allergic reaction (wheezing and/or hypotension) or an allergic reaction (itching, hives).
   e. Determine substance or source of exposure, remove patient from source if known and able.

B. Anaphylaxis/Severe Allergic reaction
   a. Assist patient in use of their own prescribed **epinephrine** auto-injector, if available
   b. Administer **epinephrine** auto-Injector IM

MCA Approval of **epinephrine** auto-injector IM
☐ MFR

MCAs will be responsible for maintaining a roster of the agencies choosing to participate and will submit roster to MDHHS

1. Contact Medical Control if child appears to weigh less than 10 kg (approx. 20 lbs.), prior to epinephrine administration, if possible .
2. Administer pediatric **epinephrine** dose auto-injector IM if child weighs between 10-30 kg (approximately 20-60 lbs.)
3. Administer **epinephrine** auto-injector IM for adults and children weighing greater than 30 kg (approximately 60 lbs.)
4. May repeat **epinephrine** auto-injector IM one time after 3-5 minutes if the patient remains hypotensive, and auto-injector available

   c. Administer **epinephrine** IM (per MCA selection may be BLS or MFR skill)
   NOTE: BLS not carrying epinephrine auto-injector MUST participate in draw up epinephrine.

MCA Approval of draw up **epinephrine.**
☑ MFR
☑ BLS
Personnel must complete MCA approved training prior to participating in draw up **epinephrine.**

MCAs will be responsible for maintaining a roster of the agencies choosing to participate and will submit roster to MDHHS.

1. Contact Medical Control if child appears to weigh less than 10 kg (approx. 20 lbs.), prior to **epinephrine** administration, if possible.
2. Administer 0.15 mg (0.15 mL) of **epinephrine** IM (1mg/mL) if child weighs between 10-30 kg (approx. 20-60 lbs.)
3. Administer 0.3 mg (0.3 mL) of **epinephrine** IM (1mg/mL) for child weighing over 30 kg (approx. 60 lbs.) or adult patients.
4. May repeat **epinephrine** IM administration one time after 3-5 minutes if the patient remains hypotensive.
5. Maxiumum of 2 doses total of epinephrine (prescribed auto-injector, EMS supplied auto-injector, draw up epinephrine combined)

d. If wheezing and/or airway constriction, administer **albuterol** 2.5 mg/3mL **NS** nebulized (Per MCA selection may be EMT skill) per **Medication Administration-Medication Protocol**

Nebulized **albuterol** administration per MCA selection
☑ EMT

1. If wheezing and/or airway constriction continues, administer nebulized **albuterol** 2.5 mg/3 ml **NS** nebulized and **ipratropium** 500 mcg/2.5 mL **NS** per **Medication Administration-Medication Protocol** (Per MCA selection may be Specialist skill)

Nebulized **albuterol/ipratropium** administration per MCA selection
☑ Specialist

e. For patients with hypotension administer **NS** or **LR** IV/IO fluid bolus (refer to **Vascular Access and IV Fluid Therapy-Procedure Protocol**) refer to **Shock-Treatment Protocol**.
1. Adults: up to 1 liter, wide open.
2. Pediatrics: 20 mL/kg, based on signs/symptoms of shock.
3. Fluid should be slowed to KVO when SBP greater than 90 mm/Hg.

f. Hypotensive patients should receive additional IV/IO fluid boluses, as indicated by hemodynamic state. (Consider preparing **epi** push dose while administering second bolus)
1. Adults: repeat IV/IO fluid bolus to a maximum of 2 liters.
2. Pediatrics: repeat dose of 20 mL/kg to a maximum of 40 ml/kg
3. Monitor for pulmonary edema.
4. If pulmonary edema presents, stop fluids and contact Medical Control for direction.

g. If hypotension persists/is unresponsive to fluid bolus, or severe respiratory distress is unresponsive to nebulized treatment, administer push dose **epinephrine** IV/IO.
Prepare (**epinephrine** 10 mcg/mL) by combining 1mL of 1mg/10mL **epinephrine** in 9mL **NS**

1. Adults:
   i. Administer 20 mcg (2 mL e**pinephrine** 10 mcg/mL) IV/IO
   ii. Repeat every 3-5 minutes
   iii. Titrate SBP greater than 90 mm/Hg.
2. Pediatrics:
   i. Administer 1 mcg/kg (0.1 mL **epinephrine** 10 mcg/mL) IV/IO
   ii. Maximum dose 10 mcg (1 mL)
   iii. Repeat every 3-5 minutes

C. If patient is symptomatic of an allergic reaction but not in a severe allergic reaction or anaphylaxis **OR** after **epinephrine** administration:

a. Administer **diphenhydramine**.
1. Adult 50 mg IM or IV/IO
2. Pediatric 1 mg/kg IM/IV/IO (maximum dose 50 mg).

b. If wheezing, and **albuterol** not already administered, administer **albuterol** 2.5 mg/3mL **NS** nebulized (Per MCA selection may be EMT skill) per **Medication Administration-Medication Protocol.**

Nebulized **albuterol** administration per MCA Selection
☑ EMT

1. If wheezing continues , administer nebulized **albuterol** 2.5 mg/3 mL **NS** and **ipratropium** 500 mcg/2.5 mL **NS** per **Medication Administration-Medication Protocol** (Per MCA selection may be Specialist skill)

Nebulized **albuterol/ipratropium** administration per MCA selection
☑ Specialist

c. Administer **prednisone** tablet 50 mg PO to adults and children > 6 years of age (if available per MCA selection)

Additional Medication Option:

☑ **Prednisone** 50 mg tablet PO
(Adults and Children > 6 y/o)

i. If **prednisone** is not available, patient is ≤ 6 years of age, or patient is unable to receive medication PO, administer **methylprednisolone** IV/IO/IM:
   a. Adults: 125 mg
   b. Pediatrics: 2mg/kg (max 125 mg)

D. Patients unresponsive to treatment, contact Medical Control

Medication Protocols
Albuterol
Diphenhydramine
Epinephrine
Ipratropium
Methylprednisolone
Prednisone

Initial Date: 05/31/2012
Revised Date: 05/08/2023
Section 1-7

Adrenal Crisis

Purpose: This protocol is intended for the management of patients with a known history of adrenal insufficiency, experiencing signs of crisis.

Indications:

1. Patient has a known history of adrenal insufficiency or Addison's disease.
2. Presents with signs and symptoms of adrenal crisis including:
    a. Pallor, headache, weakness, dizziness, nausea and vomiting, hypotension, hypoglycemia, heart failure, decreased mental status, or abdominal pain.

Treatment:

1. Follow **General Pre-hospital Care-Treatment Protocol.**
2. Pediatric patients (≤ 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.

Contact Medical Control for all adrenal crisis patients prior to treatment:

1. Administer fluid bolus **NS** or **LR** IV/IO (refer to **Vascular Access and IV Fluid Therapy-Procedure Protocol**)
    a. Adults: up to 1 liter.
    b. Pediatrics: up to 20 ml/kg
2. Assist with administration of patient's own hydrocortisone sodium succinate (Solu-Cortef)
    a. Adult: 100 mg IV/IM
    b. Pediatric: 1-2 mg/kg IV/IM
3. If patient does not have their own hydrocortisone, administer **prednisone** tablet 50 mg PO to adults and children > 6 years of age (if available per MCA selection)

Additional Medication Option:

☑ **Prednisone** 50 mg tablet PO
(Adults and Children > 6 y/o)

    a. If **prednisone** is not available, patient is ≤ 6 years of age, or patient is unable to receive medication PO, administer **methylprednisolone** IV/IO/IM:
        i. Adults: 125 mg
        ii. Pediatrics: 2mg/kg (max 125 mg)
4. Transport
5. Notify Medical Control of patient's medical history.
6. Refer to Adult or Pediatric **Altered Mental Status-Treatment Protocol.**

Medication Protocols
Methylprednisolone
Prednisone

MCA Name: Marquette Alger MCA
MCA Board Approval Date: 3/15/24
MCA Implementation Date: 4/30/24
MDHHS Approval: 5/8/23

MDHHS Reviewed 2023

Behavioral Health Emergencies

1. Assure scene is secure.
2. Follow **General Pre-hospital Care-Treatment Protocol.**
3. Respect the dignity of the patient.
4. Treat known conditions such as hypoglycemia, hypoxia, or poisoning. Refer to appropriate protocol.
5. Patients experiencing behavioral health emergencies should be transported for treatment if they have any of the following:
    a. Can be reasonably expected to intentionally or unintentionally physically injure themselves or others or has engaged in acts or made threats to support the expectation.
    b. Are unable to attend to basic physical needs.
    c. Have judgement that is so impaired that he or she is unable to understand the need for treatment and whose behavior will cause significant physical harm.
    d. Have weakened mental processes because of age, epilepsy, alcohol or drug dependence which impairs their ability to make treatment decisions.
6. Communicate in a calm and nonthreatening manner. Be conscious of personal body language and tone of voice.
7. Keep contacts to a minimum; when prudent, utilize a single rescuer for assessment.
8. Offer your assistance to the patient.
9. Constantly monitor and observe patient to prevent injury or harm.
10. Control environmental factors; attempt to move patient to a private area. Maintain escape route.
11. Attempt de-escalation, utilize an empathetic approach. Avoid confrontation.
12. If patient becomes violent or actions present a threat to patient's safety or that of others, restraint may be necessary. Refer to **Patient Restraint- Procedure Protocol**.
13. If the patient is severely agitated, combative/aggressive, and shows signs of sweating, delirium, elevated temperature, and lack of fatiguing, refer to **Hyperactive Delirium Syndrome with Severe Agitation-Treatment Protocol**.

Protective Custody - The temporary custody of an individual by a law enforcement officer with or without the individual's consent for the purpose of protecting that individual's health and safety, or the health and safety of the public and for the purpose of transporting the individual if the individual appears, in the judgment of the law enforcement officer, to be a person requiring treatment. Protective custody is civil in nature and is not to be construed as an arrest. (330.1100c (7), Sec. 100c, Michigan Mental Health Code)

Opioid Overdose Treatment and Prevention

Aliases: OD, Naloxone administration, Naloxone leave behind, Accidental overdose

Indications: Decreased level of consciousness associated with respiratory depression from Opioid Overdose, signs of opioid use, scenes with indications of opioid use. For critically ill patients see **Adult or Pediatric Crashing Patient/Impending Arrest-Treatment Protocol**.

Procedure:

1. Follow **General Pre-hospital Care-Treatment Protocol**.
2. Pediatric patients (≤ 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
3. If patient has respiratory depression, provide oxygenation and support ventilations. Treatment goal is to restore effective respirations; the patient need not be completely awakened.

a. Administer **naloxone** when (may be an MFR skill based on MCA selection):
   i. Ventilations have been established and patient has not regained consciousness.
   ii. There is more than 1 rescuer on scene for personnel safety precautions.

MCA Selection for

☑ MFR **naloxone** administration

MCAs will be responsible for maintaining a roster of the MFR agencies choosing to participate and will submit roster to MDHHS

b. Per MCA Selection (below), administer **naloxone** intranasal May repeat one time in 3-5 minutes if effective respirations not restored.

MCA selection for intranasal **naloxone** (MUST SELECT AT LEAST ONE):

☑ **Narcan® Nasal Spray** 4 mg (Adults Only). Entire dose in one nostril. Additional dose in opposite nostril.

☑ **Naloxone** Prefilled 2 mg/2 ml IN via Atomizer (Half dose in each nostril)

- Adult and child over 3 years: 2 ml
- Pediatric Dosing:
  - Up to 3 months: 0.5 ml
  - 3 months up to 18 months: 1 ml
  - Children 19-35 months: 1.5 ml

c. Administer **naloxone** IM, IN or slowly IV, titrating to restore effective respirations.
   i. Adult: 2 mg IM or IN via atomizer.
      1. IN max of two doses total.

ii. Adult: Up to 2 mg IV slowly, titrating to improvement in respiratory status. Repeat as needed every 3-5 minutes.
iii. Pediatric: 0.1mg/kg IM/IN/IV

d. Patients not responding to **naloxone** should have continued airway and ventilatory support.
e. Transport according to MCA Transport Protocol

4. For patients with signs and symptoms or reporting opioid withdrawal (tremors, chills, nausea/vomiting, hallucinations, muscle cramps, etc.)
   a. Establish IV and administer **NS** or **LR** IV/IO per **Vascular Access & IV Fluid Therapy-Procedure Protocol**
   b. For signs of dehydration,
      i. Adults: up to 1 liter, wide open.
      ii. Pediatrics: 20 ml/kg based on signs and symptoms
   c. Hypotensive patients should receive additional IV/IO fluid boluses, as indicated by hemodynamic state.
      i. Adults: repeat IV/IO fluid bolus to a maximum of 2 liters.
      ii. Pediatrics: repeat dose of 20 ml/kg to a maximum of 40 ml/kg
      iii. Monitor for pulmonary edema
      iv. If pulmonary edema presents, stop fluids and contact Medical Control.
   d. For nausea/vomiting, refer to **Nausea & Vomiting–Treatment Protocol**
   e. Transport according to MCA Transport Protocol
5. For patients who have naloxone administered and refuse transportation to the emergency department, contact Medical Control.
      i. Patient may not:
         1. Have current/sustained altered mental status
         2. Have intentionally overdosed (for self-harm)
         3. Have any suicidal/homicidal ideations or thoughts of self-harm
      ii. After contacting Medical Control for consultation, complete the patient refusal per **Refusal of Care Adult and Minor Protocol**, document the name of the facility and physician in the PCR
6. Leave Behind Naloxone

MCA Selection for Naloxone Leave Behind
Providers must be part of an MCA designated Leave Behind Naloxone agency
☑ Not Included
☐ MFR ☐ EMT ☐ AEMT ☐ Paramedic
MCA will submit roster to MDHHS

   a. Indications
      i. Patients ≥ 15 years old who received **naloxone** with symptom improvement.
      ii. Patients ≥ 15 years old who report substance use disorder.

iii. Scenes where there are signs of opioid use and an individual ≥ 15 years old available to receive the Naloxone.

b. For patients who are transported, **naloxone kits** may either be provided to
   i. family and friends on scene (≥ 15 years old) OR
   ii. to the patient when arriving at the hospital, if the patient is awake
c. Provide a **naloxone kit** to patient or family/friends on scene, if accepted
d. Document in PCR administration of kit (in procedure section)
e. Other possible offerings when administering a kit:
   i. Offer to properly dispose of any used needles following your agency policy.
   ii. Refer to a community peer support team, if available
   iii. Provide literature outlining resources for opioid use disorder or substance use disorder treatment programs in the community.
   iv. For patients who have not suffered an acute overdose AND are willing to accept treatment for opioid use disorder or substance use disorder, the following may be offered if available:
      1. Alternate destination according to MCA approval (including inpatient or outpatient treatment facilities)
      2. Mobile crisis teams
      3. Other local treatment options

<u>Medication Protocols</u>
Naloxone

Initial Date: 10/19/2022
Revised Date: 05/08/2023
Section 1.10

Foreign Body Airway Obstruction

***Alias**: Choking, Airway Obstruction, FBAO*

This procedure is intended for situations in which a severe foreign body airway obstruction (FBAO) has occurred. EMS personnel must be able to rapidly initiate treatment in such cases. EMS personnel should consider these cases to be potential cardiac arrests.

FOREIGN BODY AIRWAY OBSTRUCTION

This procedure is intended for situations in which a severe foreign body airway obstruction (FBAO) has occurred. EMS personnel must be able to rapidly initiate treatment in such cases. Note: Sudden cardiac arrest that occurs while a person is eating is frequently dispatched as "choking." EMS personnel should consider these cases to be potential cardiac arrests.

1. In conscious (responsive) adults and children >1 year of age, deliver abdominal thrusts in rapid sequence until the obstruction is relieved.
2. Administer chest thrusts in conscious patients in place of abdominal thrusts when:
    a. Abdominal thrusts are ineffective (optional consideration)
    b. Patient is obese and rescuer is unable to encircle the patient's abdomen
    c. Patient is in the later stages of pregnancy (e.g., greater than 20 weeks)
    d. Patient is under 1 year of age
    e. Wheelchair bound patients
3. For conscious infants (under 1 year old) with evidence of severe FBAO:
    a. Deliver repeated cycles of 5 back blows followed by 5 chest compressions until the object is expelled or the patient becomes unresponsive.
    b. Note: Abdominal thrusts are not recommended for infants because they may damage the infant's relatively large and unprotected liver.
4. If any patient becomes unresponsive or is found unresponsive and is unable to be ventilated using the 2-person bag-valve-mask technique with oropharyngeal airway start CPR
5. For unconscious patients, while chest compressions are being provided, perform direct laryngoscopy. If foreign body is visible, remove using adult or pediatric Magill forceps.
6. If unsuccessful in visualizing foreign body, continue chest compressions and repeat direct laryngoscopy while alternating with attempts to ventilate.
7. Once FBAO is relieved, if spontaneous respiration does not return, refer to **Airway Management-Procedure Protocol**

Adult/Pediatric Trauma Triage

PURPOSE

The goal of any trauma patient assessment and transportation guideline is to facilitate delivery of the patient to the most appropriate level of care in the most expeditious manner.

Exception to these triage guidelines is made for trauma patients requiring airway intervention that cannot be accomplished by pre-hospital personnel. These patients will be transported to closest appropriate hospital to allow for airway management, resuscitation and immediate transfer for definitive care as indicated.

I. Assess Patient According to National Guideline for the Field Triage of Injured Patients
  A. **RED CRITERIA** – High Risk for Serious Injury - Include the Following
    1. Injury Patterns
      a. Penetrating injuries to head, neck, torso, and proximal extremities
      b. Skull deformity, suspected skull fracture
      c. Suspected spinal injury with new motor or sensory loss
      d. Chest wall instability, deformity, or suspected flail chest
      e. Suspected pelvic fracture
      f. Suspected fracture of two or more proximal long bones
      g. Crushed, degloved, mangled, or pulseless extremity
      h. Amputation proximal to wrist or ankle
      i. Active bleeding requiring a tourniquet or wound packing with continuous pressure
    2. Mental Status & Vital Signs
      a. All Patients
        i. Unable to follow commands (motor GCS < 6)
        ii. RR < 10 or > 29 breaths/min
        iii. Respiratory distress or need for respiratory support
        iv. Room-air pulse oximetry < 90%
      b. Age 0-9 Years
        i. SBP < 70mm Hg + (2 x age in years)
      c. Age 10-64 years
        i. SBP < 90 mmHg or
        ii. HR > SBP
      d. Age ≥ 65 Years
        i. SBP < 110 mmHg or
        ii. HR > SBP
  B. Patients meeting any one of the **above** **RED CRITERIA** should be transported to a Level 1 or Level 2 trauma center, with the following age group guidance:
    1. **Adult** (15 years of age or older) – In order of preference of destination
      a. Level 1 or Level 2 Trauma Center within 45 minutes. (If Level 1 or Level 2 Trauma Center is not possible within 45 minutes by ground transport from scene – consider air medical.)
      b. Level 3 Trauma Center within 45 minutes

c. Level 4 Trauma Center within 45 minutes

2. **Pediatrics** (14 years of age or younger) – In order of preference of destination
   a. Pediatric Level 1 or Pediatric Level 2 Trauma Center if within 45 minutes
   b. Level 1 or Level 2 Trauma Center within 45 minutes (If NEITHER a Level 1 or Level 2 Pediatric Trauma Center NOR Level 1 or Level 2 Trauma Center is possible by ground transport from scene – consider air medical.)
   c. Level 3 Trauma Center within 45 minutes
   d. Level 4 Trauma Center within 45 minutes.

II. **YELLOW CRITERIA** – Moderate Risk for Serious Injury – Include the Following

A. Mechanism of Injury
   1. High-Risk Auto Crash
      a. Partial or complete ejection
      b. Significant intrusion (including roof)
         i. >12 inches occupant site OR
         ii. >18 inches any site OR
         iii. Need for extrication for entrapped patient
      c. Death in passenger compartment
      d. Child (age 0-9 years) unrestrained or in unsecured child safety seat
      e. Vehicle telemetry data consistent with severe injury
   2. Rider separated from transport vehicle with significant impact (e.g., motorcycle, ATV, horse, etc.)
   3. Pedestrian/bicycle rider thrown, run over, or with significant impact
   4. Fall from height > 10 feet

B. EMS Judgement
   1. Consider risk factors, including
      a. Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact
      b. Anticoagulant use
      c. Suspicion of child abuse
      d. Special, high-resource healthcare needs
      e. Pregnancy > 20 weeks
      f. Burns in conjunction with trauma
      g. Children should be triaged preferentially to pediatric capable centers
   2. If concerned, transport to a trauma center

C. 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 per local MCA and trauma policies)

National Guideline for the Field Triage of Injured Patients

RED CRITERIA

High Risk for Serious Injury

Injury Pattern	Mental Status & Vital Signs
• Penetrating injuries to head, neck, torso, and proximal structures • 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	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 oximetry < 90% Age 0–9 years • SBP < 70mm Hg + (2 x age in years) Age 10–64 years • SBP < 90 mmHg or • HR > SBP Age ≥ 65 years • SBP < 110 mmHg or • HR > SBP

Patients meeting any one of the above RED criteria should be transported to a Level 1 or Level 2 trauma center.

***RED CRITERIA* Adult** (15 years of age or older) Order of destination choices

1. Level 1 or Level 2 Trauma Center within 45 minutes.

   **If Level 1 or Level 2 Trauma Center is not possible within 45 minutes by ground transport from scene – consider air medical.*
2. Level 3 Trauma Center within 45 minutes
3. Level 4 Trauma Center within 45 minutes.

***RED CRITERIA* Pediatrics** (14 years of age or younger) Order of destination choices

1. Pediatric Level 1 or Pediatric Level 2 Trauma Center if within 45 minutes
2. Level 1 or Level 2 Trauma Center within 45 minutes

   **If Level 1 or Level 2 Pediatric Trauma Center NOR Level 1 or Level 2 Trauma Center is possible by ground transport from scene – consider air medical.*
3. Level 3 Trauma Center within 45 minutes
4. Level 4 Trauma Center within 45 minutes

YELLOW CRITERIA

Moderate Risk for Serious Injury

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
  - Vehicle telemetry data consistent with severe injury
- Rider separated from transport vehicle with significant impact (e.g., 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 a trauma center

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 per local MCA and trauma policies)

NOTES

1. Medical Control may be contacted to determine the appropriate destination when indicated.

2. High risk pelvic fracture does not include isolated hip fractures without significant mechanism

General Trauma

This protocol should be followed for severely injured patients meeting trauma triage guidelines and methodology, including chest injuries, and patients with symptoms of spinal cord injury, along with extremity weakness, numbness, or sensory loss. It consists of assessment, stabilization, extrication, initiation of resuscitation, and rapid transportation to the closest appropriate trauma facility.

GENERAL TRAUMA MANAGEMENT

1. Follow **General Pre-Hospital Care-Treatment Protocol**.
2. Stabilize spinal column while opening the airway, determine level of consciousness. Refer to **Spinal Injury Assessment-Treatment Protocol**.
3. Manage airway and ventilation per **Airway Management-Procedure Protocol**. Avoid Hyperventilation/Hyperoxygenation.
4. Control major external bleeding. Refer to **Bleeding Control (BCON)-Treatment Protocol.**
5. If signs of shock are present, refer to **Shock-Treatment Protocol**.
6. Refer to **Mass Casualty Incidents-Special Operations Protocol** if appropriate.
7. Determine if the patient is taking blood thinners and document the results in the PCR.
8. Initiate transport according to the **Adult/Pediatric Trauma Triage-Treatment Protocol** or refer to applicable MCA Transport Protocol.
9. Alert receiving hospital as soon as appropriate. Include pertinent trauma triage criteria.
10. Obtain vascular access (in a manner that will not delay transport).
11. Refer to **Pain Management-Procedure Protocol**.

CHEST INJURY

1. Control hemorrhage per **Bleeding Control (BCON)-Treatment Protocol** and **Soft Tissue and Orthopedic Injuries-Treatment Protocol** and **Bleeding Control-Treatment Protocol**.
2. Assess, monitor, and treat life threatening respiratory problems.
   A. Administer high-flow oxygen. *Avoid positive pressure ventilation if possible.*
   B. Cover open and/or sucking chest wounds with an occlusive dressing or an FDA approved, MCA authorized commercial device.
      1. Release dressing if worsened shortness of breath, or signs of tension pneumothorax.
3. If tension pneumothorax suspected, perform needle decompression per **Pleural Decompression-Procedure Protocol.**

ABDOMINAL INJURY

1. Cover intestinal eviscerations with a sterile dressing moistened with sterile saline or water; cover the area with an occlusive material (aluminum foil or plastic wrap). Cover the area with a towel or blanket to keep it warm. Transport with knees slightly bent, if possible. DO NOT PUSH VISCERA BACK INTO ABDOMEN.
2. If signs of shock see **Shock-Treatment Protocol** and/or **Hemorrhagic Shock-Treatment Protocol**

HEAD INURY

1. Avoid hypo or hyper ventilation. See **Head Injury-Treatment Protocol**

Burns

NOTE: When calculating Total Body Surface Area (TBSA) do not include superficial burns (erythematous tissue) in the TBSA

BURN SEVERITY DETERMINATION/DEFINITIONS
SUPERFICIAL - NOT counted in TBSA
Dry, red, easily blanching, sometimes painful (i.e., sunburn)
SUPERFICIAL PARTIAL THICKNESS – counted in TBSA
Moist, red, blanching, blisters, very painful
DEEP PARTIAL THICKNESS – counted in TBSA
Drier, more pale, less blanching, less pain
FULL THICKNESS – counted in TBSA
Dry, leathery texture, variable color (white, brown, black), loss of pin prick sensation

GENERAL TREATMENT:

1. Follow **General Pre-Hospital Care-Treatment Protocol**.
2. Pediatric patients (≤ 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol
3. If evidence of possible airway burn, consider proactive airway management per **Airway Management-Procedure Protocol.**
4. Administer 100% oxygen to all patients rescued from a confined space fire (i.e., building, automobile) regardless of pulse oximetry reading.
5. Determine burn extent & severity (rule of nines, or palm = 1%).
6. Keep patient warm and avoid hypothermia.
7. Assess and treat for associated injuries.
8. If burns are associated with unconsciousness or respiratory burns, or cyanide poisoning, refer to **Cyanide Exposure-Special Operations Protocol.**

THERMAL BURNS:

1. Stop the burning process. Remove smoldering and non-adherent clothing.
2. Consider potential for secondary contamination .
3. Assess and treat associated trauma.
4. Remove any constricting items.
5. Cover burns with dry clean dressings to prevent hypothermia.

CHEMICAL BURNS:

1. Protect personnel from contamination.
    a. Identify chemical agent when possible.
2. Remove all clothing and constricting items.
3. Decontaminate patient prior to transport, brushing off dry chemicals prior to irrigation refer to **Hazard Contaminate Patient-Special Operations**.
4. Evaluate for systemic symptoms, which might be caused by chemical contamination.
5. Notify receiving hospital of possible chemical contamination.
6. Cover burned area in clean, dry dressing for transport.

ELECTRICAL INJURY:

1. Protect rescuers from live electric wires.

2. When energy source is removed, remove patient from electrical source.
3. Treat associated injuries, provide spinal precautions per **Spinal Injury Assessment-Treatment Protocol** when indicated.
4. Assess and treat contact wound(s).
5. Monitor patient ECG for possible arrhythmias. Treat as per specific arrhythmia protocol.

FOR ALL TYPES OF BURNS:

1. Obtain vascular access if indicated for pain management or fluid therapy per **Vascular Access and IV Fluid Therapy-Procedure Protocol**.
2. For patients with hypotension administer **LR** (**NS** if **LR** not available) IV/IO fluid bolus
   a. Adults: up to 1 liter
   b. Pediatrics: up to 20 ml/kg
3. If patient remains hypotensive consider other underlying causes for hypotension and contact Medical Control prior to further fluid resuscitation.
4. For non-superficial burns without hypotension and BSA > 10% deep partial thickness (second degree) or any full thickness (third degree) administer fluids according to age
   a. <1 year Contact Medical Control
   b. 1-5 years old: 125 mL/hour
   c. 6-13 years old: 250 mL/hour
   d. ≥14 years: 500 mL/hour
5. Administer analgesic medication. Refer to **Pain Management-Procedure Protocol**.

TRANSPORT:

1. Follow local MCA Transport Protocol.
2. Special Transport Considerations
   a. If severe airway/breathing compromise that cannot be managed transport to the closest facility.
   b. Burn patients that also meet the field trauma triage criteria (refer to **Adult/Pediatric Trauma Triage-Treatment Protocol**) should be transported to the closest appropriate trauma facility per MCA Transport Protocol.
   c. Consider transport directly to burn center if:
      i. Full thickness burns
      ii. Partial thickness ≥10% TBSA
      iii. Any deep partial or full thickness burns involving the face, hands, genitalia, feet, perineum, or over any joints
      iv. All patients with suspected inhalation injury
      v. Circumferential burns
      vi. All chemical injuries
      vii. All high voltage (≥1,000V) electrical injuries
      viii. Lightning injury
   d. Consider air ambulance transportation for long transport times, pain control requiring deep sedation, and airway concerns that might necessitate advanced airway management.

Protocol Source/References: National Association of State EMS Officials (2016); American Burn Association (2022) Guidelines for Burn Patient Referral.

General Crush Injury

Purpose:

This protocol should be considered when the patient has been entrapped at the scene for more than one hour, one or more full extremities trapped by an object capable of causing a crush injury, including machinery, dirt, rock, and rubble or there is entrapment of patient with history of previous cardiac or renal disease or dialysis treatment.

Crush Syndrome:

Should be suspected in patients with entrapment/compression of greater than one hour, especially when a large muscle mass/group is involved. Treatment of the patient at risk for Crush Syndrome **should begin before the patient is removed when practical.**

Treatment:

1. Follow **General Trauma-Treatment Protocol**, identify and treat life threats.
2. Pediatric patients (≤ 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
3. Assess for signs of Compartment Syndrome or Crush Syndrome.
4. Use tourniquet as indicated (see **Tourniquet Application-Procedure Protocol**.
5. Administer oxygen to patient if environment allows.
6. Administer **albutero**l 2.5 mg/3ml **NS** nebulized per **Medication Administration-Medication Protocol** continuous if IV access is not immediately available. (Per MCA selection may be EMT skill). **Albuterol** may be continued to a maximum dose of 20 mg

Nebulized **albuterol** administration
☑ EMT

7. Establish large bore IV(s) and/or IO (refer to **Vascular Access and IV Fluid Therapy-Procedure Protocol**) and administer **Normal Saline** bolus prior to removal of patient, when practical.
   a. AVOID **LR** solution as it contains potassium
   b. Adults: 1 liters **NS** IV/IO wide open followed by 500-1,000 mL/hr
   c. Pediatrics: 20 ml/kg **NS** IV/IO wide open followed by 10/mL/kg/hr
8. Treat patient pain per **Pain Management-Procedure Protocol**.
9. Initiate cardiac monitoring and assess for hyperkalemia, i.e., wide QRS or peaked T waves. Monitor continuously for changes.
10. If extrication is prolonged, and/or hyperkalemia is suspected (peaked T waves, widened QRS, hypotension):
    a. Administer **sodium bicarbonate**

i. Adults: 100 mEq IVP prior to extrication and 50 mEq/hr IVPB or slow IVP

ii. Pediatrics: 1 mEq/kg (max dose 50 mEq) IVP

NOTE: Flush IV lines between sodium bicarbonate and calcium chloride

b. Administer **calcium chloride**

i. Adults: 1 gram slow IVP over 5 minutes

ii. Pediatrics: 20 mg/kg slow IVP over 5 minutes, max dose 1 gram over 5 minutes

11. Perform repeated 12-Lead ECG, if conditions allows. (Per MCA selection, may be a BLS or Specialist procedure) follow **12 Lead ECG-Procedure Protocol**

<u>Medication Protocols</u>
Albuterol
Calcium Chloride
Sodium Bicarbonate

Soft Tissue & Orthopedic Injuries

1. Follow **General Pre-hospital Care Protocol**.
2. Pediatric patients (≤ 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
3. Control bleeding (refer to **Bleeding Control (BCON)- Procedure Protocol**)
    A. Utilize direct pressure.
    B. Consider early tourniquet use (refer to **Tourniquet Application-Procedure Protocol**).
    C. Consider MCA approved hemostatic agents and hemorrhage control devices.
    D. Consider use of pressure dressings with deep wound packing.
    E. Consider pelvic binding for suspected unstable pelvic fracture.
4. For uncontrolled bleeding with hemorrhagic shock see **Hemorrhagic Shock-Treatment Protocol**
5. If appropriate, maintain spinal precautions for patient per **Spinal Injury Assessment-Treatment Protocol.**
6. Assess pain on 1-10 scale and treat per **Pain Management-Procedure Protocol**.
7. Immobilize/splint orthopedic injuries as appropriate.
    A. Special Considerations
        i. Consider traction splinting for closed femur fractures (excluding hip/femoral neck).
        ii. Straighten severely angulated fractures if distal extremity has signs of decreased perfusion.
        iii. Evaluate and document neurovascular status before and after splinting.
8. Partial/complete amputations, major soft tissue injuries (e.g., mangled extremity) and open fractures.
    A. Control bleeding as above
    B. Cover wounds with sterile dressings moistened with sterile solution.
    C. Splint extremity.
    D. Recoverable amputated parts should be brought to hospital as soon as possible.
    E. Wrap amputated part in sterile dressing moistened with sterile solution. Seal in a plastic bag and, if available, place bag in container of ice and water. DO NOT place part directly on ice.
    F. Obtain IV access per **Vascular Access and IV Therapy-Procedure Protocol.**
    G. Administer antibiotics (per MCA selection).

MCA Selection for Antibiotics

☐ No antibiotic selection

☐ **Ceftriaxone Slow IV Push**: 2gm diluted with 20ml **NS**
1. Adult: 2 gm (diluted) slow IVP 3-5 min
2. Pediatrics > 2 months of age:
   a. Administer diluted dose according to MI MEDIC cards.
   b. If MI MEDIC cards are not available, administer 50 mg/kg (diluted) slow IVP 3-5 min (Maximum dose 2 gm)

☐ **Ceftriaxone Infusion:** Diluted dose added to 100 mL NS bag
1. Adult: 2 gm (diluted) added to 100 mL NS bag. Infuse over 15-30 min
2. Pediatrics ≥ 7 years of age:
   a. Ceftriaxone Infusion according to MI MEDIC cards
   b. If MI MEDIC cards are not available, add 50 mg/kg (diluted) to 100 mL NS bag. Max dose 2 gm. Infuse over 15-30

☑ **Cefazolin Slow IV Push:** 2 gm diluted with 20 ml or **NS**,
1. Adults: 2 gm (diluted) slow IVP 3-5 min
2. Pediatrics:
   a. Administer diluted dose according to MI MEDIC cards.
   b. If MI MEDIC cards are not available, administer 30 mg/kg (diluted) slow IVP 3-5 min (Maximum dose 2 gm)

☐ **Cefazolin Infusion**. Diluted dose added to 100 mL NS bag
1. Adult: 2 gm (diluted), added to 100 mL bag of NS. Infuse over 15-30 minutes.
2. Pediatrics ≥ 7 years of age:
   a. Cefazolin Infusion according to MI MEDIC cards.
   b. If MI MEDIC cards are not available, add 30 mg/kg (diluted) to 100 mL NS bag. Max dose 2 gm. Infuse over 15- 30 minutes.

H. Frequent monitoring of circulation, sensation, and motion distal to the injury during transport.

9. For severe crush injuries, refer to **General Crush Injury-Treatment Protocol**.
10. Impaled objects are left in place and stabilized. Removal of impaled objects is only with approval of Medical Control.
11. Follow MCA transport protocol.
12. Provide pain management per **Pain Management-Procedure Protocol.**

Medication Protocols
Cefazolin
Ceftriaxone

Spinal Injury Assessment

1. Follow **General Pre-hospital Care-Treatment Protocol**.
2. Assess the mechanism of injury.
    A. Negative mechanism does not need a spine injury clinical assessment.
    B. Patients with mechanism of injury with the potential for causing spine injury shall have a spine injury clinical assessment performed.
3. Clinical criteria are used as the basis for assessment. If any of the clinical criteria are present or if the assessment cannot be completed, the patient has a positive spine injury assessment.
4. If the mechanism of injury with the potential for causing spine injury exists, the following clinical criteria are assessed:
    A. Altered mental status
    B. Use of intoxicants
    C. A painful injury that distracts the patient from assessment of the spine.
    D. Motor and/or sensory deficit
    E. Spine pain and/or tenderness
5. If any of the clinical criteria are present the patient has a positive spine injury assessment. If none of the clinical criteria are present the patient has a negative spine injury assessment.
6. Patients with a positive spine injury assessment should have spinal precautions maintained during movement and transport. Refer to **Spinal Precautions-Procedure Protocol.**
7. Patients over the age of 65 with evidence of a head strike mechanism of injury will have a rigid extrication collar applied even if the spinal injury clinical assessment is negative.

Protocol Source/References: NASEMSO Clinical Guidelines

MCA Name: Marquette Alger MCA
MCA Board Approval Date: 3/15/24
MCA Implementation Date: 4/30/24
MDHHS Approval: 5/22/23

MDHHS Reviewed 2023

Traumatic Arrest

Purpose: The patient in cardiac arrest from a traumatic cause requires rapid assessment and treatment for any chance of meaningful recovery. Standard ACLS is not the optimal approach. Successful resuscitation of the traumatic cardiac arrest patient requires rapid identification and correction of specific entities and rapid transport to an appropriate facility.

1. Indications:
    a. Patients in cardiac arrest from a traumatic source (blunt or penetrating)
2. Contraindications:
    a. Patient that meets DOA criteria, refer to **Dead on Scene/Termination of Resuscitation-Procedure Protocol.**
    b. Suspected traumatic cardiac arrest of more than 10 minutes prior to any interventions, refer to **Dead on Scene Termination of Resuscitation-Procedure Protocol**
    c. If the trauma appears to be minor/minimal and a medical condition appears to be the cause of the cardiac arrest, refer to the appropriate cardiac arrest protocol.
3. Procedures
    a. CPR - high quality CPR needs to be maintained refer to **Adult or Pediatric General Cardiac Arrest-Treatment Protocol**
        i. It is permissible to interrupt CPR briefly for life saving interventions like needle decompression/hemorrhage control.
    b. MEDICATIONS - Prioritize findings and reversing life threatening injuries as standard ACLS medications may not be useful.
    c. AIRWAY - Rapid establishment of an advanced airway with 100% oxygen administration refer to **Airway Management-Procedure Protocol**
    d. CHEST DECOMPRESSION - Refer to **Pleural Decompression-Procedure Protocol**.
        i. Consider bilateral needle decompression in the presence of chest trauma, regardless of findings.
    e. HEMORRHAGE CONTROL - Bleeding control is essential refer to **Bleeding Control (BCON)-Treatment Protocol** and if applicable **Tourniquet Application-Procedure Protocol**.
        i. Penetrating Trauma - Areas not amenable to tourniquet should have a pressure dressing and/or wound packing per **Bleeding Control (BCON)-Procedure Protocol**.
        ii. Blunt Trauma – Place a pelvic binder (commercial or a sheet) on all patients with blunt or blast trauma suffering traumatic arrest. If using a sheet, it should be wrapped around the greater trochanters.

iii. Consider TXA, as available, per **Hemorrhagic Shock-Treatment Protocol**.

f. VOLUME ADMINISTRATION - Rapid vascular access should be obtained. If large bore IV access cannot be rapidly obtained, IO access preferably in the proximal humerus should be obtained **NS** or **LR** rapidly infused. Refer to **Vascular Access & IV Fluid Therapy-Procedure Protocol**
   i. Adults: up to 1 liter
   ii. Pediatrics: up to 20 ml/kg

g. These interventions are not a substitute for rapid transport to an appropriate facility.
   i. If these interventions fail to correct the issues, contact Medical Control for consultation regarding termination of efforts.

4. Termination of efforts should be considered if:
   a. Blunt traumatic arrest in asystole
   b. No signs of life for greater than 10 minutes of intervention
   c. Transport time greater than 15 minutes
   d. Injuries incompatible with life.
5. Continuation of care should be considered with:
   a. Penetrating trauma with signs of life (reactive pupils), PEA with HR greater than 40
   b. ROSC
   c. Hypothermia
   d. Pregnant females with gestational age estimated at greater than 20 weeks.
   e. Patients under 18 years of age.
      i. Transport to the closest appropriate trauma facility per MCA Transport Protocol.
6. Post arrest care:
   a. If pulses are obtained, refer to **Adult or Pediatric Return of Spontaneous Circulation-Treatment Protocol.**
      i. Consider TXA per **Hemorrhagic Shock-Treatment Protocol**

Drowning/Submersion Injury

Drowning is defined as**, "**A process resulting in primary respiratory impairment from submersion or immersion in a liquid medium." (American Heart Association, 2010).

For patients who have been submerged and in cardiac arrest:

1. In cold water (water temperature less than 70° F/21° C)
    A. Initiate resuscitative efforts if submersion time is less than 90 minutes.
        i. Contact Medical Control for instructions on transport timing and destination for in-hospital rewarming.
    B. For submersion time greater than 90 minutes see **Dead on Scene/Termination of Resuscitation-Procedure Protocol**
2. In warm water (temperature is greater than 70° F/21° C)
    A. Initiate resuscitative efforts if submersion time is less than 30 minutes.
        i. Contact Medical Control for futher direction, which may include instructions on transport timing, destination, or termination of resuscitation.
    B. For submersion time greater than 30 minutes see **Dead on Scene/Termination of Resuscitation-Procedure Protocol**
3. It may be impractical to determine water temperature; subsurface water temperatures may be considerably colder than surface temperature. When in doubt, consider water to be cold.
4. Time estimation begins when the patient is presumed to be submersed.

For patients who have been submerged and NOT in cardiac arrest

1. If SCUBA incident with rapid ascent, the maintain the patient in a supine position.
2. Follow **General Pre-hospital Care-Treatment Protocol**.
    A. Administer high flow oxygen.
    B. Primary survey should include proactive airway management and restoration of adequate oxygenation and ventilation.
    C. Exam should include consideration of possible c-spine injury.
    D. Assess for other associated injury such as injury to the head or dive-related emergency.
    E. Assess patient's temperature.
    F. If patient is hypothermic, go to **Hypothermia/Frostbite-Treatment Protocol,** handle patients gently. Excessive/aggressive movement can precipitate cardiac arrest.
    G. Prevent further heat loss by transport in a warm environment.
    H. Patient should be dry and/or wrapped in vapor barrier, as available.
    I. Patients may develop subacute respiratory difficulty after drowning and therefore all victims of drowning should be transported for observation.
        i. Consider transport to facility with hyperbaric oxygen therapy capability.
    J. Consider CPAP (Per MCA selection, may be a BLS procedure) follow **CPAP-Procedure Protocol**.
    K. Contact Medical Control if no transport is considered or no transport is requested.

*Note: For SCUBA incident with rapid ascent, contact Medical Control. Medical Control may consider contacting the Divers Alert Network (DAN) @ 919-684-9111 to arrange evacuation and hyperbaric re-compression at a properly equipped and staffed chamber.

Protocol Source/References: AHA, National Association of State EMS Officials; cold water temp - https://www.coldwatersafety.org/why-did-we-pick-70f-21c

Poisoning/Overdose/Environmental Exposure

NERVE AGENT/ORGANOPHOSPHATE EXPOSURE refer to **Nerve Agent/Organophosphate Pesticide Exposure-Special Operations Protocol**.

GENERAL MANAGEMENT OF TOXIC EXPOSURE (INCLUDING INGESTION)

1. Follow **General Pre-hospital Care-Treatment Protocol.**
2. Pediatric patients (≤ 14 years) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
3. Use proper personal protective equipment and prepare for decontamination if necessary.
4. Remove clothing exposed to chemical (dry decon) refer to **Hazardous Contaminated Patient-Special Operations**
5. Identification of the substance the patient has been exposed to.
6. If altered mental status, refer to **Adult or Pediatric Altered Mental Status-Treatment Protocol**.
7. If suspected opioid overdose, refer to **Opioid Overdose Treatment and Prevention-Treatment Protocol.**
8. If respiratory distress, refer to **Adult or Pediatric Respiratory Distress-Treatment Protocol.**
9. If the patient is seizing, refer to **Adult or Pediatric Seizure-Treatment Protocol.**
10. Alert receiving hospital if patient may present HAZMAT risk.
11. Sample of drug or substance and any medication or poison containers should be brought in with patient if it does NOT pose a risk to rescuers.
12. Refer to **Pain Management-Procedure Protocol**
13. For inhalation exposures, ensure high flow oxygen is provided.
14. If suspected cyanide gas exposure, refer to **Cyanide Exposure-Special Operations Protocol** and contact Medical Control immediately.
15. If suspected nerve agent or organophosphate pesticide, refer to **Nerve Agent/Organophosphate Pesticide Exposure-Special Operations Protocol** and contact Medical Control immediately.
16. Obtain 12 lead (Per MCA selection, may be a BLS or Specialist procedure) refer to **12-Lead ECG- Procedure Protocol** and monitor cardiac rhythm, treat dysrhythmia per appropriate dysrhythmia protocol.
17. For extrapyramidal dystonic reactions, administer **diphenhydramine.**
    a. For adults (>14 years of age), 50 mg IV.
    b. For pediatrics (≤ 14 years of age), 1 mg/kg IV (max dose 50 mg).
15. For symptomatic tricyclic antidepressant ingestions (tachycardia, wide complex QRS), contact Medical Control for administration of **sodium bicarbonate**
    a. Adults (>14 years of age), 50 mEq IV, repeat as needed per medical control.
    b. Pediatrics (≤ 14 years of age), 1mEq/kg IV, repeat as needed per medical control.
16. For symptomatic calcium channel blocker overdose, contact Medical Control and consider **calcium chloride**
    a. Adults (>14 years of age), 1 gm IV.
    b. Pediatrics (≤ 14 years of age), 20 mg/kg IV (max dose 1 gm).

17. For other specific medications in overdose (i.e., beta blockers), contact Medical Control for further guidance.

EYE CONTAMINATION:

1. Irrigate continuously with **NS,** tap water, or bottled water (if available) for 15 minutes (attempt to continue enroute) or as directed by Medical Control.
2. For alkali exposure, maintain continuous irrigation.
3. If available (per MCA selection), administer **tetracaine,** 1-2 drops per eye every 5 minutes, maximum of 5 doses, to facilitate irrigation. Ensure patient does not rub eye.

Tetracaine Included?
(•) Yes ( ) No

SKIN ABSORPTION:

1. Brush off dry chemicals before irrigation
2. Irrigate continuously with **NS** or tap water for 15 minutes or as directed by Medical Control.

MANAGEMENT OF BITES AND STINGS

SPIDERS, SNAKES AND SCORPIONS:

1. Protect rescuers. Bring in spider, snake or scorpion if captured and contained or if dead for accurate identification.
    a. CAUTION: Dead snakes can reflexively bite after "death". Ensure animal is dead prior to placement into container and utilize tools that keep a distance between the rescuer and the animal whenever possible (e.g., shovel, tongs, etc.)

2. Ice for comfort on spider or scorpion bite; DO NOT apply ice to snake bites.
3. SNAKES
    a. Determine if localized or systemic reaction to bite:
        1) Localized Signs/Symptoms (pain and swelling, numbness/tingling, bruising)
            a) Consider pain management, per **Pain Management-Procedure Protocol** (avoid **morphine** if possible as the histamine release from **morphine** may lead to confusion between envenomation vs. medication effects
        2) Systemic Signs/Symptoms (hypotension, altered mental status, hemorrhage, airway swelling/compromise)
            a) Prepare to manage airway & hypotension; if necessary, refer to **Airway Management-Procedure Protocol, Adult or Pediatric Respiratory Distress-Treatment Protocol, Shock-Treatment Protocol** and **Anaphylaxis/Allergic Reaction-Treatment Protocol**
            b) Consider pain management, per **Pain Management-Procedure Protocol** (avoid morphine if possible)
        3) Obtain specific snake information:
            a) Species, color, rattle, elliptical pupils, or thermal pit (photos are encouraged

b. Evaluate and document appearance of wound: location, puncture marks and number, timing of bite, and prior first aid.
c. Remove all constricting items from bitten limb (rings, jewelry, watch, clothing etc.)
d. Immobilize bitten part below the level of the heart (sling, loose wrapping)
e. Initiate prompt transport.
f. If present, mark margins of erythema and/or edema with a marker and include time measured.
g. Do NOT use ice, refrigerants, tourniquets, scalpels, or suction devices.
h. Specific Precautions
    1) Eastern Massasauga Rattlesnake is the only venomous snake native to Michigan.
    2) Exotic venomous snakes i.e., pets/zoo animals, are common; obtain species information and antivenom if available on-scene, from pet owner/zookeeper and transport with patient. Antivenom should be available on-site if patient is coming from a zoo.
    3) Transport to the closest facility.

<u>BEES, CENTIPEDES, SLUGS, AND WASPS:</u>

1. Remove stinger by scraping out. Do not squeeze venom sac if this remains on stinger.
2. Provide wound care.
3. Observe patient for signs of systemic allergic reaction. Treat anaphylaxis per **Anaphylaxis/Allergic Reaction-Treatment Protocol.**

<u>ANIMAL BITES</u>

1. Assure scene safety and contact Police or Animal Control Officer if necessary.
2. DO NOT collect live animals to avoid self-injury; delegate collection of animals to Animal Control Officer, if necessary, for rabies identification. Do NOT bring live animals to the Emergency Department or healthcare facility.
3. Consider pain management per **Pain Management-Procedure Protocol.**
4. Control bleeding per **Bleeding Control (BCON)-Treatment Protocol**.
5. Rabies evaluation:
    a. The following animals are known transmitters and confer risk requiring emergent evaluation: Bat, Skunk, Fox, Dog, Cat, Ferret, Livestock, Opossum, Woodchuck
    b. Obtain the following animal information: type/species of animal, wild/stray vs domestic, bite vs scratch, animal immunization status, and if animal collection was possible
    c. All patients at risk for rabies exposure should be transported, follow local MCA transport protocols. If patient refuses transport, they should be advised to seek immediate medical evaluation for rabies evaluation and possible vaccination. Document the refusal per **Refusal of Care; Adult and Minor-Procedure Protocol**.
6. For additional information, see www.michigan.gov/rabies or contact Michigan Department of Health and Human Services: Communicable Disease Division

Medication Protocols
Calcium Chloride
Diphenhydramine
Sodium Bicarbonate
Tetracaine

Heat Emergencies

1. Follow **General Pre-hospital Care-Treatment Protocol**.
2. Pediatric patients (≤ 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol
3. Determine history/evidence of heat exposure.
4. Check blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**) and treat hypoglycemia per **Adult or Pediatric Altered Mental Status-Treatment Protocol**.

HEAT CRAMPS:

1. Move the patient to a cool environment and attempt oral liquids (may use commercial sports/rehydration).

HEAT EXHAUSTION:

1. Move the patient to a cool environment.
2. Remove tight clothing.
3. Cool patient, provide air conditioning/fanning. Avoid chilling/shivering.
4. Obtain IV/IO Access and administer fluid bolus **NS** or **LR** wide open (refer to **Vascular Access and IV Fluid Therapy-Procedure Protocol**).
   a. Adults (≥ 14 years of age): up to 1 liter
   b. Pediatrics (<14 years of age): up to 20 mL/kg
5. Patient may take oral fluid replacement rather than IV if no nausea. Allow oral intake of cool fluids or water (may use commercial sports/rehydration drinks). Do not permit patient to drink if altered mental status, abdominal pain, or nausea. Avoid carbonated, alcoholic and caffeinated beverages.
6. Treat nausea according to **Nausea/Vomiting-Treatment Protocol**.

HEAT STROKE:

1. Move the patient to a cool environment.
2. Remove tight clothing.
3. Immediate cooling – provide air conditioning and fanning. Avoid chilling/shivering.
4. Place patient in semi-reclining position with head elevated.
5. Obtain IV/IO Access and administer fluid bolus **NS** or **LR** wide open (refer to **Vascular Access and IV Fluid Therapy-Procedure Protocol**).
   a. Adults (≥ 14 years of age): up to 1 liter
   b. Pediatrics (<14 years of age): up to 20 mL/kg
7. Treat nausea according to **Nausea/Vomiting-Treatment Protocol**.
8. Initiation of aggressive cooling may take priority over transport. Contact Medical Control for further cooling and transport guidance.

MANAGEMENT OF PATIENT WITH EXERTIONAL HEAT STROKE

1. Cool as quickly as possible via ice or cool-water immersion, if possible. Alternative means, such as continually misting the exposed skin with tepid water while fanning the victim, may be used if immersion is not possible.

   a. Cool as much of the body as possible, especially the torso.
2. Cool first, transport second when possible.
3. Obtain IV/IO Access (consider resting the patient's arm on the side of immersion tub to start IV while patient is still immersed) and administer fluid bolus **NS** or **LR** wide open (refer to **Vascular Access and IV Fluid Therapy-Procedure Protocol**).
   a. Adults (≥ 14 years of age): up to 1 liter
   b. Pediatrics (<14 years of age): up to 20 mL/kg
4. If patient experiences seizures, refer to **Adult or Pediatric Seizure-Treatment Protocol**.
5. Monitor ECG (lead cables can go in the water).

Protocol Source/References: NASEMSO CLINICAL GUIDELINES

Hypothermia/Frostbite

1. Follow **General Pre-hospital Care-Treatment Protocol**

HYPOTHERMIA:

1. If cardiac arrest develops follow **Adult or Pediatric General Cardiac Arrest-Treatment Protocol**.
2. Move patient to a warm dry place, remove wet clothing & wrap in warm blankets and protect from wind exposure.
3. If the patient's temperature is greater than 30° C (86° F) or patient shivering & conscious:
   A. Apply heat packs to groin, axillae, and neck if possible.
   B. Use warmed humidified oxygen if available.
4. If patient is alert, administer warm non-caffeinated beverages (if available) by mouth, slowly.
5. If patient temperature is less than 30° C (86° F)
   A. Gentle handling is required.
   B. Facilitate transport immediately.
6. If altered mental status, check blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol)** and treat as indicated per **Adult or Pediatric Altered Mental Status-Treatment Protocol** and assess for other causes of alterations of mentation.
7. If hypotensive, follow **Shock-Treatment Protocol**.
   S A. If a commercial device designed for warming IV fluids is available, warm fluid prior to administration.
8. Administer oxygen, if available oxygen should be warmed and humidified.

SUSPECTED FROSTBITE:

1. Remove wet or constricting clothing. Keep skin dry and protected from wind.
2. Do not allow the limb to thaw if there is a chance that limb may re-freeze before evacuation is complete or if patient must walk to transportation.
3. Dress injured areas lightly in clean cloth to protect from pressure, trauma or friction. Do not rub. Do not break blisters.
4. Keep patient warm.
5. Frostbitten areas should be supported and elevated during transport.
6. Treat pain per **Pain Management-Procedure Protocol**.

Protocol Source/References: NASEMSO CLINICAL GUIDELINES

Head Injury – Moderate & Severe TBI

Purpose: Reduction of morbidity and mortality associated with Traumatic Brain Injury (TBI). The treatment of a patient with suspected TBI should focus on four important clinically identifiable conditions: hypoxia, hyperventilation, hypotension, and hemorrhage. Overall approach: Continuous monitoring of O2 saturation with high-flow oxygen regardless of O2 saturation, avoidance of positive pressure ventilation (PPV) whenever possible and use of continuous quantitative end-tidal CO2 (ETCO2) monitoring in patients requiring positive pressure ventilation, blood pressure monitoring every 3-5 minutes and using IV fluids to maintain BP above target, and assessment for signs of hemorrhage or hemorrhagic shock with use of applicable bleeding control interventions.

I. TBI Criteria (moderate or severe TBI)
   1. Anyone with physical trauma and a mechanism consistent for a brain injury AND one or more of the following:
      a. Any loss of consciousness OR any altered mental status (e.g., GCS <15)
      b. Multisystem trauma requiring PPV, whether the primary need for PPV was from TBI or from other injuries.
      c. Seizures: pre-traumatic or post-traumatic seizures whether continuing or not.
      d. In infants (where mental status may be difficult to interpret): any decreased level of consciousness or decreased responsiveness.

II. Procedure:
   1. Follow **General Pre-hospital Care Protocol**
   2. Transport according to **Adult and Pediatric Trauma Triage-Treatment Protocol** and MCA Transport Protocol.
   3. Manage Airway & Oxygenation (Prevent Hypoxemia)
      a. All patients identified with moderate or severe head injury should receive continuous high-flow oxygen immediately by non-rebreather mask.
      b. Monitor and maintain SpO2 equal to or greater than 90%.
      c. If hypoxia is present despite high-flow oxygen, basic maneuvers for airway repositioning should be attempted, followed by reevaluation.
      d. If this does not restore SpO2 to 90% or greater, or if there is inadequate ventilatory effort, bag-valve-mask (BVM) ventilation should be performed, 2-person with supplemental oxygen and basic airway adjuncts.
      e. Advanced airway placement only when BVM ventilation ineffective or other conditions warrant advanced airway (e.g., long transport time) refer to **Airway Management-Procedure Protocol**
   4. Manage Ventilation (Prevent Hyperventilation)
      Note: Identify and treat hypoventilation as well as prevent hyperventilation when assisting ventilation. As much as possible maintain normal ventilation. Hyper-ventilation decreases cerebral blood flow and worsens secondary brain injury. Strict attention on avoiding hypo- and hyper- ventilation is critical. It has been shown that repeatedly that inadvertent hyperventilation happens reliably if not

meticulously prevented. Use Pressure-Controlled Bags (PCBs) and Ventilation Rate Timers (VRTs) when available.

a. Utilize basic airway adjuncts (OPA, NPA).
b. Ventilate at the following rates:
    i. Adults (>14 years of age) ventilate at 10 breaths per minute.
    ii. Children (≥ 2 years of age - ≤ 14 years of age) ventilate at 20 breaths per minute.
    iii. Infants (< 2 years of age) ventilate at 25 breaths per minute.
c. Continuously monitor SpO2 and maintain ≥ 90%
d. Continuously monitor end tidal carbon dioxide per **End Tidal Carbon Dioxide Monitoring-Procedure Protocol**.
    i. Maintain ETCO2 35-45 mmHG (ideal target is 40 mmHG)
e. If hypoventilation or hypoxia persists after these interventions, consider advanced airway options, go to **Airway Management-Treatment Protocol.**

5. Manage Hemorrhage
    a. See **Bleeding Control (BCON)-Treatment Protocol**
    b. Consider **TXA**, if available, per the **Hemorrhagic Shock-Treatment Protocol**
        i. Consider contacting medical control for patients who may not meet clinical criteria for **TXA** administration but hemorrhage is suspected.

6. Manage Blood Pressure (Prevent Hypotension)

Note: Do not wait for the patient to become hypotensive.

a. Obtain vascular access per **Vascular Access & IV Fluid Therapy-Procedure Protocol** for all patients.
    i. Consider IO placement per **Vascular Access and IV Therapy-Procedure Protocol** in the presence of hypotension or other signs of shock when an IV cannot be established quickly.
b. Do not wait for patient to become hypotensive. Decreasing SBP or other signs of compensated shock (increasing heart rate, increasing respiratory rate) require proactive fluid administration.
c. Target blood pressures:
    i. Adults (>14 years of age) SBP 90-140 mmHG
    ii. Pediatrics (10-14 years of age) SBP 90-130 mmHG
    iii. Pediatrics (< 10 years of age) SBP ≥ 70 + (age x2)-100
d. Administer **LR** or **NS**
    i. Adults (> 14 years of age) up to 1L wide open for immediate correction.
    ii. Pediatrics (≤ 14 years of age) 20 ml/kg wide open for immediate correction.
    iii. Continue IV fluids as needed at TKO to maintain SBP in above range.
e. Check blood glucose (may be MFR skill), see **Blood Glucose Testing-Procedure Protocol** and treat hypoglycemia per **Adult or Pediatric Altered Mental Status-Treatment Protocol**

Protocol Source/References: Excellence in Prehospital Injury Care (EPIC) | Excellence in Prehospital Injury Care - Traumatic Brain Injury (arizona.edu)

Bleeding Control

Indications:
Patients with significant traumatic or non-traumatic (i.e., hemodialysis access) external hemorrhage

1. Follow **General Pre-hospital Care-Treatment Protocol** and **Soft Tissue & Orthopedic Injuries-Treatment Protocol.**
2. Apply direct pressure to the wound with clean gauze using universal precautions.
3. If the bleeding is not controlled with direct pressure, treat according to the location of the wound.
   a. Extremity bleeding - apply tourniquet:(Refer to **Tourniquet Application-Procedure Protocol**)
      i. If tourniquet unsuccessful apply second/adjacent tourniquet per **Tourniquet Application-Procedure Protocol**.
      ii. NOTE- tourniquet may be painful, see **Pain Management-Procedure Protocol.**
   b. Neck, axilla/shoulder or groin bleeding:
      i. Pack wound with MCA approved hemostatic dressing (if available, following manufacturer's instructions) or clean gauze.
      ii. Use as much of the dressing/gauze as needed to stop the blood flow.
      iii. Quickly apply pressure until the bleeding stops. (Approximately 3-5 minutes)
      iv. Leave the dressing in place and wrap area with bandaging to secure the dressing.
4. Do not remove the bandage or hemostatic dressing/gauze
5. Elevate the injury, if possible.
6. Reassess for bleeding through or around the dressing.
7. For patients who have signs or symptoms of shock, secondary to hemorrhage, refer to **Hemorrhagic Shock-Treatment Protocol**.
8. Transport according to **Adult and Pediatric Trauma Triage-Treatment Protocol** and MCA Transport Protocol

Notes:
If hemostatic dressing is used, contact medical control to advise of application, document time of use, and send packaging from dressing to hospital with patient for removal instructions.

Hemorrhagic Shock

Purpose: To provide treatment for patients displaying signs and symptoms of shock attributed to hemorrhage including trauma and **severe postpartum hemorrhage.**

1. Follow **General Pre-hospital Care-Treatment Protocol** control bleeding according to **Bleeding Control (BCON)-Treatment Protocol** when applicable.
2. Transport according to **Adult and Pediatric Trauma Triage-Treatment Protocol** and MCA Transport Protocol.
3. No intervention should delay transport.
4. Obtain vascular access.
5. For signs of hypotension unaccompanied by moderate to severe head trauma administer NS or LR IV/IO fluid bolus IV/IO (refer to **Vascular Access and IV Fluid Therapy-Procedure Protocol**).
   a. Adults (≥ 14 years of age): up to 1 liter
   b. Pediatrics (< 14 years of age): up to 20 mL/kg
6. For signs of hypotension accompanied by moderate to severe head trauma refer to **Head Injury–Treatment Protocol** for fluid administration guidelines.
7. Consider other causes of traumatic hypotension and treat accordingly. (Tension pneumothorax see **Pleural Decompression-Procedure Protocol,** neurogenic shock see **Shock-Treatment Protocol**)
8. Hypotensive patients unaccompanied by moderate to severe head trauma should receive additional IV/IO fluid boluses, as indicated by hemodynamic state.
   a. Adults (≥ 14 years of age): repeat IV/IO fluid bolus to a maximum of 2 liters.
   b. Pediatrics (< 14 years of age): repeat dose of 20 ml/kg to a maximum of 40 ml/kg.
   c. Monitor for pulmonary edema.
   d. If pulmonary edema presents, stop fluids and contact Medical Control for direction.
9. Per MCA Selection, if bleeding is uncontrolled and non-compressible, administer Tranexamic Acid (**TXA**)

Tranexamic Acid (TXA) Included

◉ Yes ○ No

Age greater than 18 years old AND ≥ 50 kg

1. Destination must be capable of administering 2nd dose.
2. Draw up and mix 1 gram of **TXA** into a 100 ml bag of **normal saline** solution (0.9% Sodium Chloride Solution).
   a. Use a filter needle if the medication is supplied in an ampule.
   b. Apply pre-printed "**TXA** added" fluorescent-colored label to IV bag.
3. Administer mixed medication via piggyback into IV/IO line over 10 minutes.

a. Hospital Notification and Documentation
   
   i. Contact Medical Control - the receiving hospital must be verbally notified that **TXA** has been given, prior to arrival.
   ii. A verbal report that **TXA** was administered must be provided to hospital ED staff (receiving physician preferred) upon hand-off of the patient from EMS.
   iii. The administration of **TXA** MUST be clearly documented on the EMS patient care record.


b. Contact Medical Control-Medical Control may order **TXA** for selected patients with suspected compensated shock not meeting the above criteria.

Medication Protocols
Tranexamic Acid (TXA)

Sexual Assault

Note to Responders: Victims of sexual assault commonly require psychological support.

- Respect all stress they may be enduring and be thoughtful with your speech and movement.
- Touching may be traumatic. Be clear and communicate what you are doing and any procedures or physical assessments that are completed.

I. Treat any life-threatening injuries or other emergencies first and according to protocol.

II. Neck Injury
   a. Signs and symptoms of strangulation and neck injury are not visible over 50% of the time.
      i. Evaluate for: loss of conscious, inability to recall how they became unconscious, voice change, involuntary urination, or defecation.
   b. Patients with signs or symptoms of any injury to the neck (e.g., strangulation) are at significant risk for complications.
   c. Visible signs may include:
      i. Any injury to the neck
         1. Redness
         2. Scratches
         3. Rope marks
         4. Bruising (especially thumb prints)
         5. Red eyes
   d. Symptoms
      i. Spasms of the neck/throat

III. Incontinence of bowel or bladder (this is a significant symptom associated with near death). During treatment, attempt to maintain evidence, refer to **Crime Scene Management-Procedure Protocol**.
   a. Do not cut through tears or stains. Only cleanse skin when necessary to provide immediate treatment.
   b. Any clothes that have been removed from the patient, should be bagged in paper bags, and brought with the patient to the hospital, if possible.
   c. Explain to the patient why they should not eat, drink, smoke, bathe, change clothing, or go to the bathroom. If they must urinate, ask that they not wipe.
   d. If the patient desires and/or mandatory reporting is indicated, notify law enforcement if they are not present.
   e. Any incident involving a minor or a vulnerable adult is a mandatory reporting event.

IV. At the request of the patient, further assessment and treatment may be delayed for law enforcement arrival only if no life-threatening situation is present.

V. During transport, allow the patient to choose the preferable attendant, if possible.

VI. Do not communicate details of a sexual assault over an open radio channel. Use telephone or other secure electronic communication.

VII. If the patient declines transport to the hospital:

a. Advise patients of risks and document according to the **Refusal of Care, Adult and Minor-Procedure Protocol**
b. Encourage patients to seek follow-up care at a local specialized treatment center.
c. If law enforcement is not present, and the patient refuses law enforcement contact, advise patient that evidence of assault is best collected within 120 hours.
d. Advise of available resources by seeking treatment or assistance, such as:
    i. MCA Specific resources, if available (i.e., Community Integrated Paramedicine if available and patient consents, MCA specific resource sheets if available, etc.)
    ii. Michigan's sexual assault hotline 1-855-VOICES4 (1-855-864-2374)
    iii. Links to local resources: https://www.michigan.gov/mdhhs/safety-injury-prev/domestic-violence/find-services-in-your-area
     iv. If unaware of local resources, and law enforcement is not available, contact Medical Control

VIII. Documentation
a. Excited utterances, which are statements that patients make while under stress from the event, should be noted as direct quotes from the patient
b. Thorough and accurate documentation of the incident is integral for continuity of care and the legal process.
c. In the case of refusals, risks documented should be specific to the type of injury and assault that occurred.

Altered Mental Status

The purpose of this protocol is to provide for the assessment and treatment of patients with altered mental status. Consideration should be given to treatable and reversible causes (e.g., hypoglycemia, opioid overdose, etc.). For patients ≤ 14 years of age refer to **Pediatric Altered Mental Status-Treatment Protocol.**

1. Follow **General Pre-hospital Care Protocol-Treatment Protocol**.
2. If patient is not alert or vital signs are abnormal:
   a. Evaluate and maintain airway, provide oxygenation, and support ventilations as needed per **Airway Management-Procedure Protocol**.
   b. If no suspected spinal injury, place the patient in recovery position.
3. If respiratory depression is present due to suspected opioid overdose, administer **naloxone** per **Opioid Overdose Treatment and Prevention-Treatment Protocol**.
4. Restrain patient, if necessary, refer to **Patient Restraint-Procedure Protocol**.
5. For a known diabetic, consider small amounts of **oral glucose** if unable to measure blood glucose level.
6. If the patient is demonstrating signs of hypoglycemia, measure blood glucose level (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**.)
   a. If less than 60 mg/dL, administer oral glucose (all licensure levels).
   b. Administer IV **dextrose** 25 gm, may titrate to fully awake and oriented.
   c. Per MCA selection, if unable to start IV, when IV **dextrose** is indicated, administer **glucagon** 1 mg (if available per MCA selection), (may be EMT skill per MCA selection).

Glucagon administration per MCA Selection

	1 mg **Glucagon** IM	1 mg **Glucagon** IN
EMT	✔	✔
Specialist	✔	✔
Paramedic	✔	✔

   d. Recheck the blood glucose level (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**.) 10 minutes after glucose or **glucagon** (per MCA selection) administration.
7. If glucose is >250 mg/dL, administer **NS** or **LR** IV bolus, up to 1 L.
   a. For patients with renal failure or heart failure, decrease volume to 500 mL.
8. Consider 12 Lead ECG (Per MCA selection, may be a BLS or Specialist procedure) follow **12 Lead ECG-Procedure Protocol**.
9. If the patient is not alert and the cause is not immediately known contact Medical Control and consider:

A – Alcohol	T – Trauma	C – Cardiac
E – Epilepsy	I – Ingestion	H – Hypoxia

I – Insulin
O – Overdose
U – Uremia
P – Psych
P – Phenothiazine
S – Salicylates
E – Environmental
S – Stroke
S - Sepsis

Medication Protocols
Dextrose
Glucagon

Stroke or Suspected Stroke

1. Follow **General Pre-hospital Care-Treatment Protocol.**
2. Measure blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol)**, if blood glucose is less than 60 mg/dL, treat per **Altered Mental Status-Treatment Protocol**.
3. If seizure, follow **Seizure-Treatment Protocol**.
4. Utilize the Cincinnati Pre-hospital Stroke Scale (CPSS) or other MCA approved stroke scale (i.e., scales including large vessel occlusion detection). See stroke supplement if applicable for MCA specific stroke screening requirements which must include but are not limited to assessment of:
    A. Facial droop (have patient show teeth or smile)
    B. Arm drift (have patient close eyes and hold both arms straight out for 10 seconds)
    C. Speech abnormality (have patient say “the sky is blue in Michigan”)
    D. Time of last known well for patient determined and documented.
    E. Any deficit in a validated stroke scale is considered positive for stroke.
    F. Follow MCA Transport Protocol for facility selection and early alerting requirements.
6. Minimize scene time.
7. Contact destination hospital as soon as possible and begin transport.
8. If available, encourage a family member to either accompany the patient or go to the receiving facility as soon as possible.
9. Initiate vascular access. (DO NOT delay scene time for IV.) Preferentially with an 18 gauge (20 gauge minimally)
10. Monitor ECG. (DO NOT delay scene time for ECG monitoring.)
11. See MCA stroke supplement (if applicable)

Respiratory Distress

For patients < 14 years of age refer to **Pediatric Respiratory Distress-Treatment Protocol**.

1. Follow **General Pre-hospital Care-Treatment Protocol.**
2. Allow patient a position of comfort.
3. Determine the type of respiratory problem involved.
4. Crackles of suspected cardiac etiology or fluid overload (Refer to the **Pulmonary Edema/Cardiogenic Shock-Treatment Protocol**).

CLEAR BREATH SOUNDS:

1. Possible metabolic problems, MI, pulmonary embolus, hyperventilation
2. Obtain 12-lead ECG (Per MCA selection, may be a BLS or Specialist procedure) follow **12 Lead ECG-Procedure Protocol**.

ASYMMETRICAL BREATH SOUNDS:

1. If evidence of tension pneumothorax and patient unstable, consider decompression refer to **Pleural Decompression-Procedure Protocol**

STRIDOR/UPPER AIRWAY OBSTRUCTION:

1. Complete Obstruction:
   A. Follow **Foreign Body Airway Obstruction-Treatment Protocol**.
2. Partial Obstruction: epiglottitis, foreign body, anaphylaxis, etc.
   A. Follow **Airway Management-Procedure Protocol**.
   B. Consider anaphylaxis see **Anaphylaxis/Allergic Reaction-Treatment Protocol**.
   C. Transport in position of comfort.

RHONCHI (SUSPECTED PNEUMONIA):

1. Sit patient upright.
2. Consider CPAP per **CPAP-Procedure Protocol.**
3. Consider **NS** or **LR** IV/IO fluid bolus up to 1 liter, wide open if tachycardia, repeat as needed per **Vascular Access and IV Fluid Therapy-Procedure Protocol**

CRACKLES~~)~~:

1. Crackles of suspected non cardiac etiology/fluid – follow wheezing, diminished breath sound below. For crackles of suspected cardiac etiology/CHF/cardiogenic shock refer to **Pulmonary Edema/Cardiogenic Shock-Treatment Protocol**.

WHEEZING, DIMINISHED BREATH SOUNDS (ASTHMA, COPD):

1. Assist the patient in using their own **albuterol** Inhaler, if available
   a. Administer **albuterol** 2.5 mg/3mL NS nebulized (Per MCA selection may be EMT skill) per **Medication Administration-Medication Protocol**

Nebulized **albuterol** administration per MCA selection
☑ EMT

2. Consider CPAP per **CPAP-Procedure Protocol**.
3. Administer epinephrine auto-injector (0.3 mg) in patients with impending respiratory failure and unable to tolerate nebulizer therapy,

MCA Approval of **epinephrine** auto-injector IM
☐ MFR

MCAs will be responsible for maintaining a roster of the agencies choosing to participate and will submit roster to MDHHS.

4. Administer **epinephrine** 1 mg/mL, 0.3 mg (0.3 mL) IM in patients with impending respiratory failure unable to tolerate nebulizer therapy (per MCA selection may be BLS or MFR skill).
   NOTE: BLS not carrying epinephrine auto-injector MUST participate in draw up epinephrine.

MCA Approval of draw up **epinephrine.**
☑ MFR
☑ BLS
Personnel must complete MCA approved training prior to participating in draw up **epinephrine.**

MCAs will be responsible for maintaining a roster of the agencies choosing to participate and will submit roster to MDHHS.

5. Administer nebulized **albuterol** 2.5 mg/3 mL **NS** nebulized and **Ipratropium** 500 mcg/2.5 mL **NS** if wheezing and/or airway constriction per **Medication Administration-Medication Protocol** (Per MCA selection may be Specialist skill)

Nebulized **albuterol/ipratropium** administration per MCA selection
☑ Specialist

6. Administer prednisone tablet 50 mg PO to adults and children > 6 years of age (if available per MCA selection)

Additional Medication Option:

☑ **Prednisone** 50 mg tablet PO
(Adults and Children > 6 y/o)

   i. If **prednisone** is not available, patient is ≤ 6 years of age, or patient is unable to

receive medication PO, administer **methylprednisolone** IV/IO/IM:
a. Adults: 125 mg
b. Pediatrics: 2mg/kg (max 125 mg)

7. Contact medical control and consider repeat **epinephrine** 1mg/mL, 0.3 mg (0.3 mL) IM in asthma patients with impending respiratory failure if unable to tolerate nebulizer therapy.
8. Consider **magnesium sulfate** 2gms slow IV in refractory status asthmaticus. Administration of **magnesium sulfate** is best accomplished by adding **magnesium sulfate** 2gm to 100 to 250 mL of **NS** and infusing over approximately 10 minutes.

Medication Protocols
Albuterol
Epinephrine
Ipratropium
Magnesium Sulfate
Methylprednisolone
Prednisone

Seizures

For patients ≤ 14 years of age refer to **Pediatric Seizure-Treatment Protocol**

1. Follow **General Pre-hospital Care-Treatment Protocol**.
2. IF PATIENT IS ACTIVELY SEIZING:
   - A. Protect patient from injury.
   - B. Do not force anything between teeth.
   - C. Pregnant women 20 weeks gestation up to 6 weeks post birth WITHOUT a seizure disorder history treat as eclampsia, see **Magnesium Sulfate** administration below (C.)
   - D. Administer **midazolam** 10 mg IM prior to IV start
3. Check blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**),
   - A. If blood glucose is found to be less than 60 mg/dL or hypoglycemia is suspected administer **dextrose** 25 gm IV per **Dextrose-Medication Protocol**
   - B. If no IV access, per MCA selection, administer **glucagon** 1 mg (if available per MCA selection), (may be EMT skill per MCA selection).

Glucagon administration per MCA Selection
☐ Not included

	1 mg **Glucagon** IM	1 mg **Glucagon** IN
EMT	✔	✔
Specialist	✔	✔
Paramedic	✔	✔

   - C. If patient is pregnant (eclampsia)
     - a. Administer **magnesium sulfate** 4 gm over 10 minutes IV/IO until seizure stops**.** Administration of **magnesium sulfate** is best accomplished by adding **magnesium sulfate** 4 gm to 100 or 250 ml of **NS** and infusing over approximately 10 minutes.
     - b. If eclamptic seizure does not stop after magnesium, then administer benzodiazepine as specified below.
   - D. If IV already established and **midazolam** IM/IN has not been administered, administer **midazolam** 5 mg IV/IO
   - E. If seizures persist
     - a. Repeat **midazolam** 5mg IV/IO/IM/IN
     - b. Contact Medical Control
4. IF PATIENT IS NOT ACTIVELY SEIZING and has/is:
   - A. Altered level of consciousness, refer to **Altered Mental Status-Treatment Protocol.**
   - B. Alert
     - a. Monitor for changes.

b. Obtain vascular access.
c. Check blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**),

Medication Protocols
Dextrose
Glucagon
Magnesium Sulfate
Midazolam

Protocol Source/References: NAEMSO Clinical Guidelines

Sepsis

It is the purpose of this protocol to recognize and treat sepsis early to promote optimal care and survival of patients who may be septic. This protocol applies to patients >14 years of age with a clinical suspicion of systemic infection who have 2 or more of the inclusion criteria. These patients are defined as meeting criteria for suspicion of sepsis and should be evaluated and treated per this protocol.

INCLUSION CRITERIA

1. Clinical suspicion of systemic infection, and two or more of the following:
   A. Hyperthermia temp >38° C (100.4 F)
   B. Hypothermia temp<36° C (96.8 F)
   C. Heart rate >90bpm
   D. Respiratory rate <10 or >20 per minute
   E. SBP <90 mmHg or evidence of hypoperfusion

Treatment

1. Follow **General Pre-Hospital Care-Treatment** Protocol.
2. Place patient in supine position.
3. Start large bore IV catheter per **Vascular Access and IV Fluid Therapy-Procedure Protocol**.
   a. Start second large bore IV catheter, if time permits.
4. Place on cardiac monitor and treat rhythm according to appropriate protocol.
5. Place on continuous pulse oximetry.
6. Check blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**
7. If the patient meets inclusion criteria, administer a **NS** or **LR** IV/IO fluid bolus up to 1 liter, wide open. Reassess the patient, repeat boluses to a maximum of 2 L **NS** or **LR** as long as vital sign abnormalities persist.
   A. Monitor for pulmonary edema.
   B. If pulmonary edema presents, stop fluids, and contact Medical Control for direction.
8. If hypotension persists, refer to **Shock-Treatment Protocol**.
9. Monitor ETCO2 level (see **End Tidal Carbon Dioxide Monitoring-Procedure Protocol**) and report levels outside of normal range (35-45 mm Hg) to the receiving facility as soon as possible

Hyperactive Delirium Syndrome with Severe Agitation

Indications: Patient > 14 years of age who is an imminent physical threat to personnel and/or themselves and level of agitation is such that transport may place all parties at risk. Hyperactive delirium syndrome with severe agitation. is a life-threatening constellation of symptoms including, but not limited to, severe agitation and vital sign abnormalities (tachycardia, hyperthermia). These patients are usually an imminent physical threat to personnel and/or themselves.

Treatment

1. Ensure ALS response.
2. Follow **General Pre-hospital Care-Treatment Protocol**
3. Ensure appropriate personnel available to provide patient and provider safety. Refer to **Patient Restraint-Procedure Protocol.**
4. Obtain history, when possible, perform visual patient assessment, looking for cause of behavior (i.e., visible trauma, stroke symptoms, etc.). If an alternate cause of the behavior is likely, transition to the **Altered Mental Status-Treatment Protocol** or other applicable protocol.
5. For patients who are uncontrollably agitated despite de-escalation techniques, prepare for airway management, and administer per MCA selection:

Per MCA Selection
☑ **Ketamine** 4 mg/kg IM maximum single dose 500 mg (3-5 minute onset)
or
☑ **Midazolam** 10 mg IM/IN

6. Once adequate sedation is obtained:
   a. Continuously monitor SpO2
   b. Monitor and capnometry- **see End Tidal Carbon Dioxide Monitoring-Procedure Protocol**.
   c. Obtain temperature.
      i. If hyperthermic (temp >38^{o} C or 100.4 F) provide cooling via ice packs to neck, axilla groin and/or fluids to skin while promoting evaporation (air movement).
   d. Establish IV per the **Vascular Access and IV Therapy-Procedure Protocol** and provide fluid bolus of up to 1 L of **NS** or **LR**. Reassess the patient, repeat boluses to a maximum of 2 L **NS** or **LR** as long as vital sign abnormalities persist.
      i. Monitor for pulmonary edema.
      ii. If pulmonary edema presents, stop fluids and contact Medical Control for direction.

e. Monitor EKG
f. Consider 12-lead if any evidence of hyperkalemia (peaked T waves, prolonged PR, widened QRS). 12 Lead (Per MCA selection, may be a BLS or Specialist procedure) follow **12 Lead ECG-Procedure Protocol**.

7. Continuously monitor patient, for potential need of airway management and treatment of hemodynamic compromise.
8. Contact medical control if additional sedation is required.

Medication Protocols
Ketamine
Midazolam

State of Michigan
ADULT TREATMENT
CRASHING ADULT/IMPENDING ARREST

Initial Date: April 21, 2021
Revised Date: 05/25/2023 Section 3-7

Purpose: EMS frequently encounters patients that are critically ill and quickly deteriorating to the point of cardiac or respiratory arrest. Deterioration can often occur while packaging and loading these patients. It is important to rapidly recognize the deteriorating patient taking immediate action to stabilize the condition prior to loading and transporting. The following timeline provides a prioritization of the goal-directed treatments to stabilize the patient and prevent deterioration. For patients ≤ 14 years of age refer to **Pediatric Crashing Patient/Impending Arrest-Treatment Protocol**.

1. Criteria
   a. Inclusion:
      i. Patient in whom cardiac or respiratory arrest appears imminent
      ii. Patient with provider impression of critical illness, including new onset altered mental status, airway compromise or severe respiratory distress/failure, and/or signs and symptoms of shock/poor perfusion.

   b. Exclusion:
      i. Life-threatening trauma that has not been corrected (i.e., exsanguination, pneumothorax, etc.)

2. Critical Actions (Initiate within first 5 minutes)
   a. Airway
      i. Insert Nasopharyngeal or Oropharyngeal Airway as indicated/tolerated if not following commands (GCS motor <6) or no response to verbal stimuli per the **Airway Management-Procedure Protocol**.
   b. Breathing
      i. If respiratory failure or distress, sit patient up if tolerated and not contraindicated by suspected spine injury.
      ii. Provide high-flow oxygen per the **Oxygen Administration-Procedure Protocol**.
      iii. If respirations are <10 per minute, ventilate by BVM at 15LPM. Two-person, two-handed technique is most effective and is highly recommended if the number of providers allows.
      iv. If respirations are >10 but inadequate, apply CPAP for respiratory distress/hypoxia per the **CPAP-Procedure Protocol.**
      v. Respirations may be assisted with BVM in sitting position if patient tolerates.
      vi. Consider PPV by BVM if not following commands or SpO2 <90%
   c. Monitoring
      i. NIBP(cycle every 3 minutes)
      ii. SpO2

iii. Continuous/waveform EtCO2
iv. EKG

3. Immediate Actions (Initiate within first 10 minutes

a. Circulation

i. Electrical Therapy (cardioversion or pacing) if dysrhythmia is primary cause of shock per the **Electrical Therapy-Procedure Protocol**

ii. Emergent IV/IO access, per **Vascular Access & IV Therapy-Procedure Protocol**.

iii. Administer **NS** or **LR** up to 1 liter bolus, infused under pressure

1. Monitor for pulmonary edema.
2. If pulmonary edema presents, stop fluids and contact Medical Control for direction.

iv. Consider push-dose **epinephrine** per the **Shock-Treatment Protocol.** Prepare **epinephrine** 10 mcg/mL by adding 1mL of 1mg/10mL **epinephrine** in 9mL **NS**, then

1. Administer 10-20 mcg (1-2 mL **epinephrine** 10 mcg/mL) IV/IO
2. Repeat every 3 to 5 minutes.
3. Titrate SBP greater than 90 mmHg.

4. Actions within First 15 Minutes

a. Re-assess response to treatments.

b. Circulation

i. Repeat fluid bolus up to 2-liter total, if indicated

ii. If bradycardia, consider **atropine** 1 mg IV/IO, if indicated

iii. Consider push-dose **epinephrine** per the **Shock-Treatment Protocol** while administering second fluid bolus.

5. Actions within First 20 Minutes

a. Re-assess response to treatments.

b. Circulation

i. Continue fluids as indicated

ii. Continue vasopressors (push-dose epinephrine) as indicated

iii. Contact Medical Control for additional fluids/vasopressors.

c. Airway

i. Insert advanced airway, if indicated, per **Airway Management Procedure Protocol.**

6. Once critical and immediate actions have been completed; move the patient to ambulance for transport. Transport may be initiated earlier per provider discretion.

Notes:

1. The specific lengths of time listed are approximate to provide a sense of urgency and to prioritize actions. Provider safety is of utmost importance. Care for these patients should be given as quickly as possible, but safety considerations and the scene environment may lead to times that are longer than these stated goals. When conditions make it impossible to meet these goals, the reasons should be documented.

2. Actions listed should be simultaneous and not in any specific order. As critical actions are performed, transport may be initiated. However, transport should not supersede initiation of life saving intervention.

3. The concepts/actions listed can also be used in conjunction with the **Return of Spontaneous Circulation (ROSC)-Treatment Protocol** to prioritize key interventions prior to transport of cardiac arrest patients with ROSC.

MCA Quality Improvement Performance Parameters:

1. Review all cases of cardiac arrest witnessed by (in presence of) EMS providers for compliance with this protocol.

2. Ensure that specific treatments also follow other appropriate protocols, e.g., Airway Management, Shock, Tachycardia, Bradycardia, etc.

Medication Protocols
Atropine
Epinephrine

Pediatric Medication Emergency Dosing and Intervention Cards

Purpose: Instructions for using the Michigan Medication Emergency Dosing and Intervention Cards (MI-MEDIC). Pediatric patients (≤ 14 years) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol

1. Obtain correct weight of the child
    a. If patient's actual weight is known, use MI MEDIC card for that weight. (DO NOT CONFUSE POUNDS and KILOGRAMS)
    b. If patient's weight is not known, use length-based resuscitation tape to determine the proper color zone.
    c. If a length-based resuscitation tape not available, use patient's age to determine color of card to use. DO NOT GUESS THE WEIGHT OF THE CHILD.
2. Select appropriate weight-based medication for intervention.
3. Select the corresponding colored card
4. Select desired medication from Cardiac Resuscitation or Medical Conditions
5. ASSURE medication CONCENTRATION on hand is as specified on card
6. Some medications should be diluted as instructed on card
7. If dilution is required, follow steps to dilute entire vial of medication prior to drawing up final ml volume to administer.
8. Confirm medication dose and volume to be delivered.
9. Administer volume of medication as desired.
10. 
Contact Medical Control for questions or concerns.

NOTE: Some medication doses have been rounded for safety and ease of use for the prevention of medication errors. These doses may not exactly correspond with the mg/kg dose in the pediatric treatment protocols. The use of these rounded doses has been approved for use and administration will be acceptable as long as the dose was referenced from the MI MEDIC cards.

Childbirth and Related Obstetrical Emergencies

Purpose: To provide the process for the assessment and management of the mother for childbirth and childbirth related emergencies. Assessment and care of newborns and infants under 30 days old, see **Newborn/Neonatal Assessment and Resuscitation-Treatment Protocol**.

1. Follow **General Pre-hospital Care-Treatment Protocol**

2. Assessment Information
   A. Past Medical History: previous births, previous complications, history of preeclampsia/eclampsia.
   B. Current History: duration of gestation (weeks), whether single or multiple births are expected, or any prior pregnancy complications.
   C. Specific Objective Findings: vital signs, assess contractions (duration, frequency).
   D. In the presence of licensed health care providers (e.g., physician, licensed midwife), contact Medical Control for care not consistent with protocols.
   E. Determine whether to transport or remain at scene due to imminent delivery. Indications of impending, imminent delivery may include:
      a. Multiple pregnancy, strong regular contractions, every 2 minutes or less, ruptured membrane, bloody show, need to push or bear down, crowning
   F. Obtain vascular access if time permits per **Vascular Access and IV Fluid Therapy-Procedure Protocol**

3. Management of Normal Delivery
   A. If signs of newborn delivery are imminent, and there is no time to transport, prepare for delivery.
   B. Have oxygen and suction readily available for care of the newborn.
   C. Try to find a place for maximum privacy, cleanliness, and warmth.
   D. Allow safe birth position of choice.
   E. Monitor patient for signs of hypotension. If signs develop, position patient so weight of uterus is to patient's left side.
   F. Drape if possible, using clean sheets.
   G. Encourage mother to relax and take slow deep breaths through her mouth.
   H. Reassure her throughout process.
   I. As baby's head begins to emerge from vagina, support it gently with hand and towel to assist in delivery.
      a. Do not pull baby's head or neck once head is delivered.
   J. After head is delivered look and feel to see if cord is wrapped around baby's neck (see Nuchal Cord management below).
   K. As the shoulders deliver, carefully hold, and support the head and shoulders as the body delivers, may be suddenly – and the baby is very slippery! Use a sterile towel if available to help support the baby.
   L. Note the time of delivery.

M. Begin newborn assessment per **Newborn/Neonatal Assessment and Resuscitation-Treatment Protocol.**
N. After 1 minute, clamp cord about 5–6 inches from the abdomen with two clamps; cut the cord between the clamps.
   a. While cord is attached, take care to ensure the baby is not significantly higher positioned than the mother to prevent blood from flowing backwards from baby to placenta.
   b. If resuscitation is needed baby can still benefit from a 1- minute delay in cord clamping but start resuscitation immediately see **Newborn/Neonatal Assessment and Resuscitation-Treatment Protocol**
O. Place the baby skin to skin on the mother's abdomen on its side with head lower than the body. (Suction with a bulb syringe should be reserved for infants with obvious obstruction)
P. Prevent heat loss
   a. Gently dry baby off and remove all wet linen
   b. Ensure the environment is warm.
   c. Place infant cap on baby
Q. For near/at term vigorous newborns, with conscious stable mothers, allow infant to remain on mother's chest during assessment and cover both baby and the mother with warm dry blankets until transport. Refer to **Safe Transport of Children in Ambulances-Treatment Protocol.**

4. <u>Management of mother post-delivery</u>.
   A. Obtain vital signs.
   B. Assess for signs of preeclampsia/eclampsia.
   C. Assess for signs of postpartum hemorrhage.
   S a. If blood loss is significant, place IV and administer **NS** or **LR** fluid bolus of 1 liter wide open.
      i. Monitor for pulmonary edema.
      
      ii. If pulmonary edema presents, stop fluids and contact Medical Control for direction.
   b. Administer oxygen NRB at 15 LPMN (if not already)
   
   c. Contact Medical Control for severe hemorrhage for consideration of **TXA** per **Hemorrhagic Shock-Treatment Protocol**
      i. Fundal massage should take place concurrently.
   D. Placenta delivery
      a. Generally, takes place within 20 minutes of delivery.
      b. Place placenta in basin or plastic bag and transport with mother.
      c. Following placental delivery, massage the uterus to aid in contraction of the uterus.
      d. Continue to assess the mother's uterus and bleeding in route to the hospital to assure the uterus is contracted and blood loss is minimal. Report blood loss upon arrival at the hospital.

5. Management of Abnormal Deliveries
   A. Apply high flow oxygen to mother.
   B. Contact Medical Control as soon as appropriate.
   C. **Nuchal Cord** (cord wrapped around neck)
      a. If the cord is around the neck and loose, slide gently – over the head DO NOT TUG.
      b. If the loop is too tight to slip over the head, attempt to slip the cord over the shoulders and deliver the body through the loop.
      c. If the cord is around neck and snug, clamp the cord with 2 clamps and cut between the clamps.
      d. Wait for the next contraction for completion of delivery of the body. DO NOT PULL on the baby.
   D. **Shoulder Dystocia**
      a. If delivery fails to progress after head delivers, quickly attempt the following:
         i. Hyperflex mother's hips to severe supine knee-chest position (i.e., McRoberts' maneuver).
         ii. Apply firm suprapubic pressure to attempt to dislodge shoulder. This often requires two EMS clinicians to perform and allows for delivery in up to 75% of cases.
         iii. Attempt to angle baby's head as posteriorly as possible but NEVER pull.
         iv. Continue with delivery as normal once the anterior shoulder is delivered.
   D. **Breech position**
      a. Place mother supine, allow the buttocks, feet, and trunk to deliver spontaneously, then support the body while the head is delivered.
      b. When delivering breech, you may need to rotate the baby's trunk clockwise; or sweep the legs from the vagina.
      c. Once the legs are delivered support the body to avoid hyperextension of the head; keep the fetus elevated off the umbilical cord.
      d. If needed, put the mother in a prone kneeling position which may assist in the delivery of the newborn
      e. Assess for presence of prolapsed cord and treat as below.
      f. If head fails to deliver, place gloved hand into vagina with fingers between infant's face and uterine wall to create an open airway. Place your index and ring fingers on the baby's cheeks forming a "V" taking care not to block the mouth and allowing the chin to be tilted toward the chest flexing the neck.
      g. NEVER pull on the body, especially a preterm or previable baby. Support the baby's body while mother pushes when she feels the urge.
   E. **Prolapsed Cord**
      a. Place mother in a supine position with hips supported on a pillow.
      b. Place gloved hand into vagina and gently lift head/body off the cord.
      c. Assess for pulsations in cord, if no pulses are felt, lift the presenting part off the cord
      d. Wrap the prolapsed cord in moist sterile gauze.

e. Maintain until relieved by hospital staff.
f. If previous techniques are not successful, mother should be placed in prone knee chest position or extreme Trendelenburg with hips elevated.
g. DO NOT ATTEMPT TO PUSH CORD BACK INTO THE PATIENT!

F. **Arm or limb presentation** – Life threatening condition.
a. Immediate transportation in prone knee chest position or extreme Trendelenburg with hips elevated.
b. Delivery should not be attempted outside the hospital.

G. **Multiple births**
a. Immediate transportation
b. Multiple birth infants are typically small birth weight and will need careful management to maintain body heat.
c. For imminent delivery proceed with procedures of normal delivery as above including clamping of cord and skin to skin.
d. Prepare additional supplies for subsequent births.
e. There may be time to transport between births.

6. Management of Preeclampsia or Eclampsia

A. Management of Preeclampsia or Eclampsia include women 20 weeks gestation up to 6 weeks post childbirth.
a. **Magnesium sulfate** can be administered prior, during, or post childbirth.
b. Be prepared to support respirations for infants born post **magnesium sulfate** administration.

B. Signs of eclampsia
a. Seizure **-** Any pregnant patient who is seizing should be assumed to have eclampsia and treated as such until arrival at the hospital.

C. Treatment of eclampsia – (actively seizing)
a. High flow oxygen
b. Establish IV access per **Vascular Access and IV Therapy-Procedure Protocol**
i. Administer **magnesium sulfate** 4 gm over 10 minutes IV/IO until seizure stops**.** Administration of **magnesium sulfate** is best accomplished by adding **magnesium sulfate** 4gm to 100 or 250 ml of **NS** and infusing over approximately 10 minutes.
ii. If eclamptic seizure does not stop after **magnesium sulfate**, then refer to **Seizure-Treatment Protocol**

D. Signs of severe preeclampsia
a. BP systolic greater than 160 mmHG or diastolic greater than 110 mmHG with one or more of the associated symptoms below
i. Headache
ii. Confusion/altered mental status
iii. Vision changes including blurred vision, spots/floaters, loss of vision these symptoms are often a precursor to seizure)
iv. Right upper quadrant or epigastric pain
v. Shortness of breath/Pulmonary edema
vi. Ecchymosis suggestive of low platelets (bruising, petechiae)
vii. Vaginal bleeding suggestive of placental abruption

viii. Focal neurologic deficits suggesting hemorrhagic or thromboembolic stroke
ix. Marked peripheral edema

b. Prophylaxis treatment for severe preeclampsia
i. High flow oxygen
ii. IV access per **Vascular Access and IV Therapy-Procedure Protocol**
iii. Administer magnesium sulfate (per MCA selection)

Pre radio **magnesium sulfate** administration (without Medical Control contact)

Post radio **magnesium sulfate** administration (contact Medical Control) prior to administration.

iv. Administer **magnesium sulfate** 4gm IV/IO. Administration of **magnesium sulfate** is best accomplished by adding **magnesium sulfate** 4gm to 100 or 250 ml of **NS** and infusing over approximately 10 minutes.

c. Immediate transport

NOTES:

1. Hyperextension means head back,
2. Hyperflexion means head to chest.
3. There are two patients to assess, manage, and transport during childbirth – request resources as appropriate.

<u>Medication Protocols</u>
Magnesium Sulfate

Newborn & Neonatal Assessment and Resuscitation

Aliases: newborn assessment, newborn treatment, newborn resuscitation, neonatal resuscitation.

Purpose: Infants less than 30 days old are considered neonates. This protocol is intended for assessment of newly born infants, and/or the resuscitation of newly born infants less than 30 days old.

ASSESSMENT OF NEWLY BORN INFANTS

1. History
   A. Date and time of birth
   B. Onset of symptoms
   C. Prenatal history (prenatal care, substance abuse, multiple gestation, maternal illness)
   D. Birth history (maternal fever, meconium, prolapsed or nuchal cord, bleeding)
   E. Estimated gestational age (may be based on last menstrual period)

2. Immediate Assessment & Procedures
   A. **Respiratory (R of APGAR)**
      i. Assess rate and effort (strong, weak, or absent; regular or irregular)
      ii. Absent
         a. If the baby does not breathe spontaneously, stimulate by gently rubbing its back or slapping the soles of its feet.
      iii. Respiratory distress (grunting, nasal flaring, retractions, gasping, apnea **OR** no return of spontaneous breathing after stimulation.
         a. position airway (sniffing position) and clear airway as needed
         b. If thick meconium or secretions present suction mouth then nose
         c. Initiate ventilation with appropriately sized equipment and 21% oxygen (room air)
   B. **Heart rate/pulse (P of APGAR)**(fast, slow, or absent), auscultation of chest is the preferred method
      i. If heart rate >100 beats per minute
         a. Monitor for central cyanosis, provide blow-by oxygen as needed
         b. Monitor for signs of respiratory distress. If apneic or significant distress:
            1) Initiate bag-valve-mask ventilation with room air at 40-60 breaths per minute
      ii. If heart rate < 100 beats per minute
         a. Initiate bag-valve-mask ventilation with room air at 40-60 breaths per minute
         b. Primary indicator of improvement is increased heart rate
         c. Only use minimum necessary volume to achieve chest rise
         d. If no improvement after 90 seconds, provide ventilations with supplemental oxygen (100%) until heart rate normalizes (100 or above)
      iii. If heart rate < 60 beats per minute

a. Ensure effective ventilations with supplementary **oxyge**n and adequate chest rise
b. If no improvements after 30 seconds, initiate chest compressions
   1) Two-thumb-encircling-hands technique is preferred
c. Coordinate chest compressions with positive pressure ventilation (3:1 ratio, 90 compressions and 30 breaths per minute)
d. Per MCA selection, consider intubation per **Airway Management-Procedure Protocol**

C. **Color/Appearance (first A of APGAR)** (central cyanosis, peripheral cyanosis, pallor, normal)
   a. Administer blow-by oxygen for a few minutes until baby's core color is pink.

D. **Grimace (G of APGAR)**

E. **Muscle tone/activity (second A of APGAR)**(poor or strong)

3. APGAR score for witnessed deliveries, based on above assessment should be noted at one minute and five minutes after delivery.
   i. A – appearance (color)
   ii. P – pulse (heart rate)
   iii. G – grimace (reflex irritability to slap on sole of foot)
   iv. A – activity (muscle tone)
   v. R – respiration (respiratory effort)
   vi. Each parameter gets a score of 0 to 2.

APGAR SCORING

Sign	0	1	2
Appearance – skin color	Bluish or paleness	Pink or ruddy; hands or feet are blue	Pink or ruddy; entire body
Pulse – heart rate	Absent	Below 100	Over 100
Grimace – reflex irritability to foot slap	No response	Crying; some motion	Crying; vigorous
Activity – muscle tone	Limp	Some flexion of extremities	Active; good motion in extremities
Respiratory effort	Absent	Slow and Irregular	Normal; crying

4. Prevent heat lost
   A. Maintain warm environment
   B. Keep infant dry and covered with dry blankets
   C. Keep infant's head covered with infant cap
   D. Swaddle infant to mother skin to skin if infant is stable until transport
5. For patient transport, refer to **Safe Transportation of Children in Ambulances-Treatment Protocol**.

Pediatric Altered Mental Status

The purpose of this protocol is to provide for the assessment and treatment of pediatric patients with altered mental status of unknown etiology such as alcohol, trauma, poisonings, seizures, behavioral problems, stroke, environmental causes, infection, etc.

- For pediatrics less than < 24 hours old – refer to **Newborn/Neonatal Assessment and Resuscitation-Treatment Protocol**
- For critically ill patients refer **to Pediatric Crashing Patient/Impending Arrest-Treatment Protocol**

1. Follow **General Pre-hospital Care-Treatment Protocol**.
2. Pediatric patients (≤ 14 years) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol
3. Restrain patient, if necessary, refer to **Patient Restraint-Procedure Protocol**.
4. Ensure adequate oxygenation, ventilation, and work of breathing
   - A. Monitor SpO2
   - B. Consider use of capnography
5. Check blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**
6. Check temperature if febrile go to **Pediatric Fever-Treatment Protocol**
7. Start IV/IO if needed per **Vascular Access & IV Therapy-Procedure Protocol**
8. Altered and able to swallow – administer **oral glucose** if:
   - A. 2 months old or younger and glucose is <40 mg/dL
   - B. 3 months old or older and glucose is <60 mg/dL .
9. Not alert – administer **dextrose** according to MI-MEDICS CARDS or table below
   - A. 2 months old or younger and glucose is <40 mg/dL
   - B. 3 months old or older and glucose is <60 mg/dL

Color	Age	Weight	Dose	Concentration	Volume		Concentration	Volume
Grey	0-2 months	3-5 kg (6-11 lbs.)	2.5g	Dextrose 12.5%	20 mL	**OR**	Dextrose 10%	25 mL
Pink	3-6 months	6-7 kg (13-16 lbs.)	3.25g	Dextrose 25%	13 mL	**OR**	Dextrose 10%	33 mL
Red	7-10 months	8-9 kg (17-20 lbs.)	4.25g	Dextrose 25%	17 mL	**OR**	Dextrose 10%	43 mL
Purple	11-18 months	10-11 kg (21-25 lbs.)	5g	Dextrose 25%	20 mL	**OR**	Dextrose 10%	50 mL
Yellow	19-35 months	12-14 kg (26-31 lbs.)	6.25g	Dextrose 25%	25 mL	**OR**	Dextrose 10%	63 mL
White	3-4 years	15-18 kg (32-40 lbs.)	8g	Dextrose 25%	32 mL	**OR**	Dextrose 10%	80 mL
Blue	5-6 years	19-23 kg (41-50 lbs.)	10g	Dextrose 25%	40 mL	**OR**	Dextrose 10%	100 mL
Orange	7-9 years	24-29 kg (52-64 lbs.)	12.5g	Dextrose 50%	25 mL	**OR**	Dextrose 10%	125 mL
Green	10-14 Years	30-36 kg (65-79 lbs.)	15g	Dextrose 50%	40 mL	**OR**	Dextrose 10%	150 mL

10. Per MCA selection, if unable to start IV, administer **glucagon** IM/IN (if available per MCA selection) according to MI-MEDIC cards, (may be EMT skill per MCA selection). If MI MEDIC cards are unavailable following dosing as below.

Glucagon administration per MCA Selection

☐ Not included

	Glucagon IM A. Patients less than 5 years of age administer **glucagon** 0.5 mg IM B. Patients aged 5 or greater, administer **glucagon** 1 mg IM	**Glucagon** IN A. Patients less than 5 years of age, administer **glucagon** 0.5 mg IN B. Patients aged 5 or greater, administer **glucagon** 1 mg IN
EMT	✔	✔
Specialist	✔	✔
Paramedic	✔	✔

11. If patient respiratory depression persists and/or patient has not regained consciousness despite adequate oxygenation and ventilatory support administer **naloxone** per **Opioid Overdose Treatment and Prevention-Treatment Protocol**
12. Contact Medical Control for repeat **dextrose**.
13. Contact Medical Control for repeat **naloxone**.

NOTE:

1. Instructions for diluting **dextrose**
   a. To obtain **dextrose 10%**, discard 40 ml out of one amp of D50, then draw up 40 ml of **NS** into the D50 ampule
   b. To obtain **dextrose 12.5%,** discard 37.5 ml out of one amp of D50, then draw 37.5 ml of **NS** into the D50 ampule.
   c. To obtain **dextrose 25%,** discard 25 ml out of one amp of D50, then draw 25 ml of **NS** into the D50 ampule.
   b. May utilize **dextrose 10%** for all ages 5 ml/kg (0.5 gm/kg) up to 250 ml, according to **Dextrose-Medication Protocol**.
2. To avoid extravasation, a patent IV must be available for IV administration of **dextrose**. **Dextrose** should always be pushed slowly (e.g., over 1-2 minutes).

Medication Protocols
Dextrose
Glucagon
Naloxone

Pediatric Respiratory Distress, Failure or Arrest

1. Follow **General Pre-hospital Care-Treatment Protocol.**
2. Pediatric patients (≤ 14 years) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol
3. Assess the patient's airway
   A. If unable to ventilate patient after airway repositioning refer to **Foreign Body Airway Obstruction-Treatment Protocol** and/or **Airway Management-Procedure Protocol**
   B. Consider anaphylaxis refer to **Allergic Reaction/Anaphylaxis-Treatment Protocol**
4. Allow the patient a position of comfort that also maintains an open airway.
5. Titrate SpO2 to 94%
   A. Have a parent assist with oxygen via blow by or mask support.
6. Airway should be managed by least invasive method possible.
7. Suction secretions if needed.
8. Consider CPAP if appropriate size available, follow **CPAP-Procedure Protocol**
9. Do not delay transport for interventions.
10. Attempt vascular access only if necessary for patient treatment.

Suspected Bronchospasm (Wheezing):

1. Assist the patient in using their own **albuterol** Inhaler, if available and medication has not expired and is prescribed to patient.
2. Administer **albuterol 2.5 mg/3ml** NS nebulized (Per MCA selection may be EMT skill) per **Medication Administration-Medication Protocol**

Nebulized **albuterol** administration per MCA selection
☑ EMT

3. Consider CPAP if appropriate size available, follow **CPAP- Procedure Protocol**
4. In cases of respiratory failure administer **epinephrine auto-injector**

MCA Approval of **epinephrine** auto-injector IM
☐ MFR
MCAs will be responsible for maintaining a roster of the agencies choosing to participate and will submit roster to MDHHS.

   A. If child appears to weigh less than 10 kg (approximately 20 lbs.), contact medical control prior to epinephrine if possible.
   B. If child weighs between 10-30 kg (approximately 20-60 lbs.), administer **pediatric epinephrine auto-injector** IM.
   C. Child weighing greater than 30 kg (approximately 60 lbs.), administer **epinephrine auto-injector** IM.

5. In cases or respiratory failure administer **epinephrine** 1 mg/ml IM (per MCA selection may be BLS or MFR skill).

NOTE: BLS not carrying epinephrine auto-injector MUST participate in draw up epinephrine.

MCA Approval of draw up **epinephrine.**
☑ MFR
☑ BLS
Personnel must complete MCA approved training prior to participating in draw up **epinephrine.**

MCAs will be responsible for maintaining a roster of the agencies choosing to participate and will submit roster to MDHHS.

A. If child appears to weigh less than 10 kg (approximately 20 lbs.), contact medical control prior to epinephrine if possible.
B. If child weighs between 10-30 kg (approximately 60 lbs.), administer **epinephrine** (concentration of 1mg/1mL) 0.15 mg (0.15mL) IM
C. Child weighing 30 kg or greater; administer **epinephrine** (concentration of 1mg/1mL) 0.3 mg (0.3 mL) IM

6. Per MCA selection, administer **prednisone** 50 mg PO to children > 6 years of age (if available per MCA selection) .

Additional Medication Option:

☑ **Prednisone** 50 mg tablet PO
(Children > 6 y/o)

A. If prednisone is not available, patient is ≤ 6 years of age, or patient is unable to receive medication PO, administer **methylprednisolone** IV/IO/IM:
   i. Pediatrics: 2mg/kg

Stridor/Suspected Croup:

1. Croup is most common in children 6 months to 6 years of age
2. Commonly associated with recent upper airway infection or fever
3. If foreign body is suspected, and unable to be removed contact Medical Control prior to administration of nebulized **racepinephrine/epinephrine** See **Foreign Body Airway Obstruction-Treatment Protocol**
4. Consider humidified oxygen
5. If patient presents with stridor at rest without suspected airway obstruction administer nebulized **epinephrine** per MCA selection (Medical Control contact not required):

MCA Selection

☑ **Racepinephrine** 2.25% inhalation solution via nebulizer

Administer by placing 0.5 mL of **Racepinephrine** 2.25% inhalation solution in nebulizer and dilute with 3 mL of normal saline.

☑ **Epinephrine** 5 mg (1mg/1ml) nebulized

6. Do not delay transport.

Respiratory Failure or Arrest:

1. Ventilate the patient using an appropriately sized BVM with supplemental oxygen.
   A. Chest rise is the best indicator of successful ventilation.
   B. Ventilate at a rate appropriate for the patient:
      i. Infant: 30 breaths per minute
      ii. Child: 20 breaths per minute
   C. Utilize capnography per **End Tidal Carbon Dioxide Monitoring-Procedure Protocol** to maintain end tidal CO2 35-45 mm Hg.
2. Bag Valve Mask is the preferred method of ventilation for kids under 8 years old.
   A. When unable to ventilate with BVM and basic airway adjuncts, consider advanced airway see **Airway Management-Procedure Protocol**
3. If opioid overdose is suspected, administer **naloxone** according to MI-MEDIC cards. If MI-MEDIC is unavailable, administer **naloxone** per **Opioid Overdose Treatment and Prevention-Treatment Protocol**.
4. Monitor EKG and refer to **Pediatric Crashing Patient/Impending Arrest-Treatment Protocol** or appropriate cardiac protocol as required.

Medication Protocols

Albuterol
Epinephrine
Methylprednisolone
Prednisone
Racepinephrine

Pediatric Fever

This protocol is intended to assist EMS providers in reducing fever in the pediatric patients prior to arrival to the emergency department**. Fever is defined as a temperature of 100.4 degrees Fahrenheit (38 degrees Celsius) or greater.** Emergency management of the febrile child involves an assessment to determine if any associated problems are present which may require emergency treatment.

1. Follow **General Pre-hospital Care-Treatment Protocol**.
2. Pediatric patients (≤ 14 years) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
3. Obtain baseline temperature and document method used.
    a. Children less 60 days old require a documented rectal temperature (including time temperature obtained) prior to antipyretic administration.
4. Administer antipyretic according to MCA selection

MCA Antipyretic Selection
(Must select at least one)
☑ **Ibuprofen (children > 6 months of age)**
☑ **Acetaminophen**

5. Administer i**buprofen** if child is over 6 months old, has not been given **ibuprofen** (e.g., Motrin/Advil) or any medication containing ibuprofen (i.e., cold medication) in the last 6 hours and is alert.
    i. If patient's weight is known, utilize that weight and MI-MEDIC for dosing.
    ii. If patient's weight is not available, utilize length-based tape and MI-MEDIC for dosing.
    iii. If MI-MEDIC is not available, use dosing chart below.

OR

6. Administer **acetaminophen** if the child has not been given **acetaminophen** (e.g., Tylenol) or any medication containing acetaminophen (i.e., cold medication) in last four (4) hours and is alert, and:
    i. If patient's weight is known, utilize that weight and MI-MEDIC for dosing.
    ii. If patient's weight is not available, utilize length-based tape and MI-MEDIC for dosing
    iii. If MI-Medic is not available, use dosing chart below.
7. If any question concerning alertness or ability to swallow, **DO NOT ADMINISTER.**
8. Dosing questions should be directed to online medical control.

Children's Elixir Dosing Table			
Child's Weight	Child's Age	**Acetaminophen** 160 mg/5mL	**Ibuprofen** 100 mg/5mL
3-5 kg (6-12 lbs.)	0-2 mos.	1.25 mL (40 mg)	DO NOT GIVE
6-7 kg (13-16 lbs.)	3-6 mos.	3 mL (96 mg)	DO NOT GIVE
8-9 kg (17-20 lbs.)	7-10 mos.	4 mL (128 mg)	4 mL (80 mg)
10-11 kg (21-25 lbs.)	11-18 mos.	5 mL (160 mg)	5 mL (100 mg)
12-14 kg (26-31 lbs.)	19 mos.-35 mos.	6 mL (192 mg)	6 mL (120 mg)
15-18 kg (32-40 lbs.)	3-4 yrs.	7 mL (224 mg)	7.5 mL (150 mg)
19-23 kg (41-51 lbs.)	5-6 yrs.	9 mL (288 mg)	9.5 mL (190 mg)
24-29 kg (52-64 lbs.)	7-9 yrs.	12 mL (384 mg)	13 mL (260 mg)
30-36 kg (65-79 lbs.)	10-14 yrs.	15 mL (480 mg)	15 mL (300 mg)

Medication Protocols
Acetaminophen
Ibuprofen

Protocol Source/References: http://assets.babycenter.com/ims/Content/first-year-health-guide_acetaminophen_chart_pdf.pdf

Pediatric Seizures

I. Follow **General Pre-Hospital Care -Treatment Protocol**.
II. For focal seizure contact Medical Control
III. **IF PATIENT IS ACTIVELY SEIZING (GENERALIZED TONIC CLONIC):**
   A. Protect patient from injury.
   B. Maintain airway and provide supplemental oxygen
   C. Administer **midazolam** according to the MI-MEDIC cards
      a. If MI-MEDIC unavailable administer **midazolam** 0.1mg/kg IM maximum individual dose 10 mg.
      b. If IV established prior to seizure activity administer **midazolam** 0.05 mg/kg IV/IO maximum single dose of 5 mg.
      c. Monitor SpO2, EKG and waveform capnography (per **End Tidal Carbon Dioxide Monitoring-Procedure Protocol)** after **midazolam** administration.
   D. Consider trauma if evidence or suspicion of trauma treat according to applicable protocol in addition to stopping the seizure.
   E. Check blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**).
      S a. Start IV/IO if needed
      S b. Administer **dextrose** according to MI-MEDICS CARDS when:
         i. ≤ 2 months old and blood glucose is <40 mg/dL
         ii. ≥ 3months old and blood glucose is <60 mg/dL
         iii. If MI MEDIC cards are unavailable, utilize the table below

Color	Age	Weight	Dose	Concentration	Volume		Concentration	Volume
Grey	0-2 months	3-5 kg (6-11 lbs.)	2.5g	Dextrose 12.5%	20 mL	**OR**	Dextrose 10%	25 mL
Pink	3-6 months	6-7 kg (13-16 lbs.)	3.25g	Dextrose 25%	13 mL	**OR**	Dextrose 10%	33 mL
Red	7-10 months	8-9 kg (17-20 lbs.)	4.25g	Dextrose 25%	17 mL	**OR**	Dextrose 10%	43 mL
Purple	11-18 months	10-11 kg (21-25 lbs.)	5g	Dextrose 25%	20 mL	**OR**	Dextrose 10%	50 mL
Yellow	19-35 months	12-14 kg (26-31 lbs.)	6.25g	Dextrose 25%	25 mL	**OR**	Dextrose 10%	63 mL
White	3-4 years	15-18 kg (32-40 lbs.)	8g	Dextrose 25%	32 mL	**OR**	Dextrose 10%	80 mL
Blue	5-6 years	19-23 kg (41-50 lbs.)	10g	Dextrose 25%	40 mL	**OR**	Dextrose 10%	100 mL
Orange	7-9 years	24-29 kg (52-64 lbs.)	12.5g	Dextrose 50%	25 mL	**OR**	Dextrose 10%	125 mL
Green	10-14 Years	30-36 kg (65-79 lbs.)	15g	Dextrose 50%	40 mL	**OR**	Dextrose 10%	150 mL

c. If unable to start IV, administer **glucagon** IM/IN (if available per MCA selection), (may be EMT skill per MCA selection).

Glucagon administration

☐ **Not included**

		Glucagon IM A. Patients < than 5 years of age administer **glucagon** 0.5 mg IM B. Patients ≥ 5 years of age administer **glucagon** 1 mg IM	**Glucagon IN** A. Patients < than 5 years of age administer **glucagon** 0.5 mg IM B. Patients ≥ 5 years of age administer **glucagon** 1 mg IM
	Paramedic	✔	✔
	Specialist	✔	✔
	EMT	✔	✔

d. If seizure persists 10 minutes after initial dose of **midazolam** and correction of low blood glucose repeat one time **midazolam** (per MCA selection)

◉ Pre radio **midazolam** administration (without Medical Control contact)

○ Post radio **midazolam** administration (contact Medical Control) prior to administration.

i. 0.1mg/kg IM maximum single dose of 10 mg

OR

ii. If IV already available 0.05 mg/kg IV/IO maximum single dose of 5 mg.

F. If seizures persist after second dose, consider underlying causes and contact Medical Control for further instructions.

IV. For PATIENT NOT CURRENTLY SEIZING, monitor and treat known underlying causes, if possible:

A. Check blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**) and treat as outlined above (III. E.)

a. If patient is altered and able to swallow – administer **oral glucose** when**:**

i. ≤ 2 months old and blood glucose is <40 mg/dL

ii. ≥ 3months old and blood glucose is <60 mg/dL

B. Check temperature and refer to **Pediatric Fever-Treatment Protocol** if applicable.

C. Monitor oxygenation and mental status, administer oxygen to maintain 94%, including ventilatory support as needed according to the **Airway Management-Procedure Protocol**
   a. For patients with respiratory depression and high suspicion opioid involvement, administer **naloxone** per **Opioid Overdose Treatment and Prevention-Treatment Protocol**.
D. Consider trauma, if evidence or suspicion treat according to applicable protocol.
E. Keep environment safe for the child, padding around the patient, if possible

NOTE:

1. Instructions for diluting **dextrose**
   a. To obtain **dextrose 10%,** discard 40 ml out of one amp of D50, then draw up 40 ml of **NS** into the D50 ampule
   b. To obtain **dextrose 12.5%,** discard 37.5 ml out of one amp of D50, then draw 37.5 ml of **NS** into the D50 amp;
   c. To obtain **dextrose 25%,** discard 25 ml out of one amp of D50, then draw 25 ml of **NS** into the D50 amp
   b. May utilize 10% for all ages 5 ml/kg (0.5 gm/kg) up to 250 ml, according to **Dextrose-Medication Protocol**.
2. 2. To avoid extravasation, a patent IV must be available for IV administration of **dextrose**. **Dextrose** should always be pushed slowly (e.g., over 1-2 minutes).

Medication Protocols
Dextrose
Glucagon
Midazolam
Naloxone

Safe Transportation of Children in Ambulances

Safe transportation of children in ambulances is very important. This protocol will serve as a guideline to the safe transportation of children in an ambulance. These are a limited set of circumstances that may not fit every situation.

Definitions:

1. Child Restraint System (CRS) is a device that is designed for child safety in any mode of transportation (e.g., vehicle, airplane, ambulance, etc.). This includes:
2. Vehicle CRS such as car seats that are used in personal vehicles (e.g., forward and rearward facing and booster seats
3. Ambulance Child Restraints (ACR) are a subset of CRS and are a specific type of child restraint system that is designed to be used in ambulances and on ambulance stretchers. ACR is not a brand name and devices that meet the definition of ACR and are approved by the MCA may be utilized.
    a. An ACR does NOT include car seats that were designed for use in personal vehicles.

Criteria for Transport

1. This protocol applies pediatric patients who are of a height/weight that require the use of a CRS.
2. Any pediatric patient that requires a CRS that is transported in an ambulance **must be in an ACR.**
    a. When not transported in an ACR, this must be documented as such and reported to the MCA.
3. This protocol is based on recommendations, as published by the National Highway Traffic Safety Administration (NHTSA), for the transportation of children in five possible situations:
    a. The transport of a non-patient pediatric passenger, accompanying an injured or ill patient
    b. The transport of a pediatric patient whose condition does *not* require continuous and/or intensive medical monitoring or intervention.
    c. The transport of a pediatric patient who *does* require continuous and/or intensive monitoring or intervention.
    d. The transport of a pediatric patient whose condition requires spinal motion restriction and/or lying flat, refer to **Spinal Precautions-Procedure Protocol**
    e. The transport of a pediatric patient who require transport as part of a multiple patient transport (newborn with mother, multiple children, etc.)

Procedure

1. **Transport patient on ambulance stretcher secured with an ACR.**
2. The child's height and weight will be considered when determining an appropriate ACR, following manufacturers recommendations.
3. When use of ACR is unavailable, unachievable or is detrimental see situational guidelines below, document as such and report to the MCA.

Situation Guidelines: Alternatives for consideration during catastrophic situations when ACR use is unavailable or unachievable (must be documented as such and reported to the MCA). Follow in order of operation until an achievable transport method is arrived at.

1. Transport of an uninjured/not ill child accompanying an injured or ill patient (in this order)
    a. Arrange for transport in a vehicle other than an emergency ground ambulance in a size-appropriate, properly installed, undamaged CRS.
    b. Request an ACR equipped transporting vehicle.
    c. Transport in an ambulance in the front passenger seat in a size-appropriate, properly installed, undamaged CRS. Airbags must off and seat moved to the furthest back position.
    d. Transport in an ambulance in a forward-facing EMS provider's seat/ captain's chair, in a size-appropriate, properly installed, undamaged CRS.
    e. Transport in an ambulance in rear-facing EMS provider's seat in a size-appropriate, properly installed, undamaged CRS.

2. Transport of an ill/injured child that does *not* require continuous intensive medical monitoring or interventions (in this order)
    a. Request an ACR equipped transporting vehicle if patient's condition allows.
    b. Transport the child in a size-appropriate undamaged CRS secured appropriately on ambulance stretcher.
    c. Transport in the forward-facing EMS provider's seat/ captain's chair, in a size-appropriate, properly installed, undamaged CRS.
    d. Transport in the rear-facing EMS provider's seat in a size-appropriate, properly installed, undamaged CRS.
    e. Secure the child to the ambulance stretcher, using three horizontal restraints across the child's chest, pelvis, and lower extremities and one vertical restraint across each of the child's shoulders. The ambulance stretcher should be positioned (subject to the manufacturer's specifications) to provide for the child's comfort based upon the child's injuries and/or illness and to allow for appropriate medical care.

3. Transport of an ill/injured child who *does* require continuous intensive monitoring or intervention.
    a. Request an ACR equipped transporting vehicle if patient's condition allows.
    b. Secure the child to the ambulance stretcher, using three horizontal restraints across the child's chest, pelvis, and lower extremities and one vertical restraint across each of the child's shoulders. The ambulance stretcher should be positioned (subject to the manufacturer's specifications) to provide for the child's comfort based upon the child's injuries and/or illness and to allow for appropriate medical care.

4. Transport of an ill/injured child who requires spinal motion restriction or lying flat.
    a. Request an ACR equipped transporting vehicle and follow **Spinal Precautions-Procedure Protocol**
    b. If the child is already secured to a spine board and it is detrimental to remove the child from the device, ensure padding is added as needed and secure to the ambulance stretcher (i.e., extrication prior to arrival of transporting ambulance). See **Spinal Precautions-Procedure Protocol.**

5. Transport of a child or children requiring transport as part of a multiple patient transport (newborn with mother, multiple children, etc.)
    a. Transport each as a single patient according to the guidance provided for situations 1 through 4. Use additional units to accomplish safe transport.
    b. For mother and newborn, both are considered patients.
        i. Prevent hypothermia of the newborn immediately and continuously.
        ii. Where the mother does not have complications arising from delivery, transport the newborn in an ACR on the ambulance stretcher and the mother in the rear-facing EMS provider seat.
        iii. Where the mother has complications resulting from delivery and is in need of positioning on the ambulance stretcher, transport the newborn in an approved size-appropriate car seat in the rear-facing EMS provider seat with a belt-path that prevents both lateral and forward movement under continuous monitoring, securing the mother to the ambulance stretcher.

Protocol Source/References: National Highway Traffic Safety Administration. (2012). Working group best-practice recommendations for the safe transportation of children in emergency ground ambulances. https://www.nasemso.org/Committees/STC/documents/NHTSA-Safe-Transportation-of-Children-in-Ambulances-2012.pdf

Purpose: EMS frequently encounters patients that are critically ill and quickly deteriorating to the point of cardiac or respiratory arrest. Deterioration can often occur while packaging and loading these patients. It is important to rapidly recognize the deteriorating patient and taking immediate action to stabilize the condition prior to loading and transporting. The following timeline provides a prioritization of the goal-directed treatments to stabilize the patient and prevent deterioration.

1. **Criteria: Patient ≤ 14 years of age**
   a. Inclusion:
      i. Patient in whom cardiac or respiratory arrest appears imminent
      ii. Patient with provider impression of critical illness, including new onset altered mental status, airway compromise or severe respiratory distress/failure,(cyanosis, severe retractions, head bobbing,grunting, respiratory rate extremes per age-adjusted normal MI-MEDIC), and/or signs and symptoms of shock/poor perfusion. (capillary refill greater than 3 seconds, tachycardia or hypotension per age-adjusted normal on MI-MEDIC).
   b. Exclusion:
      i. Life-threatening trauma that has not been corrected (i.e., exsanguination, pneumothorax, etc.)
2. **Critical Actions (within First 5 Minutes)**
   a. Airway
      i. Open airway manually. For child <2 years old, place padding under shoulders (align auditory meatus with sternal notch).
      ii. Insert nasopharyngeal or oropharyngeal Airway as indicated/tolerated if not following commands (GCS motor <6), as indicated/tolerated if GCS <9, or no response to verbal stimuli per the **Airway Management-Procedure Protocol**.
   b. Breathing
      i. If respiratory failure or distress, sit patient up if tolerated and not contraindicated by suspected spine injury. keep the patient calm and allow them to maintain a position of comfort, if possible.
      ii. Provide high-flow oxygen per the **Oxygen Administration-Procedure Protocol.**
         A. If respirations are <10 per minute, ventilate by BVM at 15LPM. Two-person, two-handed technique is most effective and is highly recommended if the number of providers allows.
         B. If respirations are inadequate, ventilate by BVM at 15LPM. Administer ventilations guided by chest rise. Two-person, two-

handed technique is most effective and is highly recommended if the number of providers allows.

iii. If respirations are >10 but inadequate, apply CPAP for respiratory distress/hypoxia if appropriate size CPAP available. Refer to **CPAP-Procedure Protocol** for age/size requirements.

iv. Respirations may be assisted with BVM in sitting position if patient tolerates.

v. Consider PPV by BVM if not following commands or SpO2 <90%

vi. If respirations appear adequate, but the patient is not following commands or SpO2 persistently less than 90%, consider ventilation by BVM with 15LPM oxygen

vii. Administer ventilations guided by chest rise. Two-person, two-handed technique is most effective and is highly recommended if the number of providers allows.

S vii. Consider waveform capnography if appropriate per **End Tidal Carbon Dioxide Monitoring-Procedure Protocol**

c. Circulation

i. Reference MI-MEDIC cards for age-adjusted expected blood pressure and heart rate ranges.

ii. If bradycardic (HR <60), optimize ventilation/oxygenation. Refer to the **Pediatric Bradycardia-Treatment Protocol.**

S iii. Emergent IV/IO access - Limit IV attempts to 2 total. For unresponsive or severely compromised pediatrics, IO can be the initial attempt.

d. Monitoring

i. NIBP (cycle every 3 minutes)

ii. SpO2

S iii. Continuous capnography per **End Tidal Carbon Dioxide-Procedure Protocol**.

iv. EKG

3. Immediate actions within First 10 Minutes

a. Circulation

S i. If evidence of poor perfusion, administer **NS** or **LR** 20 mL/kg bolus (unless cardiogenic shock suspected i.e., JVD, hepatomegaly, abdominal distension, crackles, etc.).

S A. If suspected cardiogenic shock, administer 5-10 mL/kg **NS** bolus instead and contact Medical Control.

ii. If dysrhythmia is thought to be primary cause of shock, contact Medical Control to discuss further interventions (electrical therapy with cardioversion or pacing, etc.).

MCA Name: Marquette Alger MCA
MCA Board Approval Date: 3/15/24
MCA Implementation Date: 4/30/24
MDHHS Approval 5/25/23

MDHHS Reviewed 2023

4. **Actions within First 15 Minutes**
    a. Re-assess response to treatments, including capillary refill with vital signs
        i. Recheck vitals and listen to lungs following fluid bolus.
        A. If decreasing oxygen saturations, crackles, or worsening respiratory distress —STOP fluid bolus and contact Medical Control immediately.
            i. Consider starting vasopressors per **Shock-Treatment Protocol**.
    b. Circulation
        i. Repeat **NS** or **LR** 20 ml/kg bolus if indicated, maximum total dose 40 ml/kg.
        ii. If bradycardia (HR <60), optimize ventilation/oxygenation and refer to the **Pediatric Bradycardia-Treatment Protocol**
        iii. If no response to fluids, follow **Shock-Treatment Protocol**
5. **Actions within First 20 Minutes**
    a. Re-assess response to treatments
    b. Circulation
        i. Continue fluids as indicated by **Shock-Treatment Protocol** or contact Medical Control
        ii. Continue vasopressors (push-dose) as indicated by **Shock-Treatment Protocol** or contact Medical Control
    c. Airway
        i. Insert advanced airway, if indicated and appropriate size available, per **Airway Management-Procedure Protocol.**
6. Once critical and immediate actions have been completed: move the patient to ambulance for transport. Transport may be initiated earlier per provider discretion.

Notes:

1. The specific lengths of time listed are approximate to provide a sense of urgency and to prioritize actions. Provider safety is of utmost importance. Care for these patients should be given as quickly as possible, but safety considerations and the scene environment may lead to times that are longer than these stated goals. When conditions make it impossible to meet these goals, the reasons should be documented.

2. Actions listed should be simultaneous and not in any specific order. As critical actions are performed, transport may be initiated. However, transport should not supersede initiation of life saving intervention.

3. The concepts/actions listed can also be used in conjunction with the **Pediatric Return of Spontaneous Circulation (ROSC)-Treatment Protocol** to prioritize key interventions prior to transport of cardiac arrest patients with ROSC.

MCA Quality Improvement Performance Parameters:

1. Review all cases of cardiac arrest witnessed by (in presence of) EMS providers for compliance with this protocol.

2. Ensure that specific treatments also follow other appropriate protocols, e.g., Airway Management, Shock, Tachycardia, Bradycardia, etc.

Cardiac Arrest – General

This protocol should be followed for adult cardiac arrests. Medical cardiac arrest patients undergoing attempted resuscitation should not be transported unless return of spontaneous circulation (ROSC) is achieved, transport is ordered by Medical Control, or otherwise specified in protocol.

- If an arrest is of a known traumatic origin, refer to the **Traumatic Arrest -Treatment Protocol**.
- If it is unknown whether the arrest is traumatic or medical, and the patient does not meet dead on scene criteria per **Dead on Scene Termination of Resuscitation-Procedure Protocol**, start CPR and continue with this protocol.
- If patient is hypothermic refer to **Hypothermia/Frostbite-Treatment Protocol** for warming techniques when applicable.
- Patients displaying a Do Not Resuscitate (DNR) order, bracelet, or necklace; or valid Michigan Physician Orders for Scope of Treatment (MI POST) – follow **DNR-Procedure Protocol** or **MI-POST-Procedure Protocol** accordingly.

- Cardiac arrest patients undergoing resuscitation should only be moved if the scene is unsafe, the physical location of the patient does not permit appropriate treatment, or under a direct medical control order.

HIGH QUALITY CPR & DEFIBRILLATION

Focus should be on prompt defibrillation and effective chest compressions.

- CPR and electrical therapy should be consistent with current American Heart Association guidelines. For all patients, **anterior/posterior placement** of pads is preferred and should be used, if possible, and if defibrillation not delayed.
- For all devices defibrillate with energy levels following manufacturers' recommendations.
    - If unknown use the maximum available

Excellent CPR is a priority:

- Keep pauses in CPR to a minimum by checking rhythm when rotating rescuer doing compressions and by avoiding pauses in CPR during airway management and other interventions. CPR pauses should be kept to less than 10 seconds.
- Use End Tidal Carbon Dioxide (ETCO2) monitoring throughout resuscitation.
- CPR initial sequence is CAB (Compressions, Airway, Breathing), except in drowning or obvious respiratory cause which should use the ABC (Airway, Breathing, Compressions) sequence.
- Chest compression rate is 100 to 120/min.
- Chest compression depth for adults is 2 inches (5 cm
- Compressions and ventilations in a ratio of 30:2
- Supraglottic airways are an acceptable primary advanced airway device (i.e., considered at least as good as endotracheal intubation) for patients in cardiac arrest with exceptions noted in the **Airway Management-Procedure Protocol.**

- Transition to continuous compressions with asynchronous ventilations every 6 seconds after placement of an advanced airway.
- Allow complete chest recoil after each compression.
- Minimize interruptions in compressions. Reassess rhythm and pulses every 2 minutes or when prompted by defibrillator.
- Avoid hyperventilation.
- Minimize compression pauses during defibrillation by doing compressions while defibrillator is charging (if device allows) and restart compressions immediately after defibrillation.
- For pregnant patients, a rescuer should manually displace the uterus to the patient's left during CPR.
    - Pregnant patients may be difficult to ventilate due to increased intrabdominal pressure, monitor end tidal CO2 and SpO2
- Change rescuers doing compressions at least every 2 minutes to avoid fatigue.
- After advanced airway placement, and if personnel available, consider positioning 2 personnel (one each side) to quickly alternate in compressions (100 per person then alternate) without pauses.

OPERATIONAL CONSIDERATIONS

1. Prior to advanced airway placement, utilize ventilation periods to visualize the ECG rhythm without compression artifact, this will allow you to plan for the assessment period at the end of the two-minute CPR cycle.
2. If AED has been applied by BLS personnel, skip to appropriate place in protocol that incorporates previous care. ALS personnel should switch to manual defibrillator after initial AED defibrillation or place AED in manual mode.

PROCEDURE

1. Request additional assistance, as needed, and initiate ALS response, if available.
2. Confirm Arrest
    a. Assess breathing (cardiac arrest patients may have gasping or agonal breathing).
    b. Check a carotid/femoral pulse for not more than 10 seconds. If uncertain if pulse is present, initiate CPR.
    c. Patients with Left Ventricular Assist Device (LVAD) **refer to LVAD- Procedure Protocol**
3. Initiate CPR or continue CPR; apply and use AED/defibrillator (per **Electrical Therapy-Procedure Protocol**) as soon as available.
    a. For refractory v-fib after 3 shocks, consider double sequential defibrillation per **Double Sequential Defibrillation-Procedure Protocol** (MCA Optional Protocol)
4. Ensure high quality CPR
    a. Manual chest compressions remain the standard of care for the treatment of cardiac arrest. Mechanical chest compression devices may only be used as alternative to conventional CPR in specific settings where the delivery of high-quality manual compressions may be challenging or dangerous for the

provider (e.g., inadequate numbers of rescuers available, CPR during hypothermic cardiac arrest, CPR in a moving ambulance). See **Mechanical Chest Compression Device-Procedure Protocol** (MCA Optional Protocol)

b. An impedance threshold device may be utilized during CPR, if available. Device should be discontinued immediately upon return of spontaneous circulation. See **Impedance Threshold Device-Procedure Protocol** (MCA Optional Protocol)

c. An FDA-approved Active Compression-Decompression CPR device may be used, if available, in accordance with manufacturer's instruction for use and should be used in conjunction with an ITD (see **Active Compression-Decompression-Procedure Protocol**)

5. Establish a patent airway, maintaining C-Spine precaution if indicated, using appropriate airway adjuncts and high flow oxygen**.** See **Airway Management-Procedure Protocol.**
   a. Initiate bag-valve-mask ventilation
      i. 2-person bag-valve-mask ventilation with oral airway should be used
      ii. If only 2 rescuers, rescuer performing compressions can squeeze bag while 2nd rescuer maintains face to mask seal with both hands.
   b. Consider advanced airway (supraglottic or endotracheal) placement without interrupting chest compressions to allow for continuous compressions.
      i. Confirm placement through EtCO2 and physical examination
      ii. Ventilations delivered asynchronously at 10 breaths per minute or 1 breath every 6 seconds when using an advanced airway.
6. Reassess ABC's as indicated by rhythm or patient condition change. Pulse checks should take no more than 10 seconds. If no pulse after 10 seconds, assume pulselessness, continue CPR beginning with compressions.
7. Continuously monitor $EtCO_2$ per MCA selection in **End-Tidal Carbon Dioxide Monitoring-Procedure Protocol**.
   a. EtCO2 of 0 is indicative of failed airway.
   b. If EtCO2 is <10 mmHG, attempt to improve CPR quality. If CPR quality good, may indicate futility state.
   c. Monitor EtCO2 for trends and indications of patient status.
8. Start an IV/IO **NS** or **LR** KVO. If IV is attempted and is unsuccessful, after 2 attempts start an IO line per **Vascular Access & IV Fluid Therapy-Procedure Protocol.**
   a. Give one liter **NS** or **LR** bolus, monitor for pulmonary edema. May repeat bolus as necessary to a maximum of 2 liters.
9. Administer **epinephrine** 1 mg/10 ml administering 1 mg IV/IO every 3 to 5 minutes.
10. Administer antidysrhythmic according to rhythm check
    a. For Ventricular Fibrillation (VF, pulseless Ventricular Tachycardia (VT), or multiple AED defibrillations, per MCA selection, administer **amiodarone** 300 mg IV/IO or **lidocaine** 1 mg/kg IV/IO

Per MCA Selection

☑ **amiodarone** 300 mg IV/IO (May repeat once 150 mg IV/IO)

☐ **lidocaine** 1 mg/kg IV/IO (May repeat, every 5-10 minutes, 0.5 mg/kg, up to total dose of 3 mg/kg)

b. For suspected torsades de pointes administer **magnesium sulfate** 2 g IV/IO

11. Consider and treat reversible causes of cardiac arrest. NOTE: Sodium bicarbonate and calcium chloride are not to be routinely given in cardiac arrest UNLESS clear reason to suspect conditions below.
    a. If known or highly suspected tricyclic antidepressant overdose, administer:
        i. **sodium bicarbonate** 1 mEq/kg IV/IO
    b. If known or highly suspected hyperkalemia (e.g., dialysis patient, EKG changes) administer:
        i. **calcium chloride** (10%) 1 gm/10 mL IV/IO
        ii. FLUSH line with 20 mL **NS** between calcium chloride and sodium bicarbonate administration
        iii. **sodium bicarbonate** 1 mEq/kg IV/IO
    c. Assess for tension pneumothorax or misplaced ETT:
        i. If tension pneumothorax suspected, perform needle decompression per **Pleural Decompression-Procedure Protocol**.
    d. If known or highly suspected opioid overdose
        i. Patent airway and adequate ventilation takes precedence over pharmacological interventions.
        ii. Consider **naloxone** 2 mg IV/IO or 2-4 mg IN refer to **Opioid Overdose Treatment and Prevention-Treatment Protocol**
12. If sustained ROSC is achieved refer to **Return of Spontaneous Circulation-Treatment Protocol**
    a. Reassess for ROSC (check pulses) if $EtCO_2$ abruptly increases by more than 10 mmHg.
13. If ROSC is not achieved, continue resuscitation while contacting Medical Control
    a. BLS/LALS: If ROSC has not been achieved and ALS is not available or is delayed, contact Medical Control after **20 minutes** of high-quality CPR for further direction AND before initiating transport. Continue high quality CPR unless directed otherwise by Medical Control per **Dead on Scene & Termination of Resuscitation Protocol**.
    b. ALS: If ROSC is not present after **30 minutes of ALS time** contact Medical Control for further direction AND before initiating transport.
    c. Continue high quality CPR unless directed otherwise by Medical Control per **Dead on Scene & Termination of Resuscitation Protocol**.

Notes:

1. Chest Compression Fraction (CCF) is the proportion of time during cardiac arrest when compressions are being performed. CCF should be as high as possible, ideally greater than 80% [American Heart Association, ACLS (2020), pg.115].

2. Document tube placement confirmation by $EtCO_2$ and by auscultation as described above and/or use of other MCA approved secondary confirmation device.
3. Identify and communicate to Medical Control potentially reversible causes. Treat EMS reversible causes, using other protocols, as applicable.
    A. Hyper/hypokalemia (known renal failure), other metabolic disorders
    B. Hypothermia
    C. Hypovolemia (including vomiting/diarrhea)
    D. Hypoxia
    E. Hydrogen ion excess (acidosis)
    F. Toxins/ overdose (e.g., beta-blocker or calcium channel-blocker)
    G. Tamponade
    H. Tension pneumothorax
    I. Thrombosis (pulmonary or coronary)
4. Routine use of **sodium bicarbonate** and **calcium chloride** in cardiac arrest is not indicated.
5. If ROSC is achieved refer to **Return of Spontaneous Circulation -Treatment Protocol**
    A. Where available transport to an interventional cardiac catheterization facility, per MCA Transport Protocol

<u>Medication Protocols:</u>
Amiodarone
Calcium Chloride
Epinephrine
Lidocaine
Magnesium Sulfate
Naloxone
Sodium Bicarbonate

Protocol Source/References: Highlights of the 2020 AHA Guidelines Update for CPR and ECC

Bradycardia

This protocol is for paramedic use only

This is a protocol for patients with serious symptomatic bradycardia, defined as patients with heart rate less than 60 bpm and hypotension, or shock. Titrate treatments to a heart rate above 60 bpm. If the patient remains hypotensive, refer to the **Shock Treatment Protocol**.

1. Follow the **General Pre-Hospital Care-Treatment Protocol**.
2. Administer **atropine** 1 mg IV/IO rapid push repeating every 3-5 minutes to a total dose of 3 mg IV/IO, until a heart rate of greater than 60/minute is reached.
3. Transcutaneous pacing (TCP) when available may be initiated prior to establishment of IV access and/or before **atropine** begins to take effect. Pacing is the treatment of choice for high degree A-V block (second-degree Type II, or third-degree), apply pacer pads. Follow the **Electrical Therapy- Procedure Protocol.**
4. Per MCA selection, provide sedation per **Patient Procedural Sedation-Procedure Protocol**
5. For patients with persistent symptomatic bradycardia, administer **epinephrine** by push dose (dilute boluses)
    a. Prepare (10 mcg/mL) by adding 1mL of 1mg/10mL **epinephrine** in 9mL **NS**, then:
        i. Administer 10-20 mcg (1-2 mL **epinephrine** 10 mcg/mL) IV/IO
        ii. Repeat every 3 to 5 minutes
        iii. Titrate SBP greater than 90 mmHg

Notes:

1. Consider possible etiologies:
    A. Hyper/hypokalemia, other metabolic disorders
    B. Hypothermia
    C. Hypovolemia (including vomiting/diarrhea)
    D. Hypoxia
    E. Hydrogen ion excess (acidosis)
    F. Toxins/ overdose (e.g., beta-blocker or calcium channel-blocker)
    G. Tamponade
    H. Tension pneumothorax
    I. Thrombosis (pulmonary or coronary)
2. Transcutaneous pacemaker electrode pads may be applied to these patients without initiating pacing so that the pacemaker is ready if patient condition deteriorates.
3. For symptomatic high-degree (second-degree Type II, or third-degree) AV block, begin pacing without delay.
4. Heart transplant patients may not respond to **atropine**

<u>Medication Protocols</u>
Atropine
Epinephrine

Protocol Source/References: Highlights of the 2020 AHA Guidelines Update for CPR and ECC

Tachycardia

This protocol is for paramedic use only

Aliases: Supraventricular Tachycardia (SVT), Ventricular Tachycardia (VT or V-Tach), Atrial Fibrillation with Rapid Ventricular Response (A-Fib with RVR)

- This protocol is used for the care of patients with persistent tachycardia (ventricular rate greater than or equal to 150/minute) where the tachycardia is believed to be the primary cause of the patient's symptoms.
- For rates <150, believed to be causing symptoms, contact Medical Control for possible orders. It is not intended to treat tachycardia that is secondary to underlying conditions (i.e., dehydration, trauma, sepsis, or toxins). Consultation with online medical control should be considered for complex patients in whom the cause of the arrhythmia is not obvious.
- Unstable patients may be defined as those with a tachycardia with: hypotension, acutely altered mental status, signs of shock, significant ischemic chest discomfort, shortness of breath, or pulmonary edema that is likely due to the arrhythmia. Unstable patients will usually have a ventricular rate >150 BPM.
- Note: Unstable patients with compensatory sinus tachycardia may resemble tachycardic arrhythmias but should not be treated as such. Treat underlying cause.
- **Adenosine** is only used for regular monomorphic tachycardic rhythm

1. Follow the **General Pre-Hospital Care-Treatment Protocol**.
2. Identify and treat reversible causes.
3. Determine if patient is stable or unstable.

UNSTABLE

1. Prepare for immediate cardioversion. In conscious patients consider sedation prior to electrical cardioversion per **Patient Procedural Sedation-Procedure Protocol**
2. Electrical cardioversion
   a. Perform synchronized cardioversion according to manufacturer recommendations.
   b. If unable to deliver synchronized cardioversion in polymorphic V Tach (including Torsades), defibrillate (cardiovert without synchronization) according to manufacturer recommendations (or device maximum energy dose)
   c. Contact medical control if the patient does not convert at maximum energy, for additional orders.

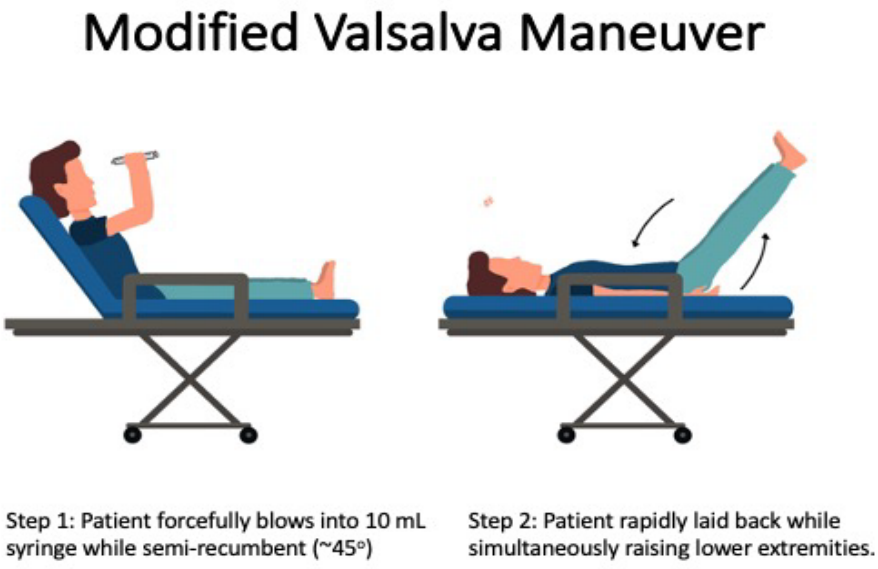
STABLE (But Symptomatic)

1. If at any point a patient becomes unstable, go to UNSTABLE section, and perform synchronized cardioversion.
2. Start an IV **NS** KVO. A large bore antecubital IV is preferred.
3. Obtain 12 lead ECG
4. Contact Medical Control for guidance as needed.

NARROW COMPLEX

REGULAR AND NARROW rhythm (i.e., SVT, A-flutter)

1. Perform Valsalva Maneuver with Postural Modification
    a. Provide continuous cardiac monitoring
    b. Run ECG strip during the procedure.
    c. DO NOT PERFORM CAROTID MASSAGE.
    d. Perform Valsalva Maneuver with Postural Modification (see Figure below)
        i. Place the patient in a semi-fowlers position
        ii. Instruct the patient to forcefully blow into a 10 mL syringe for 15 second
        iii. Then rapidly lower the patient's head to the horizontal position while simultaneously elevating the patient's legs for 60 seconds.



2. For suspected SVT that doesn't convert with Valsalva consider **adenosine** 6 mg rapid IV push through the most proximal injection site. This should be followed immediately with 20 ml **NS** flush.
    a. Adenosine may allow flutter waves to be visible indicating A-Flutter and should be treated as IRREGULAR AND NARROW rhythm below.
    b. If conversion does not occur, administer **adenosine** 12 mg IV using the same technique as stated above.
3. If SVT persists, treat according to MCA selection below.

Medication per MCA Selection

- ☐ **diltiazem** 15-20 mg (0.25 mg/kg) IV slowly
- ☑ **verapamil** 5 mg IV
- ☐ No medication, supportive therapy only

☑ Contact Medical Control prior to medication administration.

☐ Medication administration without Medical Control Contact

4. For suspected A-Flutter treat as IRREGULAR AND NARROW rhythm as below.

IRREGULAR AND NARROW rhythm (i.e., A-Fib/A-Flutter)

1. For suspected A-Fib/A-Flutter (per MCA selection), and if applicable, consider administration as below with Medical Control contact if indicated per MCA selection.
2. Note: treatment is indicated if heart rate is persistently above 125 BPM AND patient is

Medication per MCA Selection

- ☐ **diltiazem** 15-20 mg (0.25 mg/kg) IV slowly
- ☐ **verapamil** 5 mg IV
- ☑ **amiodarone** 150 mg IV over 10 minutes
- ☐ No medication, supportive therapy only

☑ Contact Medical Control prior to medication administration.

☐ Medication administration without Medical Control Contact

Symptomatic from arrhythmia (consider dehydration, hypovolemia, etc., for causes).

WIDE COMPLEX

REGULAR WIDE QRS rhythm (i.e., V-Tach, SVT/A-Flutter with aberrancy)

1. For suspected V-Tach administer **amiodarone** or **lidocaine** per MCA Selection.

Per MCA Selection

- ☑ **amiodarone** - 150 mg IV over 10 minutes
- ☐ **lidocaine** - 1 mg/kg IV

2. If V-Tach persists contact Medical Control and per Medical Control direction, administer:
    a. **amiodarone** 150 mg IV over 10 minutes as needed to a maximum of 450 mg
    OR
    b. **lidocaine** 0.5 -1.0 mg/kg IV push every 5 - 10 minutes to a maximum of 3 mg/kg.
3. For suspected SVT with aberrancy treat as REGULAR AND NARROW rhythm as above.
4. For suspected A-Flutter with aberrancy treat as IRREGULAR AND NARROW rhythm as above.

IRREGULAR WIDE QRS rhythm (i.e., torsades or A-Fib with aberrancy).

1. For suspected torsades administer **magnesium sulfate** 2 gm IV over 10 minutes.
2. For suspected atrial fibrillation with aberrancy follow irregular and narrow complex treatment as above.

NOTES:

1. Administration of **amiodarone** is best accomplished by adding **amiodarone** 150 mg to 100 or 250 ml of **NS** and infusing over approximately 10 minutes.
2. Administration of Magnesium Sulfate is best accomplished by adding **magnesium sulfate** 2 gm to 100 or 250 ml of **NS** and infusing over approximately 10 minutes.
3. Wide complex regular tachycardia may represent SVT with aberrancy, contact Medical Control and consider **adenosine**.

Medication Protocols
Adenosine
Amiodarone
Diltiazem
Lidocaine
Magnesium Sulfate
Verapamil

Protocol Source/References: **REVERT Trial** https://www.ecgmedicaltraining.com/wp-content/uploads/2016/06/REVERT-Trial-SVT.jpg)

Pulmonary Edema/Cardiogenic Shock

This protocol is to be followed for patients in respiratory distress due to pulmonary edema with or without hypotension (i.e., CHF/fluid overload or Cardiogenic Shock). Pulmonary edema usually presents with crackles which should be continuously evaluated as they may evolve with treatments.

1. Follow **General Pre-Hospital Care-Treatment Protocol**.
2. Initiate supplemental oxygen by non-rebreather mask.
3. Position patient upright with legs dependent, if possible.
4. Consider CPAP per **CPAP-Procedure Protocol**
5. Establish IV access without delaying treatment per **Vascular Access & IV Fluid Therapy-Procedure Protocol**.
6. If wheezing, administer **albuterol** 2.5 mg/3ml **NS** nebulized (Per MCA selection may be EMT skill) per **Medication Administration-Medication Protocol**

Nebulized **albuterol** administration per MCA selection
☑ EMT

7. If crackles (with or without wheezing) administer **nitroglycerin** as outlined below.
   a. Inquire of all patients regardless of identified gender if they have taken an erectile dysfunction medication or medications used to treat pulmonary hypertension in the last 48 hours.
      i. If yes, DO NOT ADMINISTER NITROGLYCERIN AND CONTACT MEDICAL CONTROL.
   b. Prior to IV administration if no erectile dysfunction medication and systolic BP is above 120 mmHG, **nitroglycerin** 0.4mg sublingual may be administered up to a maximum of 3 doses.
   c. If SBP above 100 mmHg (with IV/IO in place), administer **nitroglycerin** 0.4 mg SL, repeat every 3-5 minutes if SBP remains above 100 mmHg.
   d. If wheezing continues, continue **nitroglycerin** 0.4 mg SL and consider: **albuterol/ipratropium bromide** per **Respiratory Distress-Treatment Protocol**
8. If SBP is below 100 mmHG treat for cardiogenic shock.
   a. Prepare (**epinephrine** 10 mcg/mL) by combining 1mL of 1mg/10mL **epinephrine** in 9mL **NS**
      i. Administer 20 mcg (2 mL e**pinephrine** 10 mcg/mL) IV/IO
      ii. Repeat every 3-5 minutes
      iii. Titrate SBP greater than 90 mm/Hg.
9. If indicated, consider an advanced airway see **Airway Management-Procedure Protocol**.
10. Obtain 12-lead ECG (May be a BLS or Specialist skill, per MCA selection, see **12 Lead ECG-Procedure Protocol**). Follow MCA transport protocol if ECG is positive for ST segment elevation myocardial infarction (STEMI) and alert hospital as soon as possible.

Medication Protocols
Albuterol
Epinephrine
Nitroglycerin

Chest Pain/Acute Coronary Syndrome

The goal is to reduce cardiac workload and to maximize myocardial oxygen delivery by reducing anxiety, appropriately oxygenating, and relieving pain. For non-cardiac causes of chest pain, refer to appropriate protocol which may include **Pain Management-Procedure Protocol.**

1. Follow **General Pre-Hospital Care Protocol.**
2. Obtain 12-lead as early as possible without delaying medication administration. (Per MCA selection, may be a BLS or Specialist procedure, follow **12 Lead ECG Procedure-Protocol**).
3. Administer oxygen 4 L/min per nasal cannula if pulse oximetry SpO2 < 94%.
4. Assist patient in the use of their own **aspirin** up to a dose of 325 mg and per formulation (chew, swallow, etc.)
5. Administer **aspirin** up to 325 mg PO, chew and swallow if no aspirin or suspected insufficient dose since the onset of chest pain. (Per MCA selection may be MFR and/or EMT skill).

Aspirin Administration	
☑ MFR	☑ EMT

6. Inquire of all patients regardless of identified gender if they have taken an erectile dysfunction medication or medications used to treat pulmonary hypertension in the last 48 hours.
   a. If yes, DO NOT ADMINISTER/ ASSIST WITH NITROGLYCERIN AND CONTACT MEDICAL CONTROL.
7. Consider **fentanyl** early when nitroglycerin is contraindicated due to erectile dysfunction medication (see 14. below for **fentanyl** administration)
8. If no erectile dysfunction medication, systolic BP is above 120 mmHG and patient has **nitroglycerin** sublingual tabs prescribed to them available (check expiration date): assist patient in use of their own nitroglycerin, up to a maximum of 3 doses.
9. Prior to IV administration if no erectile dysfunction medication and systolic BP is above 120 mmHG, **nitroglycerin** 0.4mg sublingual may be administered up to a maximum of 3 doses. (Per MCA selection may be EMT skill)

Nitroglycerin Administration
☑ EMT

10. Start an IV **NS** or **LR** KVO per **Vascular Access and IV Fluid Therapy-Procedure Protocol**.
11. If the patient has a SBP of less than 100 mmHg:
    a. Administer 250 ml fluid bolus (may repeat 3 times for a total of 1 liter)
    b. Between boluses assess patient response and monitor for pulmonary edema.
    c. If pulmonary edema is noted stop fluids and contact Medical Control

12. If no erectile dysfunction medication, IV has been established, and systolic BP is above 100 mmHG, administer **nitroglycerin** 0.4 mg sublingual. Dose may be repeated at 3-to-5-minute intervals if chest pain persists and systolic BP remains above 100 mmHg.
13. Obtain 12-lead ECG (Per MCA selection, may be a BLS or Specialist procedure, follow **12 Lead ECG Procedure-Protocol**). Follow local MCA transport protocol if ECG is positive for acute ST Elevation Myocardial Infarction (STEMI) and alert the hospital as soon as possible.
14. For patients with suspected cardiac chest pain refractory to **nitroglycerin**, or **nitroglycerin** is contraindicated due to erectile dysfunction medication, consider f**entanyl** administration:
    a. Adults (< 65 years of age) administer **fentanyl** 1 mcg/kg IV/IO/IN, max single dose 100 mcg, may repeat one time. Total dose may not exceed 200 mcg.
    b. Adults (> 65 years of age) administer **fentanyl** 0.5 mcg/kg IV/IO/IN, max single dose 50 mcg, may repeat three times. Total dose may not exceed 200 mcg.
    c. Total dose may not exceed 200 mcg without Medical Control contact and approval.

Medication Protocols
Aspirin
Fentanyl
Nitroglycerin

ST ELEVATION MYOCARDIAL INFARCT (STEMI)

Purpose of this protocol is to assure patients with ST segment elevation MI (STEMI) are transported to facilities with 24-hour interventional cardiology capabilities and provide guidance for when to institute this bypass protocol for Acute MI.

Exclusion Criteria:

1. EKG reads POSSIBLE Acute MI age undetermined.
2. Known Renal failure in patient that is unwilling to dialyze.
3. Completely dependent patient (dementia, etc.)
4. Terminally ill patient
5. Unwilling to undergo an invasive procedure (i.e. Cath Lab)

Procedure:

1. If ST Elevation or if 12 Lead EKG is interpreted by the monitor as: ***ACUTE MI*** (Lifepak 11 or 12) OR ***Meets ST Elevation MI Criteria*** (Lifepak 15), then contact Medical Control requesting bypass to PCI Center (UPHS Marquette) and/or contact Medical Control at UPHS Marquette indicating STEMI Alert.
2. Adhere to appropriate protocol (i.e. Chest Pain) and continue following this protocol also.
3. IV in RIGHT arm, if possible.

Notes:

1. If UPHS Marquette is not the closest facility, rapidly contact Medical Control and request bypass to PCI Center (UPHS Marquette).
2. Advise UPHS Marquette that you are enroute with a “STEMI Alert” (use that phrase).
3. A Code MI will be called on the basis of the prehospital 12 Lead EKG interpretation. The Cath Lab will be activated and ready to receive the patient.
4. Expect to pass through the ED and be directed to the Cath Lab. In some instances, you may be notified to go directly to the Cath Lab.

Purpose of this protocol is to assure patients with ST segment elevation MI (STEMI) are transported to facilities with 24-hour interventional cardiology capabilities and provide guidance for when to institute this bypass protocol for Acute MI.

If ST Elevation or if 12 Lead EKG is interpreted by the monitor as:
ACUTE MI (LP 11 or 12) OR ***Meets ST Elevation MI Criteria*** (LP 15)

↓

Contact Medical Control requesting Bypass to PCI Center (UPHS Marquette) and/or contact Medical Control at UPHS Marquette Indicating STEMI ALERT.

↓

In addition to adhering to appropriate protocol (i.e. Chest Pain), continue to follow this protocol.
Administer ASA 324mg PO chewed unless already administered.

↓

IV in Right Arm, if Possible

EXCLUSION CRITERIA:

1. EKG reads POSSIBLE Acute MI age undetermined.
2. Known renal failure in patient that is unwilling to dialyze.
3. Completely dependent patient (dementia, etc.)
4. Terminally ill patient.
5. Unwilling to undergo an invasive procedure (i.e. Cath Lab)

Notes:

1. If UPHS Marquette is not the closest facility, rapidly contact Medical Control and request bypass to PCI Center (UPHS Marquette).
2. Advise UPHS Marquette that you are enroute with a “STEMI Alert” (use that phrase).
3. A Code MI will be called on the basis of the prehospital 12 Lead EKG interpretation. The Cath Lab will be activated and ready to receive the patient.
4. Expect to pass through the ED and be directed to the Cath Lab. In some instances, you may be notified to go directly to the Cath Lab.

Return of Spontaneous Circulation (ROSC)

This protocol should be followed for all cardiac arrests with ROSC. If an arrest is of a known traumatic origin, refer to the **Traumatic Arrest -Treatment Protocol** and MCA Transport Protocol. If it is unknown whether the arrest is traumatic or medical, consider other treatable causes. Initiate ALS response if available. After ROSC, patients should be stabilized on scene prior to transport, for five to ten minutes before moving the patient. Refer to **Crashing Adult /Impending Arrest-Treatment Protocol.**

1. If ventilation assistance is required, ventilate at 10-12 breaths per minute. Do not hyperventilate.
2. Monitor vital sign and reassess patient. If patient becomes pulseless begin CPR and refer to **Adult Cardiac Arrest General-Treatment Protocol**.
3. Check blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**
4. Start an IV/IO **NS** or **LR** KVO if not already in place**.**
5. Treat hypotension (systolic blood pressure less than 90 mm/Hg) with an IV/IO fluid bolus of up to 1 liter.
6. Perform 12- lead ECG (Per MCA selection, may be BLS or Specialist skill per **12 Lead ECG-Procedure Protoco**l)
7. Consider Transport to a facility capable of Percutaneous Coronary Intervention (PCI) per MCA protocol if 12 Lead ECG indicates ST Elevation MI.
8. Monitor waveform ETCO2. If ventilation assistance is required, target ETCO2 of 35-45 mm Hg per **End Tidal Carbon Dioxide Monitoring-Procedure Protocol**
9. If hypotension persists after initial IV/IO fluid bolus, prepare push dose **epinephrine** while administering second 1 liter fluid bolus (maximum total fluid 2 liters)
10. Administer **epinephrine** by push dose (dilute boluses).
    a. Prepare (10 mcg/mL) by adding 1mL of 1mg/10mL **epinephrine** in 9mL NS, then:
        i. Administer 10-20 mcg (1-2 mL **epinephrine** 10 mcg/mL)
        ii. Repeat every 3 to 5 minutes
        iii. Titrate to SBP greater than 90 mm/Hg
11. Anticipate airway intolerance and prepare for patient sedation. If patient becomes agitated with advanced airway in place, refer to **Patient Procedural Sedation-Procedure Protocol.**

Notes:

1. If a mechanical ventilator is available or there are spontaneous respirations in the non-intubated patient, titrate inspired oxygen on the basis of monitored SpO2 to maintain a saturation of ≥92% but <98%. Titrate ETCO2 between 35-45 mmHg.
2. Consider removal of airway device only if wide awake, following commands, and unable to tolerate airway device.

<u>Medication Protocols</u>
Epinephrine

Pediatric Cardiac Arrest – General

This protocol should be followed for all pediatric cardiac arrests.

- If an arrest is of a known traumatic origin refer to the **Traumatic Arrest-Treatment Protocol**.
- If it is unknown whether the arrest is traumatic or medical, and the patient does not meet dead on scene criteria per **Dead on Scene Termination of Resuscitation-Procedure Protocol**, start CPR and continue with this protocol.
- If patient is hypothermic refer to **Hypothermic/Frostbite-Treatment Protcol** for warming techniques when applicable.

Note: Primary cardiac arrest in the pediatric patient is rare. Most arrests are secondary to respiratory failure. Maintaining basic airway management techniques unless unable or ineffective. Advanced airway insertion attempts should be performed only if BLS airway management is ineffective. Keep CPR interruptions to a minimum. Medications given during cardiac arrest are given IV or IO.

HIGH QUALITY CPR & DEFIBRILLATION

- CPR and electrical therapy should be consistent with current American Heart Association guidelines. For all patients, **anterior/posterior placement** of pads is preferred and should be used, if possible, and if defibrillation not delayed.
- Once arrest is confirmed, emphasis should be on avoiding interruptions in CPR.
- CPR should be done in accordance with current guidelines established by the American Heart Association.
- Compressions at least 1.5” in depth for infants, 2” in depth for children (at least one third the anteroposterior diameter of the chest).
- Compression rate of at least 100-120 per minute
- Allow full chest recoil with each compression for maximum perfusion.
- Avoid excessive ventilation (volume and rate).
- Continue CPR with minimal interruptions, changing the rescuer doing compressions
- Verify CPR quality frequently and any time rescuer providing compressions or ventilations change.
- Change rescuer performing compressions at least every 2 minutes to avoid fatigue.
- Interruption in compressions must be less than 10 seconds
- If an advanced airway is placed, provide continuous CPR, without pauses for ventilation and ventilate at 20 breaths per minute or 1 breath every 3 seconds

OPERATIONAL CONSIDERATIONS

1. Prior to advanced airway placement, utilize ventilation periods to visualize the ECG rhythm without compression artifact, this will allow you to plan for the assessment period at the end of the two-minute CPR cycle.
2. If AED has been applied by BLS personnel, skip to appropriate place in protocol that

incorporates previous care. ALS personnel should switch to manual defibrillator after initial AED defibrillation or place AED in manual mode.

PROCEDURE

1. Request additional assistance, as needed, and initiate ALS response, if available.
2. Confirm Arrest
    a. Assess for signs of normal breathing. Agonal breathing is associated with cardiac arrest.
    b. Check a carotid or brachial pulse as age appropriate for no more than 10 seconds.
3. Initiate CPR or continue CPR if already in progress and apply and use AED/manual defibrillator per **Electrical Therapy-Procedure Protocol** as soon as possible. Use AED pediatric pads and settings per AED manufacturer instriuctions for use.
4. Ensure CPR quality
    a. Manual chest compressions remain the standard of care. Mechanical chest compression devices may be a reasonable alternative to conventional CPR in specific settings where the delivery of high quality manual compession may be challenging or dangers for the provider (e.g., limited rescuers, prolonged CPR, CPR during hypothermic cardiac arres, CPR in a moving ambulance). An FDA approved, MCA authorized mechanical CPR device operating at the manufacturers pre-set rate may be utilized. See **Mechanical Chest Compression Device-Procedure Protocol** for age/weight requirements and limitations. (MCA Optional)
    b. An impedance threshold device may be utilized during CPR for children > 10kg (if available). Device should be discontinued immediately upon return of spontaneous circulation. See **Impedance Threshold Device-Procedure Protocol** (MCA Optional Protocol)
5. Establish a patent airway, maintaining C-Spine precautions if indicated, beginning with BLS airway adjuncts and a BVM with high flow oxygen. Ventilations with BVM (2 -rescuer technique) and airway adjuncts are at least as effective as endotracheal intubation in children.
    a. 2-person bag-valve-mask ventilation with oral airway should be standard technique
    b. If only 2 rescuers, rescuer performing compressions can squeeze bag while 2nd rescuer maintains face to mask seal with both hands
    c. If unable to ventilate or unable to maintain a patent airway, establish an advanced airway per the **Airway Management-Procedure Protocol**. (Supraglottic airways are first choice advanced airway for pediatrics when age approved sizes are available)
        i. All advanced airways (includes supraglottic) require EtCO2 monitoring.
6. If Return of Spontaneous Circulation (ROSC) has **not** been achieved after three, two-minute cycles of CPR AND ALS is not available or delayed, contact Medical Control to discuss initiation of BLS transport while continuing to focus on high quality CPR.
7. Reassess ABC's as indicated by rhythm or patient condition change. Pulse checks should take no more than 10 seconds. If no pulse after 10 seconds, assume pulselessness, continue CPR beginning with compressions.

8. Continuously monitor $EtCO_2$ per MCA selection in End-Tidal Carbon Dioxide Montioring-Procedure Protocol.
    a. EtCO2 of 0 is indicative of failed airway.
    b. If EtCO2 is <10 mmHG, attempt to improve CPR quality. If CPR quality good, may indicate futility state.
    c. Monitor EtCO2 for trends and indications of patient status.
9. Start an IV/IO **NS** or **LR** KVO. IO may be the first choice. See **Vascular Access & IV Fluid Therapy-Procedure Protocol.**
10. Check rhythm, every 2 minutes, defibrillate according to MI MEDIC card. If MI MEDIC are not available:
    a. Initial defibrillation at 2 J/kg (or closest energy setting specific to defibrillator being utilized), and continue CPR.
    b. Subsequent defibrillations must be at least 4 J/kg, but may escalate to 10J/kg or adult dosage.
11. Administer **epinephrine** according to MI MEDIC cards.
    a. Initial dose should ideally be administered within 5 minutes of ALS/LALS contact of confirmed pediatric cardiac arrest.
    b. If MI MEDIC cards are not available administer:
        i. 1 mg/10 ml, 0.01 mg/kg (0.1 ml/kg)
        ii. Max dose 1mg (10 ml)
        iii. Repeat every 3-5 minutes
12. If shockable rhythm persists administer aniarrhythmc (per MCA selecetion) according to MI MEDIC cards.
    a. If MI MEDIC cards are not available administer antiarrhythmic (per MCA selection) as follows:

Per MCA Selection

☑ **Amiodarone** 5 mg/kg (max single dose 300 mg) IV/IO (May repeat twice) Do not exceed 450 mg total IV/IO

or

☐ **Lidocaine** 1 mg/kg IV/IO (May repeat 0.5 mg/kg twice at 5-10 minute intervals. Maximum 3 doses total

13. Identify and treat reversible causes of arrest
    a. Hypovolemia (including vomiting/diarrhea)– Administer 20 ml/kg **NS** or **LR** IV/IO bolus
    b. Hypoglycemia – check blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**)
        i. If blood glucose is less than 60 mg/dL administer dextrose according to MI MEDIC cards.
        ii. If MI-MEDIC unavailable, administer **dextrose** 0.5 g/kg per Pediatric Altered Mental Status.
    c. Tension pneumothorax – see **Pleural Decompression-Procedure Protocol**
    d. Hyperkalemia (renal failure) – Contact Medical Control
        i. Administer **calcium chloride 10%** per MI MEDIC cards
            1. If MI MEDIC cards are unavailable administer 20 mg/kg (0.2 ml/kg), max single dose 1 gm

ii. FLUSH line with 20 mL **NS** between calcium chloride and sodium bicarbonate administration.
iii. Administer **sodium bicarbonate** per MI MEDIC cards
2. If MI MEDIC cards are unavailable administer 1 mEq/kg IV/IO

5. If ROSC is not achieved, continue resuscitation while contacting Medical Control
   a. BLS/LALS: If ROSC has not been achieved and ALS is not available or is delayed, contact Medical Control after **20 minutes** of high-quality CPR for further direction AND before initiating transport. Continue high quality CPR unless directed otherwise by Medical Control per **Dead on Scene & Termination of Resuscitation Protocol**.
   b. ALS: If ROSC is not present after **30 minutes of ALS time** contact Medical Control for further direction AND before initiating transport.
   c. Continue high quality CPR unless directed otherwise by Medical Control per **Dead on Scene & Termination of Resuscitation Protocol**.

Notes:
1. Chest Compression Fraction (CCF) is the proportion of time during cardiac arrest when compressions are being performed. CCF should be as high as possible: ideally greater than 80% (AHA, ACLS, pg.115)
2. Identify and communicate to Medical Control potentially reversible causes. Treat EMS reversible causes, using other protocols, as applicable.
   A. Hyper/hypokalemia (known renal failure), other metabolic disorders
   B. Hypothermia
   C. Hypovolemia (including vomiting/diarrhea)
   D. Hypoxia
   E. Hydrogen ion excess (acidosis)
   F. Toxins/ overdose (e.g., beta-blocker or calcium channel-blocker)
   G. Tamponade
   H. Tension pneumothorax
   I. Thrombosis (pulmonary or coronary)
3. Routine use of **sodium bicarbonate** and **calcium chloride** in cardiac arrest is not indicated.
4. If ROSC is achieved refer to **Pediatric Return of Spontaneous Circulation - Treatment Protocol**

Medication Protocols
Amiodarone
Calcium Chloride
Dextrose
Epinephrine
Lidocaine
Sodium Bicarbonate

Pediatric Bradycardia

This protocol is for paramedic use only

Aliases: Slow heart rate, heart block

Bradycardia should be considered to be due to hypoxia until proven otherwise. This protocol applies to pediatric patients with bradycardia, a pulse, and poor perfusion (cardiopulmonary compromise).

NOTES: Signs of cardiopulmonary compromise include:

1. Hypotension:
    a. In neonates, SBP less than 60
    b. In infants 1 month to 1 year, SBP less than 70
    c. In children aged 2 to 10 years, SBP less than 70 + (age x 2).
    d. For children greater than 10, SBP less than 90
2. Acutely altered mental status.
3. Signs of shock - indicated by absent and/or weak peripheral and femoral pulses, increased capillary refill time (> 3 seconds), skin cool/mottled.
4. Respiratory difficulty indicated by increased work of breathing (retractions, nasal flaring, grunting, tracheal tugging), cyanosis, altered level of consciousness (unusual irritability, lethargy, failure to respond to parents), stridor, wheezing.

General Treatment

A. Pediatric patients (≤ 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
B. Manage airway as necessary
C. Provide supplemental oxygen as needed to maintain O2 saturation > 94%
D. Initiate monitoring

1. If pulse is < 60 confirm and support adequate oxygenation and ventilation.
2. If pulse remains < 60 and patient remains symptomatic perform CPR
3. Establish vascular access
4. Apply cardiac monitor to identify rhythm
5. If pulse remains < 60, despite oxygenation & ventilation
    A. Administer **epinephrine** according to MI MEDIC cards.
        i. If MI MEDIC cards are not available administer **epinephrine**:
            1. 1mg/ 10mL,
            2. 0.01 mg/kg (0.1 ml/kg) IV/IO up to 1 mg (10 ml),
            3. Repeat every 3-5 minutes.
    B. If patient remains unstable and pulse < 60 administer **atropine** according to MI MEDIC cards.
        i. If MI MEDIC cards are not available administer **atropine**:

1. 0.02 mg/kg IV/IO (minimum dose 0.1 mg, maximum single dose 0.5 mg)
2. May repeat once in 5 minutes, if effective.

ii. Continue administration of epinephrine as above

6. If patient remains unstable and pulse <60 after **epinephrine** and **atropine** administration:
   i. Begin transcutaneous pacing at rate up to 100 bpm per **Electrical Therapy-Procedure Protocol.**
   ii. Sedation may be used to facilitate transcutaneous pacing per MCA selection. Refer to **Patient Procedural Sedation-Procedure Protocol**.
7. Continuously monitor for pulses. If pulse is not present, refer to **Pediatric Cardiac Arrest-Treatment Protocol**.
8. Ensure adequate patient warming.

Notes:

When CPR is required, a precise diagnosis of the specific bradyarrhythmia is not important.

Medication Protocols
Atropine
Epinephrine

Pediatric Tachycardia

This protocol is for paramedic use only

Aliases: Supraventricular tachycardia (SVT), atrial fibrillation (a-fib), atrial flutter, ventricular tachycardia (V-tach)

This protocol is intended for symptomatic pediatric patients with elevated heart rate, relative to their age. Refer to MI-MEDIC for appropriate vital signs and medication doses.

I. General Treatment
- A. Pediatric patients (≤ 14 years of age) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
- B. Follow General Pre-Hospital Care-Treatment Protocol
- C. Determine if patient is stable or unstable
- D. Manage airway as necessary
- E. Provide supplemental oxygen as needed to maintain O2 saturation > 94%
- F. Initiate monitoring
- G. Perform 12-lead EKG but do not delay care for 12-lead EKG on unstable patients
- H. Establish vascular access
- I. Identify and treat underlying causes of tachycardia such as dehydration, fever, vomiting, sepsis and pain.
- J. Administer **NS** or **LR** bolus 20ml/kg with possible hypovolemia.
- K. Consider the following additional therapies if specific dysrhythmias are recognized:

II. **UNSTABLE**
- A. Regular Narrow Complex Tachycardia – Unstable
  - i. Prepare for immediate cardioversion. In conscious patients consider sedation prior to electrical cardioversion. Refer to **Patient Procedural Sedation-Procedure Protocol.**
  - ii. Deliver a synchronized shock; 1 J/kg for the first dose
  - iii. Repeat doses should be 2 J/kg
  - iv. DO NOT EXCEED ADULT DOSING.
- B. Regular, Wide Complex Tachycardia – Unstable
  - i. Prepare for immediate cardioversion. In conscious patients consider sedation prior to electrical cardioversion. Refer to **Patient Procedural Sedation-Procedure Protocol.**
  - ii. Synchronized cardioversion 1 J/kg
  - iii. For recurrent or refractory wide complex – unstable tachycardia, consult Medical Control prior to medication administration (medication per MCA selection)

Per MCA Selection

☑ Amiodarone 5 mg/kg (max single dose 300 mg) IV/IO (May repeat twice). Do not exceed 450 mg total IV/IO

or

☐ Lidocaine 1 mg/kg IV/IO (May repeat 0.5 mg/kg twice at 5-10 minute intervals). Maximum 3 doses total

C. Irregular, Wide Complex Tachycardia – Unstable
   i. Defibrillate according to **Electrical Therapy Procedure**
   ii. Refer to **Pediatric General Cardiac Arrest Protocol**

D. If able to convert tachycardia, maintain full cardiac monitoring including pulse oximetry and supportive care until transfer of care at the receiving facility.

III. **STABLE**

A. Regular Narrow Complex Tachycardia – Stable (SVT)
   i. Perform vagal maneuvers
      1. Ensure the patient is on oxygen and on a cardiac monitor.
      2. Run ECG strip during the procedure.
      3. If child is able to follow instructions:
         a. Blow into a into a 10 mL syringe for 15 seconds
         b. Squat and bear down
      4. If child is not able to follow instructions:
         a. While supine elevate the patient's legs to the knee chest position for 60 seconds.
         b. If available consider quickly placing a bag of ice on the eyes and forehead. Do NOT occlude the nose or place below the bridge of the nose.
            i. Results are generally seen within 15 seconds.
            ii. This is not an ongoing intervention, it is an abrubt maneuver not be maintained for more than 15 seconds.
      5. DO NOT USE CAROTID MASSAGE.

   ii. Contact Medical Control prior to administration. Administer **adenosine** according to MI MEDIC cards if vagal maneuvers are ineffective**.**
      1. If MI MEDIC cards are not available administer **adenosine**
         a. 0.1 mg/kg (max of 6 mg) rapid IV push through the most proximal injection site, immediately followed by a 10 mL flush.
         b. May repeat once with 0.2 mg/kg (max of 12 mg) administered as above.

B. Regular, Wide Complex Monomorphic QRS Tachycardia – Stable
   i. Contact Medical Control
   ii. Consider **adenosine** per MI MEDIC cards.
      1. If MI MEDIC cards are not available administer **adenosine**
         a. 0.1 mg/kg (max of 6 mg) rapid IV push through the most proximal injection site, immediately followed by a 10 mL flush.
         b. May repeat once with 0.2 mg/kg (max of 12 mg) administered as above.

Medication Protocols
Adensoine
Amiodarone
Lidocaine

Return of Spontaneous Circulation (ROSC)

This protocol should be followed for all cardiac arrests with ROSC. If an arrest is of a known traumatic origin, refer to the **Traumatic Arrest-Treatment Protocol** and MCA Transport Protocol. If it is unknown whether the arrest is traumatic or medical, consider other treatable causes. Initiate ALS response if available. After ROSC, patients should be stabilized on scene prior to transport, ideally for at least five minutes before moving the patient. Refer to **Pediatric Crashing Patient/Impending Arrest-Treatment Protocol.**

1. Pediatric patients (≤ 14 years) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol.
2. If ventilation assistance is required, ventilate at 10-12 breaths per minute. Do not hyperventilate.
3. Reassess patient, if patient becomes pulseless
    a. Begin CPR
    b. Follow **Pediatric Cardiac Arrest-Treatment Protocol**.
4. Monitor vital signs.
5. Check blood glucose (may be MFR skill, see **Blood Glucose Testing-Procedure Protocol**)
6. Start an IV/IO **NS** or **LR** KVO**.**
7. Treat hypotension with an IV/IO fluid bolus 20 ml/kg consistent with **Shock-Treatment Protocol**.
8. May perform 12- lead ECG (Per MCA selection, may be BLS skill per **12 Lead ECG-Procedure Protocol**) but must not delay or take precedence over other critical assessments and interventions.
9. Monitor waveform ETCO2. If ventilation assistance is required, target ETCO2 of 35-45 mm Hg per **End Tidal Carbon Dioxide Monitoring-Procedure Protocol**
10. If hypotension persists after IV/IO fluid bolus, administer push dose **epinephrine** (diluted boluses) according to MI MEDIC cards.
    a. If MI MEDIC cards are not available prepare (10 mcg/mL) by adding 1mL of 1mg/10mL **epinephrine** in 9mL **NS**, then
        i. Administer 1 mcg/kg (0.1 mL/kg **epinephrine** 10 mcg/mL)
        ii. Maximum dose 10 mcg (1 mL)
        iii. Repeat every 3-5 minutes
        iv. Titrate to age appropriate SBP per MI MEDIC cards. If MI MEDIC cards are unavailable titrate SBP > 70 mmHg + (2 x age in years) up to 100 mmHg.
2. Anticipate airway intolerance and prepare for patient sedation. If patient becomes agitated with advanced airway in place, refer to **Patient Procedural Sedation-Procedure Protocol.**

<u>Medication Protocols</u>
Epinephrine

12-Lead ECG

Paramedic Protocol (may be Specialist or EMS per MCA selection)

Aliases: EKG, 12 lead

Indications:

1. A 12-lead ECG is indicated on patients exhibiting any of the following signs/symptoms:
    A. Chest pain or pressure
    B. Upper abdominal pain
    C. Syncope
    D. Shortness of breath
    E. Pain/discomfort which are often associated with cardiac ischemia:
        a. Jaw, neck, shoulder, left arm or other presentations; unless no other symptoms exist and the cause of the specific pain can be identified with a traumatic or musculoskeletal injury.
        b. If there is any doubt about the origin of the pain/discomfort, or the presentation seems atypical for the mechanism, a 12-lead should be performed.

2. Patients exhibiting the following signs/symptoms should have a 12-lead ECG performed if the etiology of the illness is indicative of an Acute Coronary Syndrome or the etiology of the illness is indeterminate:
    A. Nausea
    B. Vomiting
    C. Diaphoresis
    D. Dizziness
    E. Patient expression of “feelings of doom”

3. A 12-lead ECG may be performed based on the clinical judgment of the paramedic even in the absence of the above signs/symptoms.

Procedure:

1. Follow **General Pre-hospital Care-Treatment Protocol.**

2. Perform 12-lead ECG per manufacturer guidelines, if available.

MCA approval to obtain ECG
- ☑ Specialist
- ☑ EMT

MCA approval to transmit ECG (and notify of STEMI)
- ☑ Specialist
- ☑ EMT

MCAs will be responsible for maintaining a roster of the BLS and LALS agencies choosing to participate and will submit roster to MDHHS

3. Report if acute MI is suspected, either by device or paramedic provider interpretation and promptly relay either the 12-lead findings via MCA approved communications system or transmit 12-lead to the receiving facility.

4. Agencies in cooperation with hospitals with pre-hospital 12-lead ECG receiving capability should have the relay done electronically as soon as possible for the following conditions:
   A. ST elevation ≥1mm in 2 contiguous leads.
   B. Chest pain patient with left bundle branch block.
   C. EMS personnel request assistance by hospital for interpretation of ECG.
   D. Hospital requests ECG be sent.

5. The Acute MI Report relayed to the receiving facility should include the following:
   A. *** **Acute MI Suspected** *** or equivalent machine indication of Acute MI.
   B. Location of MI, “ST elevation, consider _____injury”.
   C. Time of onset of the chest pain if present.
   D. Current level of pain.
   E. Cardiac history (previous MI, CHF, CABG, Angioplasty or Stent).
   F. Presence of possible indicators of false positive ECG (tachyarrhythmia, left bundle branch block, pacemaker, wide complex QRS, positive ECG with artifact after previous negative ECG).

6. Transport patients per MCA transport protocol.

7. Repeat 12 Lead is indicated for prolonged transports or changes in condition.

Child Abuse & Neglect (Suspected)

Aliases: Child abuse, 3200 form, mandatory reporting

Purpose: To provide the process for assessment and management for patients of suspected child abuse.

When emergency personnel suspect that a patient has been abused (physically and/or sexually), neglected, or exploited, **a verbal and written report must be made to the emergency physician on arrival at the hospital and to the Protective Services Agency (child or adult)**. The primary purpose is protection of the patient from further harm. Do not confront the patient or family members with such suspicions at the scene.

Michigan law (MCL 722.623) requires that licensed EMS providers who have "reasonable cause to suspect child abuse or neglect" shall report "immediately, by telephone or otherwise" their suspicions to the Protective Services Agency for the County involved. In cases of suspected child abuse, this oral report shall also be followed with a written report on the Department of Human Services forms available in every hospital emergency department.

Michigan law (MCL 400.11a) also requires this same oral report for suspected cases of abuse or neglect of an adult.

Licensed providers are required to make an immediate verbal report and a written report within 72 hours when they suspect child abuse or neglect. Mandated reporters must also notify the head of their organization of the report. Reporting the suspected allegations of child abuse and/or neglect to the head of the organization does not fulfill the requirement to report directly to MDHHS.

The verbal report can be completed by calling 855-444-3911. The pdf form is found here DHS3200_report.dot (live.com) and is included in the protocol for reference. Reports can be made online (login required).

1. Definitions

"**Child Abuse**" means harm or threatened harm to a child's health or welfare by a parent, legal guardian, or any other person responsible for the child's health or welfare…that occurs through non-accidental physical or mental injury; sexual abuse; sexual exploitation, or maltreatment.

"**Child Neglect"** means harm or threatened harm to a child's health or welfare by a parent, legal guardian, or any other person responsible for the child health or welfare that occurs through either of the following: 1) Negligent treatment, including the failure to provide adequate food, shelter, or medical care; 2) Placing a child at an unreasonable risk to the child's health or welfare by failure of the parent, legal guardian, or any other person responsible for the child's health or welfare to intervene to eliminate that risk when that person is able to do so and has, or should have, knowledge of the risk.

2. Indicators of Possible Abuse

- History of abuse provided by the patient
- Delay in seeking care for injury
- Injury inconsistent with history provided
- Conflicting reports of injury from patient and care-giver
- Patient unable, or unwilling, to describe mechanism of injury
- Lacerations, bruises, burns, or fractures in various stages of healing
- Scald burns with demarcated immersion lines
- Scald burns involving anterior or posterior half of extremity
- Scald burns involving buttocks or genitalia
- Cigarette burns
- Bruising in a non-ambulatory child
- Rope burns or marks
- Patient confined to restricted space or position
- Pregnancy or presence of venereal disease in a child less than 12 years

3. Physical Assessment

A. Treat and document physical injury per the appropriate medical treatment protocol.
B. Observe for:
   - Potential over-sedation
   - Inappropriate fear
   - Avoidance behavior
   - Poor parent-child bonding
   - Inappropriate interaction with care giver

4. Evaluation and Documentation

- Focus the interview on the patient's physical injury. Do not address the specifics of abuse or neglect at this point.
- Obtain and record pertinent history related to the presenting problems.
- Determine and chart past medical history, and any cognitive or physical impairment.
- Note signs of inadequate housing or lack of facilities such as heat or water.
- Carefully and specifically document the patient's statement of instances of rough handling, sexual abuse, alcohol or drug abuse by family members, verbal or emotional abuse, isolation or confinement, misuse of property or theft, threats, gross neglect such as restriction of fluids, food or hygiene.
- Attempt to record, verbatim (word for word), any excited utterances (spontaneous comments).
- If necessary, ask the caregiver for information regarding the patient's medical condition. Observe mental health of caregiver.

- Request police assistance if there is any history of threatening, abusive, or violent acts. Protect yourself while obtaining a safe environment for the patient.

5. **Special Considerations**
   - If the patient is not transported, the suspected abuse must still be reported. Law enforcement may also be contacted, at the discretion of EMS providers.
   - Careful and specific documentation is vital because the "story" often changes as the investigation proceeds.
   - Contact the Department of Health and Human Services Hotline at 1-855-444-3911.

REPORT OF ACTUAL OR SUSPECTED CHILD ABUSE OR NEGLECT

Michigan Department of Health and Human Services

Was Complaint Phoned to MDHHS?
☐ Yes ☐ No ▶ If yes, Intake ID # _____ ▶ If no, contact Centralized Intake (855-444-3911) immediately

INSTRUCTIONS: REPORTING PERSON: Complete items 1-19 (20-28 should be completed by medical personnel, if applicable). Send to Centralized Intake at the address listed on page 2.

1. Date

2. List of Child(ren) Suspected of Being Abused or Neglected. **To insert additional rows, tab at the end of last row to create a new row.**

NAME	BIRTH DATE	SOCIAL SECURITY #	SEX	RACE
"Click Here and Type"				
3. Mother's Name				
4. Father's Name				

5. Child(ren)'s Address (No. & Street)	6. City	7. County	8. Phone No.

9. Name of Alleged Perpetrator of Abuse or Neglect	10. Relationship to Child(ren)
11. Person(s) The Child(ren) Living With When Abuse/Neglect Occurred	12. Address, City & Zip Code Where Abuse/Neglect Occurred

13. Describe Injury or Conditions and Reason for Suspicion of Abuse or Neglect

14. Source of Complaint (Add reporter code below)

01 Private Physician/Physician's Assistant	11 School Nurse	42 MDHHS Facility Social Worker
02 Hosp/Clinic Physician/Physician's Assistant	12 Teacher	43 DMH Facility Social Worker
03 Coroner/Medical Examiner	13 School Administrator	44 Other Public Social Worker
04 Dentist/Register Dental Hygienist	14 School Counselor	45 Private Agency Social Worker
05 Audiologist	21 Law Enforcement	46 Court Social Worker
06 Nurse (Not School)	22 Domestic Violence Providers	47 Other Social Worker
07 Paramedic/EMT	23 Friend of the Court	48 FIS/ES Worker/Supervisor
08 Psychologist	25 Clergy	49 Social Services Specialist/Manager (CPS, FC, etc.)
09 Marriage/Family Therapist	31 Child Care Provider	56 Court Personnel
10 Licensed Counselor	41 Hospital/Clinic Social Worker	

15. Reporting Person's Name	Report Code (see above)	15a. Name of Reporting Organization (school, hospital, etc.)			
15b. Address (No. & Street)		15c. City	15d. State	15e. Zip Code	15f. Phone Number
16. Reporting Person's Name	Report Code (see above)	16a. Name of Reporting Organization (school, hospital, etc.)			
16b. Address (No. & Street)		16c. City	16d. State	16e. Zip Code	16f. Phone Number
17. Reporting Person's Name	Report Code (see above)	17a. Name of Reporting Organization (school, hospital, etc.)			
17b. Address (No. & Street)		17c. City	17d. State	17e. Zip Code	17f. Phone Number
18. Reporting Person's Name	Report Code (see above)	18a. Name of Reporting Organization (school, hospital, etc.)			
18b. Address (No. & Street)		18c. City	18d. State	18e. Zip Code	18f. Phone Number
19. Reporting Person's Name	Report Code (see above)	19a. Name of Reporting Organization (school, hospital, etc.)			
19b. Address (No. & Street)		19c. City	19d. State	19e. Zip Code	19f. Phone Number

DHS-3200 (Rev. 6-18) Previous edition may be used. 1

TO BE COMPLETED BY MEDICAL PERSONNEL WHEN PHYSICAL EXAMINATION HAS BEEN DONE

20. Summary Report and Conclusions of Physical Examination (Attach Medical Documentation)		
21. Laboratory Report	22. X-Ray	
23. Other (specify)	24. History or Physical Signs of Previous Abuse/Neglect ☐ YES ☐ NO	
25. Prior Hospitalization or Medical Examination for This Child		
DATES	**PLACES**	
26. Physician's Signature	27. Date	28. Hospital (if applicable)

The Michigan Department of Health and Human Services (MDHHS) does not discriminate against any individual or group because of race, religion, age, national origin, color, height, weight, marital status, genetic information, sex, sexual orientation, gender identity or expression, political beliefs or disability.	AUTHORITY: P.A. 238 of 1975. COMPLETION: Mandatory. PENALTY: None.

INSTRUCTIONS

GENERAL INFORMATION:
This form is to be completed as the written follow-up to the oral report (as required in Sec. 3 (1) of 1975 PA 238, as amended) and mailed to Centralized Intake for Abuse & Neglect. Indicate if this report was phoned into MDHHS as a report of suspected CA/N. If so, indicate the Log # (if known). The reporting person is to fill out as completely as possible items 1-19. Only medical personnel should complete items 20-28.

Mail this form to:
Centralized Intake for Abuse & Neglect
5321 28th Street Court, SE
Grand Rapids, MI 49546

OR

Fax this form to 616-977-8900 or 616-977-8050 or 616-977-1158 or 616-977-1154
OR
email this form to MDHHS-CPS-CIGroup@michigan.gov

1. Date – Enter the date the form is being completed.
2. List child(ren) suspected of being abused or neglected – Enter available information for the child(ren) believed to be abused or neglected. Indicate if child has a disability that may need accommodation.
3. Mother's name – Enter mother's name (or mother substitute) and other available information. Indicate if mother has a disability that may need accommodation.
4. Father's name – Enter father's name (or father substitute) and other available information. Indicate if father has a disability that may need accommodation.

5.-7. Child(ren)'s address – Enter the address of the child(ren).

8. Phone Number – Enter phone number of the household where child(ren) resides.
9. Name of alleged perpetrator of abuse or neglect – Indicate person(s) suspected or presumed to be responsible for the alleged abuse or neglect.
10. Relationship to child(ren) – Indicate the relationship to the child(ren) of the alleged perpetrator of neglect or abuse, e.g., parent, grandparent, babysitter.
11. Person(s) child(ren) living with when abuse/neglect occurred – Enter name(s). Indicate if individuals have a disability that may need accommodation.
12. Address where abuse / neglect occurred.
13. Describe injury or conditions and reason of suspicion of abuse or neglect – Indicate the basis for making a report and the information available about the abuse or neglect.
14. Source of complaint – Check appropriate box noting professional group or appropriate category.

Note: If abuse or neglect is suspected in a hospital, also check hospital.

15.-19 - Reporting person's name - Enter the name and address of person(s) reporting this matter.

DHS-3200 (Rev. 6-18) Previous edition may be used. 2

Crime Scene Management

Aliases: Crime scene preservation

1. Follow **General Pre-hospital Care Protocol-Treatment Protocol**
2. Preserve evidence whenever possible.
    A. Wear gloves for all patient care and other activities within the crime scene.
    B. Never cut through holes in clothing created by bullets or knives.
    C. Retain all clothing, place in a paper bag. Be alert for torn clothing, fragments of cloth, blood, or body fluids, etc. for they need to be preserved as evidence.
    D. Law enforcement is responsible for the disposition of this evidence.
    E. When transporting a patient who may be dying, ascertain name and/or description of assailant if possible.
    F. At an outdoor crime scene do not disturb shoe prints, tire marks, shell casings, etc.
    G. Limit movement at the crime scene.
    H. Attempt to keep others out of the area.
3. Advise patient to not shower, change clothes, or dispose of pertinent objects. If applicable, refer to **Sexual Assault-Treatment Protocol**.
4. Assess patient for injury and treat according to protocol.
5. Use sensitivity in asking victim about history/events.
6. Thoroughly document all injuries and voluntary statements of patient. Red marks may disappear and your documentation may be the only witness that the victim was choked or struck, even though he/she stated it.
7. Document patient's emotional state.
8. Assure law enforcement agency has been notified.
    A. Notify the investigating law enforcement of any alteration of the crime scene by EMS personnel including:
        a. Any movement of furniture, tables, etc.
        b. The original position of the patient and items.
        c. If you turned on lights.
        d. What you touched, moved, etc.
9. Transport, treating according to appropriate protocol.
    A. If transport is refused, refer patient to support agency and/or hospital whenever possible and contact medical control if applicable.

NOTES:

1. Your first duty is to provide emergency medical care at the scene of an illness/injury.
2. Certain measures can be taken to assist law enforcement personnel in preserving a crime without jeopardy to the patient.
3. The investigation of the circumstances surrounding the incident is the responsibility of the law enforcement agency.
4. Do not touch firearms (loaded or unloaded) unless it poses a potential or immediate threat. Secure any weapon that can be used against you or the crew out of the reach of the patient and bystanders.

Vulnerable Adult Abuse, Neglect, or Exploitation (Suspected)

Aliases: elder abuse, mandatory reporting

Purpose: To provide the process for assessment and management of vulnerable adult patients with suspicion of elder abuse.

I. Definitions

a. Vulnerable adult – means an individual age 18 and older who is unable to protect himself or herself from abuse, neglect or exploitation because of a mental or physical impairment or because of advanced age.
b. Abuse - means harm or threatened harm to an adult's health or welfare caused by another person. Abuse includes, but is not limited to, non-accidental physical or mental injury, sexual abuse, or maltreatment.
c. Exploitation - means an action that involves the misuse of an adult's funds, property, or personal dignity by another person.
d. Neglect - means harm to an adult's health or welfare caused by the inability of the adult to respond to a harmful situation or by the conduct of a person who assumes responsibility for a significant aspect of the adult's health or welfare. Neglect includes the failure to provide adequate food, clothing, shelter, or medical care.

   Note: A person shall not be considered to be abused, neglected, or in need of emergency or protective services for the sole reason that the person is receiving or relying upon treatment by spiritual means through prayer alone in accordance with the tenets and practices of a recognized church or religious denomination, and this act shall not require any medical care or treatment in contravention of the stated or implied objection of that person.

II. Procedure

a. Do not confront the suspected abuser with suspicions as this could create an unsafe situation for the patient and EMS personnel.
b. Do not question the patient about suspected abuse/maltreatment in front of the suspected abuser. The primary goal, after treating life threatening injuries, is to protect the patient and personnel from harm.
c. Request police assistance if there is any history of threatening, abusive, or violent acts. Protect yourself while obtaining a safe environment for the patient.
d. Focus the interview on the patient's injury. Do not address the specifics of abuse, maltreatment, or neglect at this point.
e. Determine and chart past medical history, and any cognitive or physical impairment.
f. During assessment, pay attention to signs and symptoms of abuse, neglect, or exploitation.
   i. Physical

1. Injury inconsistent with history provided
2. Delay in seeking care for injury
3. Lacerations, bruises, burns, or fractures in various stages of healing
4. Scald burns with demarcated immersion lines
5. Scald burns involving anterior or posterior half of extremity
6. Cigarette burns
7. Rope burns or marks
8. Potential over-sedation
9. Appearance of malnourishment

ii. Environmental
1. Patient confined to restricted space or position
2. Inadequate housing including:
   a. Hazardous situations
   b. Hoarding
   c. Squalor
3. Lack of facilities, such as heat or water
4. Restricted access or lack of adequate food and fluids

iii. Psychosocial
1. History of abuse provided by the patient
2. Conflicting reports of injury from patient and caregiver
3. Patient unable or unwilling to describe mechanism of injury
4. Inappropriate fear
5. Avoidance behavior
6. Disappearing from contact with neighbors, friends, or family
7. Inappropriate interaction with care giver

g. Treat patient according to appropriate protocol for their condition.
h. Transport patient according to MCA transportation protocol and transfer care to receiving facility. Discreetly notify the receiving health care provider of suspected abuse, maltreatment, or neglect.
i. Documentation of suspected abuse, neglect, or exploitation includes, but is not limited to:
   i. Pertinent history related to the presenting problems
   ii. Any statements of the patient pertaining to instances of rough handling, sexual abuse, alcohol or drug abuse by family members, verbal or emotional abuse, isolation or confinement, misuse of property or theft, threats, gross neglect such as restriction of fluids, food or hygiene
   iii. Excited utterances (spontaneous comments) should be documented verbatim (word for word)
   iv. Mental health of caregiver
   v. Any other suspicious findings

III. Other Indications of Exploitation

a. Oversight of finances surrendered to others without explanation or consent
b. Transferring assets to “new friends” assisting with finances
c. Unexplained or unauthorized changes to wills or other estate documents

d. Advance directives or other decisions being made by those who appear to have a conflict of interest
e. Patient does not understand current finances, offers improbable explanations
f. Unexplained disappearances of cash, valuable objects, or financial statements

IV. Mandatory Reporting

a. Michigan law (MCL 400.11a) requires a verbal report for suspected cases of abuse, neglect, or exploitation of a vulnerable adult to Michigan Department of Health and Human Services Centralize Intake for Abuse and Neglect at **855-444-3911.**
b. Reporting the suspected allegations of abuse, neglect, or exploitation to an organization does not fulfill the requirement to report directly Michigan Department of Health and Human Services Centralize Intake for Abuse and Neglect.

V. Special Considerations

a. If the patient is not transported, the suspected abuse must still be reported. Law enforcement may also be contacted, at the discretion of EMS providers.
b. Do not rely on someone else on scene of the incident to report.

Protocol Source/References: MCL 400.11

Continuous Positive Airway Pressure (CPAP) Administration

For use of this protocol, patients must meet one or more of the indications. Contraindicated patients and those that do not meet the inclusion criteria will be treated according to existing protocols without the application of CPAP.

Indications:
Severe respiratory distress not responding to initial treatment with any of the following:

1. CHF/Pulmonary edema/near drowning
2. Hypoxia, i.e., SpO2 less than 92% on supplemental oxygen.
3. Acute exacerbation of asthma/COPD.

Contraindications:

1. Respiratory/cardiac arrest.
2. Blood Pressure
    a. Adult (≥10 years of age) less than 90mmHg systolic
        i. NOTE: 70 + (2x10 years of age) = 90 mmHg
    b. Pediatrics (<10 years of age) less than (70 mmHg + [2x age in years]).
        i. Small adult CPAP mask does not properly fit the patient and/or pediatric size CPAP mask is not available.
3. Inability to maintain patent airway.
4. Major trauma, pneumothorax, penetrating or blunt chest trauma and blast injury.
5. Vomiting or active GI bleeding with emesis.
6. Unstable facial fractures.

Procedure

1. EXPLAIN THE PROCEDURE TO THE PATIENT.
2. Apply appropriately sized and properly sealing CPAP mask per manufacturer's recommendations.
3. Place the patient on continuous pulse oximetry.
4. Secure the mask with provided straps and tighten to obtain a good seal, check for air leaks.
5. Continue to coach the patient to keep the mask in place, readjust as needed.
6. Begin with 5 cmH20 with titration as necessary and as tolerated.
7. Advise medical control of CPAP use during radio report.
8. If respiratory status deteriorates, remove the device and assist ventilations with a BVM/supplemental oxygen; place an appropriate airway control device.
9. Obtain/monitor vital signs.
10. Administer medications, per appropriate protocol, as indicated**.**
    a. The CPAP mask can be briefly removed for oral or SL medication (e.g., nitroglycerin) administration.
11. Contact medical control and consider sedation to reduce anxiety per **Patient Procedural Sedation- Procedure Protocol.**

Discontinuing CPAP Therapy

1. CPAP therapy needs to be continuous and should not be stopped without Medical Control contact unless:
    a. Patient cannot tolerate the mask.
    b. Patient has marked deterioration including respiratory arrest.
    c. Patient has decreasing LOC.
    d. Pat has or is at risk for vomiting.
    e. It is determined to be clinically detrimental.

2. Assist ventilations as necessary and contact Medical Control regarding the discontinuation of CPAP therapy.

Special Notes:

1. For patients with a decreased level of consciousness, continuously closely monitor patient while on CPAP.
2. Upon arrival at receiving facility, do not remove CPAP until hospital therapy is ready to be placed on the patient.
3. Watch the patient for gastric distention.
4. CPAP may be used on DNR patients not in arrest.
5. Due to changes in cardiac preload and afterload during CPAP therapy, a complete set of VS must be obtained every 10 minutes (5 minutes in short transport situations).

Dead on Scene & Termination of Resuscitation

Aliases: DOA, DOS, Termination of Resuscitation

Purpose: For patients in cardiac arrest, when and when not to initiate CPR, and when to terminate efforts.

A. Dead on Scene Criteria - CPR should NOT be initiated in the following cardiac arrest patients:
   1. Decomposition
   2. Rigor mortis (Caution: do not confuse with stiffness due to cold environment)
   3. Dependent lividity
   4. Decapitation
   5. Traumatic cardiac arrest while entrapped (witnessed or unwitnessed)
   6. Incinerated or frozen body
   7. Submersion greater than 90 minutes in cold water (water temperature less than 70° F/21° C) as documented by the licensed health care professional after arrival on scene.
   8. Submersion greater than 30 minutes in warm water (water temperature greater than 70° F/21° C) as documented by the licensed health care professional after arrival on scene.
   9. Gross dismemberment or obvious mortal wounds/conditions (injuries inconsistent with life – i.e., crushing injuries of the head and/or chest)
   10. Unwitnessed arrest of traumatic origin, without organized electrical activity (must be asystole or pulseless rhythm with rate less than 40/min).
       i. Exception to this is electrocution (including lightning strike) or acute hypothermia.
   11. Patient has a valid "Do Not Resuscitate" identification bracelet or order refer to **DNR-Procedure Protocol**
   12. Patient has MI-POST with Do Not Resuscitate selected in section A refer to **MI POST-Procedure Protocol**
   13. In cases of mass casualty incidents, where the number of patients exceeds the providers and resources to care for them, any patient who is pulseless and apneic may be triaged as deceased.

B. Exceptions to Dead on Scene Criteria in which CPR should be initiated:
   1. In EMS professional judgement potential viability despite meeting Dead on Scene criteria.
   2. Pregnant patient arrest witnessed by either bystanders or EMS personnel
      i. Resuscitation and immediate transport to the closest receiving facility
      
      ii. Contact Medical Control as early as possible

C. For all other patients:
   1. Follow the **Adult or Pediatric Cardiac Arrest-Treatment Protocol**.

2. Medical cardiac arrest patients undergoing attempted resuscitation will not be transported unless return of spontaneous circulation (ROSC) is achieved.
    i. If the resuscitation cannot be safely performed on scene patient should be loaded into transporting unit and vehicle should be moved to closest appropriate area to continue resuscitation efforts
     ii. Contact Medical Control for special circumstances requiring early transport and document accordingly.
3. Patients will have resuscitation continued at the scene for at least 30 minutes.
     i. Contact Medical Control for special circumstances and document accordingly.
4. If ROSC is achieved see **Adult or Pediatric Return of Spontaneous Circulation-Treatment Protocol**

D. <u>Termination of Resuscitation if ROSC is NOT Achieved</u>

  1. ALS Termination of Resuscitation, after 30 minutes of ALS time contact Medical Control for:
    i. Consideration of termination of resuscitation for Asystole in all 3 leads or PEA with a rate of less than 40.
    ii. Consideration of termination and/or further orders/potential transport for PEA with a rate greater than 40 or persistent V Fib.

 2. BLS Termination of Resuscitation
    i. AHA Guidelines suggest that the following are reliable and valid criteria for BLS termination of resuscitation when **<u>ALL</u>** of the following apply:
        a. Arrest not witnessed by EMS personnel
        b. ROSC is not present after 20 minutes of high-quality CPR with an adequate airway.
        c. No AED shock was delivered by EMS personnel or prior to arrival.
     ii. Contact Medical Control for the following:
        a. Termination of efforts
        b. Further orders for on scene care/treatment
        c. Consideration of transport in extreme situations
3. The medical examiner system will be activated consistent with **Medical Examiner Notification and Body Disposition Protocol**
4. Prehospital personnel will provide information to the family which should include medical control procedures for termination of resuscitation when applicable.
5. The following must be documented
    a. Time of death as pronounced by physician
    b. Name of hospital and physician providing time of death
    c. Notification of law enforcement
    d. Gift of life status

Do-Not-Resuscitate

Aliases: DNR

Purpose: The purpose of this policy is to provide a guideline to prehospital providers, who under certain circumstances may accommodate patients who do not wish to receive and/or may not benefit from cardiopulmonary resuscitation. This policy is drafted in accordance with Public Act 368 of 1978, as amended, as well as Act 192 and 193 of the Public Acts of 1996. This policy is intended to facilitate kind, humane, and compassionate service for patients who have executed a valid "Do-not-resuscitate order" under the aforementioned Acts.

1. **Definitions**
   - A. Attending Physician – means the physician who has primary responsibility for the treatment and care of a declarant.
   - B. Declarant – means a person who has executed a do-not-resuscitate order, or on whose behalf a do-not-resuscitate order has been executed pursuant to applicable laws.
   - C. Do-not-resuscitate order – means a document executive pursuant to Act 193, directing that in the event a patient suffers cessation of both spontaneous respiration and circulation in a setting outside of a hospital, nursing home, or mental health facility owned or operated by the Department of Community Health, no resuscitation will be initiated.
   - D. Do-not-resuscitate Identification Bracelet or Identification Bracelet – means a wrist bracelet that meets the requirements of Act 193 and worn by a declarant while a do-not-resuscitate order is in effect.
   - E. Order – means a do-not-resuscitate order.
   - F. Patient Advocate – means an individual designated to make medical treatment decisions for a patient under Section 496 of the revised probate code, Act No. 642 of the Public Acts of 1978, being section 700.496 of the Michigan Compiled Laws.
   - G. Vital Sign – means a pulse or evidence of respiration.
   - H. MI-POST Michigan Physician Order for Scope of Treatment see **MI POST-Procedure Protocol**

2. **Procedure**

   A do-not-resuscitate order is applicable to all prehospital life support agencies and personnel. A do-not-resuscitate order may be executed by an individual 18 years of age or older and of sound mind **OR** by an individual 18 years of age or older and of sound mind, and adherent of a church or religious denomination whose members depend upon spiritual means through prayer alone for healing **OR** by a patient advocate of an individual 18 years of age or older.

   - A. CRITERIA: EMS providers **shall not attempt** resuscitation of any individual who meets **ALL** of the following criteria:
     - a. 18 years of age or older

b. Patient has no vital signs. This means no pulse or evidence of respiration.
c. Patient is wearing a do-not-resuscitate identification bracelet which is clearly imprinted with the words "Do-Not-Resuscitate Order", name and address of declarant, and the name and telephone number of declarant's attending physician, if any **OR** The EMS provider is provided with a do-not-resuscitate order for the patient. Such an order form shall be in substantially the form outlined in Annex 1 or 2 and shall be dated and signed by all parties.

B. A patient wearing a "do-not-resuscitate order" identification bracelet, or who has executed a valid "do-not-resuscitate order" form, **but who has vital signs, shall not be denied** any treatments or care otherwise specified in protocols.

C. If a do-not-resuscitate order form is presented and is not substantially in the form as outlined in Annex 1 or 2, or is not complete and signed by all parties, **resuscitation will be initiated** while Medical Control is being contacted for direction.

D. In the event care has been initiated on a patient, and subsequently a valid do-not-resuscitate order form is identified, and the patient meets the criteria in (2.A.) above, discontinue resuscitation and contact Medical Control.

E. A do-not-resuscitate order will not be followed if the declarant or patient advocate revokes the order. An order may be revoked at any time and in any manner by which the declarant or patient advocate is able to communicate this intent. **Resuscitation efforts will be initiated** and EMS personnel shall contact on-line Medical Control to advise them of the circumstances.

F. A patient care record will be completed for runs handled within this protocol. The patient care record will clearly specify the circumstances and patient condition found by the EMS providers, and describe the do-not-resuscitate documents involved.

Note: The forms included in this protocol are samples, and examples of what a DNR may look like and should include. A valid DNR form does not need to look like this, but must contain fundamentally these items.

"DO-NOT-RESUSCITATE ORDER"

I have discussed my health status with my physician _____. I request that in the event my heart and breathing should stop, no person shall attempt to resuscitate me.

This order is in effect until it is revoked by me.

Being of sound mind, I voluntarily execute this order, and I understand its full import.

_____ _____
(**Declarant's signature**) (Date)

_____
(Type or print declarant's full name)

_____ _____
(**Signature of person who signed for declarant, if applicable**) (Date)

_____
(Type or print full name)

_____ _____
(**Physician's signature**) (Date)

_____
(Type or print physician's full name)

ATTESTATION OF WITNESSES

The individual who has executed this order appears to be of sound mind, and under no duress, fraud, or undue influence. Upon executing this order, the individual has (has not) received an identification bracelet.

_____ _____
(**Witness signature**) (Date) (**Witness signature**) (Date)

_____ _____
(Type or print witness's name) (Type of print witness's name)

This form was prepared pursuant to, and in compliance with, The "Michigan do-not-resuscitate procedure act".

ANNEX 1

"DO-NOT-RESUSCITATE ORDER"
Adherent of Church or Religious Denomination

I request that in the event my heart and breathing should stop, no person shall attempt to resuscitate me.

This order is in effect until it is revoked by me.

Being of sound mind, I voluntarily execute this order, and I understand its full import.

_____ _____
(**Declarant's signature**) (Date)

_____
(Type or print declarant's full name)

_____ _____
(**Signature of person who signed for declarant, if applicable**) (Date)

_____
(Type or print full name)

ATTESTATION OF WITNESSES

The individual who has executed this order appears to be of sound mind, and under no duress, fraud, or undue influence. Upon executing this order, the individual has (has not) received an identification bracelet.

_____ _____
(**Witness signature**) (Date) (**Witness signature**) (Date)

_____ _____
(Type or print witness's name) (Type of print witness's name)

This form was prepared pursuant to, and in compliance with,
The "Michigan do-not-resuscitate procedure act".

ANNEX 2

Electrical Therapy

Aliases: AED, Cardioversion, defibrillation, pacing

I. Precautions for all Electrical Therapy

1. Dry the chest-wall if wet or diaphoretic
2. Nitroglycerin paste should be removed; paddles should not be placed over nitroglycerin patches.
3. Avoid placing the paddles over a pacemaker or an implantable cardioverter defibrillator (ICD).
4. Ensure no provider or bystander contact with the patient or the pads during defibrillation.

II. Automatic External Defibrillation (AED)

1. Do NOT apply AED to patient with LVAD, go **LVAD-Procedure Protocol**.
2. The AED shall be applied only to patients found in cardiopulmonary arrest.
3. Interruptions to CPR should be kept to a minimum.
4. The AED should not be used on patients found lying on conductive surfaces or patients in moving vehicles.
5. For all patients, anterior/posterior placement of pads is preferred and should be used, if possible.
6. There are no age or weight limits for AED use.
7. In pediatric patients, attenuated pads should be used, if available. If adult pads are used in pediatric patients, pads must be placed in an anterior/posterior configuration.
8. The word “shock” instead of defibrillation shall be used in this section as devices utilize this verbiage.
9. Follow the **Adult or Pediatric Cardiac Arrest-Treatment Protocol** .
10. Stop CPR to analyze patient and shock once, if indicated.
11. Continue CPR immediately after the shock, or immediately if no shock is indicated and continue for 2 minutes (5 cycles) or when AED initiates analysis.
12. If no pulse, analyze the patient and repeat one shock, if indicated.
13. If patient converts to a non-shockable rhythm at any time, continue CPR until AED prompts to check the patient.
14. Should a patient who is successfully defibrillated arrest again, analyze the patient again.

III. Manual Defibrillation

1. Indications:
   A. Ventricular fibrillation
   B. Pulseless ventricular tachycardia
   C. Unstable irregular wide complex tachycardia
2. Technique:
   A. Turn defibrillator on.
   B. Apply defibrillator pads according to manufacturer specifications. For all patients, anterior/posterior placement of pads is preferred and should be used, if possible.

C. Charge defibrillator to energy level specified in appropriate protocol or according to manufacturer specifications.
D. Verify shockable rhythm.
E. Assure that no one is touching the patient.
F. Defibrillate patient.
G. Immediately initiate or resume CPR.
H. Repeat defibrillations at 2-minute intervals if the patient remains in a shockable rhythm per protocol.
I. Continue to treat the patient according to the appropriate protocol.
J. For refractory v-fib after 3 shocks, consider double sequential defibrillation per **Double Sequential Defibrillation-Procedure Protocol** (MCA Optional Protocol)

3. Precautions
   A. If visible muscle contraction of the patient did not occur, defibrillation did not occur, check equipment.
   B. If pediatric pads were used with an AED prior to ALS management, continue using AED or use ALS monitor with appropriate pads. Do not use attenuated pediatric AED pads with an ALS monitor.

IV. Synchronized Cardioversion

1. Indications: Hemodynamically unstable patient with the following rhythms:
   A. Regular Wide Complex Tachycardia (Presumed Ventricular Tachycardia).
   B. Narrow Complex Tachycardia (Supraventricular Tachycardia (SVT) or Atrial Fibrillation with a rapid ventricular response).
2. Contraindications: Heart rate < 150 unless ordered by Medical Control
3. Technique:
   A. Consider IV sedation per **Patient Procedural Sedation-Procedure Protocol.**
   B. Turn on defibrillator (monophasic or biphasic)
   C. Attach monitor leads to the patient and ensure proper display of the patient's rhythm.
   D. Turn SYNC on, assure that QRS complex is marked
   E. Apply defibrillator paddles/pads according to manufacturer specifications.
   F. Charge defibrillator to energy level specified in appropriate protocol or according to manufacturer specifications.
   G. Check Rhythm.
   H. Assure that no one is touching the patient.
   I. Cardiovert patient
   J. Recheck pulse and rhythm.
   K. If rhythm does not convert, repeat cardioversion according to the appropriate protocol.
   L. Recheck the "sync mode" after each synchronized cardioversion as many defibrillators default back to unsynchronized mode.
   M. If ventricular fibrillation occurs, deactivate synchronized mode and defibrillate.
4. Precautions
   A. Ensure sync mode has been selected.

B. In "sync" mode, the button(s) may need to be held until cardioversion is delivered per manufacturer's instructions. If cardioversion is not delivered the first time, repeat the sequence per manufacturer's instructions.
C. If a sinus rhythm is achieved by cardioversion, even briefly, and then reverts to previous rhythm, repeat the cardioversion at the same setting as was initially successful.

V. Transcutaneous Pacing (TCP)

1. Indications: Symptomatic Bradycardia with inadequate perfusion.
2. Technique:
   A. Monitor rhythm.
   B. Follow manufacturer's guidelines for pacing. For some monitors, ECG electrodes must be in place, along with pacing pads or combo-pads, in order for the pacer to function.
   C. Apply pacing electrodes per manufacturer's instructions.
   D. Consider sedation, per **Patient Procedural Sedation-Procedure Protocol.**
   E. If QRS complexes are present, select a lead in which the QRS is the most positive or upright (so machine can sense their presence).
   F. Set external pacemaker rate to 60 bpm to begin.
   G. Initiate pacing and increase milliamp (mA) output until evidence of capture has occurred.
   H. Increase at increments of 20 mA for unconscious patients and 5 mA for conscious patients.
      a. Use minimal mA needed for mechanical capture.
   I. Run a rhythm strip and save.
   J. Assure adequate electrical and mechanical capture.
      a. Electrical:
         1. Visible pacer spike immediately followed by wide QRS and broad T waves.
      b. Mechanical:
         1. Palpable Pulses, improved LOC; improved BP; improved patient color.
   K. If mechanical capture is not obtained, contact medical control. Perform CPR if appropriate.
3. Contraindications
   A. Wet environment
   B. Burns to the chest (relative)

VI. Special Considerations for Electrical Therapy:

1. Electrical therapy may not be successful in hypothermic patients.

Electrical Therapy
Double Sequential Defibrillation (MCA Optional Protocol)
Paramedic Only Protocol

Aliases: Dual sequential defibrillation

☑ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol.

MCAs will be responsible for maintaining a roster of the agencies choosing to participate and will submit roster to MDHHS

Note: Double sequential defibrillation is considered an "off-label" intervention that is supported by scientific evidence, including a large randomized controlled trial which reported improved outcomes with this technique compared to standard defibrillation and was not found to be damaging to defibrillators.[1] While not currently indicated in the manufacturers' instructions for use for defibrillators typically used in Michigan, it is not known to be specifically prohibited in the instructions for use.

I. Indications

1. Consider for refractory ventricular fibrillation or pulseless ventricular tachycardia where ≥ 3 defibrillations have been delivered (including AED)
   AND
2. Availability of second defibrillator (may include 1 semi-automatic AED)
   Do not delay defibrillation while awaiting second defibrillator

II. Contraindications

1. Rhythm other than refractory ventricular fibrillation/pulseless ventricular tachycardia
2. Three (3) or more defibrillations not delivered.
3. Unable to place 4 defibrillation pads on patient without overlap of pads.

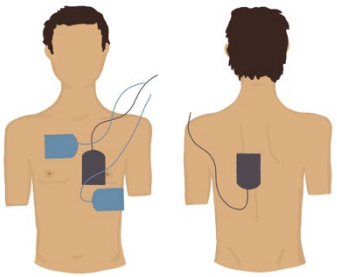
III. Procedure

1. Follow General Precautions per **Electrical Therapy-Procedure Protocol**
2. Ensure ongoing high-quality CPR that is interrupted only when absolutely necessary (and for ≤10 seconds) and anti-arrhythmic medication is

[1] Cheskes S, Verbeek PR, Drennan IR, McLeod SL, Turner L, Pinto R, Feldman M, Davis M, Vaillancourt C, Morrison LJ, Dorian P, Scales DC. Defibrillation Strategies for Refractory Ventricular Fibrillation. N Engl J Med. 2022 Nov 24;387(21):1947-1956. doi: 10.1056/NEJMoa2207304. Epub 2022 Nov 6. PMID: 36342151.

administered per Cardiac Arrest protocol.

3. Prepare sites for second pad set attachment and apply defibrillation pads as per the VF/VT protocol.
   A. Defibrillator 1: Pads in anterior/posterior (AP) position, with anterior pad just to patient's left of sternum (brown pads in diagram)
   B. Defibrillator #2: Pads in anterior/lateral (AL) position, with anterior pad to patient's right of sternum and lateral pad at the patients left anterior axillary line (blue pads in diagram)



   C. Consideration for pad placement – Assure optimal contact.
      1) Shave excessive chest/back hair, as needed.
      2) Assure pads are firmly in place.
      3) Ensure pads are not in contact with one another.
      4) For patients with implanted pacers/defibrillators, avoid placing paddles or pads directly above device.
4. Set the appropriate energy level and assure controls for both defibrillators are accessible to **single paramedic performing defibrillation**.
5. Charge the defibrillators to the selected energy level;
   A. Continue chest compressions while the defibrillator is charging (may be limited if AED).
   B. If second defibrillator is an AED, allow the AED to analyze rhythm and charge while manual defibrillator charging, continuing chest compressions, as AED device permits.
6. When both defibrillators have reached selected energy setting:
   A. Assure that no one is touching the patient.
   B. Defibrillate patient with **single paramedic depressing the "shock" button in rapid sequence with short delay (<1 second) between shocks.** If AED used, AED shock should be delivered first)
   C. Immediately resume chest compressions.
   D. Repeat defibrillations at 2-minute intervals if the patient remains in a shockable rhythm per protocol.
   E. Continue to treat the patient according to the appropriate protocol.

IV. Documentation

1. Document as 2 defibrillations within the procedures (same time)
2. The words 'double sequential' or 'dual sequential' must be included in the narrative.

V. QI/QA Process

1. A 100% of the calls utilizing this protocol will be reviewed by the MCA.

Airway Management

MCA'S are responsible for training on all airway devices, techniques, securing methods and documentation. All pediatric advanced airway interventions will have a 100% review by the MCA. All cricothyroidotomy procedures will have a 100% review by the MCA.

	MFR	EMT	EMT-A (Specialist)	PARAMEDIC
Basic Airway				
Oropharyngeal Airway	X	X	X	X
Nasopharyngeal Airway	X	X	X	X
Bag-Valve-Mask Ventilation	X	X	X	X
Oral Suctioning	X	X	X	X
CPAP		X	X	X
Advance Airway-Supraglottic				
i-Gel (Adult sizes)	MCA Selection Required	X	X	X
i-Gel (Pediatric sizes)				X
Air-Qsp3 or AirQsp3G (Adult sizes only patients > 35 kg)		X	X	X
LMA Supreme (Adult sizes ONLY)		X	X	X
King (Adult sizes ONLY)		X	X	X
Advance Airways Paramedic Only				
Oral Endotracheal Intubation				X
Needle / Surgical Cricothyroidotomy				MCA Selection Required
Tracheal Suctioning				X
Monitoring				
Waveform capnography		MCA Selection Required	X	X
Numeric capnometry		X	X	X
Colorimetric capnometry	X	X	X	X

Management Overview

1. Maintain a patent airway
2. Provide effective oxygenation and adequate ventilation using the least invasive possible method to achieve those goals paired with pulse oximetry and end-tidal capnography (EtCO2) data
3. Anticipate, recognize, and alleviate respiratory distress
4. Provide necessary interventions quickly and safely to patients with the need for respiratory support
5. Anticipate, identify, and plan for a potentially difficult airway
6. Optimize the patient for any advanced airway attempt

Indications

1. Airway obstruction
2. Need for positive pressure ventilation
   a. Respiratory or cardiac arrest (including agonal respirations)
   b. Respiratory failure (inadequate respiratory rate/volume)
3. Airway protection, such as an unconscious patient without a gag reflex.
4. Trauma patient with a Glasgow Coma Score of 8 or less.
5. Patients with signs of severe respiratory distress/respiratory failure
6. Patients with evidence of hypoxemia or hypoventilation with medical or traumatic etiology

Contraindications

1. Presence of a gag reflex may be a contraindication to some specific airway interventions.
2. Specific supraglottic airways may have contraindications due to caustic ingestion or known esophageal varices.

Pediatrics

1. Pediatric patients should not be intubated UNLESS efforts to manage the airway from least invasive methods (OPA, NPA, BVM) to more invasive airways (supraglottic airways) are ineffective.
2. Refer to MI MEDIC cards for device sizes.

AIRWAY MANAGEMENT
(Basic Airway Management)

1. In cases of foreign body airway obstruction, refer to **Foreign Body Airway Obstruction-Treatment Protocol.**
2. Patients with significant respiratory distress should have continuous pulse oximetry.
3. Patients with significant respiratory distress should have waveform capnography monitoring for both assessment and for guiding therapy.
4. UNCONSCIOUS PATIENTS
   a. When the airway is not self-maintained, open the airway using basic maneuvers (chin lift or jaw thrust). Patients with a potential cervical spine injury should have a modified jaw thrust performed attempting to minimize neck flexion and extension.
   b. Perform oral pharyngeal suctioning as needed to remove body fluids and minimize risk of aspiration. When possible, suctioning should be limited to no more than 15 seconds and should not extend beyond the pharynx.
   c. In unconscious patients without a gag reflex, insert a properly sized oropharyngeal airway. Immediately remove upon return of gag reflex.
   d. In unconscious patients with gag reflex, consider insertion of a properly sized nasopharyngeal airway, using water-soluble lubrication when available.
5. CONSCIOUS PATIENTS
   a. CPAP should be considered early for patients with severe respiratory distress that do not improve with supplemental oxygen administration (see **Oxygen**

Administration – Procedure Protocol) in accordance with the **CPAP-Procedure Protocol**

(Positive Pressure Ventilation)

6. In patients requiring bag-valve-mask ventilations, consider inserting both oral and nasopharyngeal airways to optimize ventilations.
7. For patients with respiratory arrest or significant respiratory depression (e.g., adult patient with respiratory rate less than 8 per minute) perform bag-valve-mask (BVM) ventilations.
    a. Note: BVM ventilations should be performed by 2 rescuers whenever possible. Use supplemental oxygen and reservoir system, focusing on adequate chest rise and ventilations that are not too forceful.
8. Ventilate at an appropriate rate. Avoid hyperventilation. Generally appropriate rates for ventilation are:
    a. Adults >8 y/o 10 breaths / minute
    b. Children 1-8 y/o 20 breaths / minute
    c. Infants < 1 y/o 25 breaths / minute
9. A pocket mask or face shield is an acceptable alternative for single rescuer ventilations.
10. When caring for patients with stomas, use pediatric masks over the stoma to achieve seal.
11. For patients with a tracheostomy tube and home ventilator connect BVM (without mask) directly to tracheostomy tube and ventilate at appropriate rates.

(Advanced Airway)

12. Use of sedation to facilitate advanced airway placement is prohibited.
13. In the adult patient (> 14 years of age), providers may consider continuing basic airway management techniques (instead of advanced airway) if the airway is able to be maintained adequately.
14. In the pediatric patient (≤ 14 years of age), providers must continue basic airway management, unless the airway is unable to be adequately maintained at which time the provider must move to an advanced airway.
15. Advanced Airways must be:
    a. Placed in accordance with manufacturer's instructions and/or MCA approved training.
    b. Confirmed by positive end-tidal CO_2. Refer to **End Tidal Carbon Dioxide Monitoring-Procedure Protocol**
    c. Confirmed by auscultation for absence of gastric sounds and presence of bilateral lung sounds.
        i. Additional clinical findings consistent with a properly placed advanced airway include chest expansion, improvement in patient's color, and improvement in pulse oximetry.
    d. Re-confirmed at frequent intervals throughout the care of the patient, and after each patient movement.

16. Advanced Airways **MUST** have the following documented:

DEVICE SPECIFICS/PLACEMENT	CONFIRMATION	ADDITIONAL
Type of Device: ET/King/i-gel, etc., specify make of device when more than one option approved in the MCA (e.g., Air-Qsp3 vs AirQsp3G)	Type of end tidal CO2 monitoring used: (waveform capnography, numeric only capnometry, colorimetric capnometry)	Method for securing device
Size of Device	Serial readings of capnography/capnometry	Any complications encountered
Visualization of vocal cords (ET only)	Chest rise with ventilation	Gastric decompression if applicable
Number of attempts to place device	Equality of lung sounds	Tracheal suctioning if applicable
Tube measurement (cm) at teeth for ET and all other devices with measurement markings	Absence of epigastric sounds	
Which tube used for ventilation (Combitube)	Ventilation compliance	

17. Supraglottic Airways (SGA) (may be MFR skill per MCA selection)
    a. Each MCA must select at least one state-authorized supraglottic airway for use in their system.
    b. MCAs are responsible for training for all airway devices selected.
        i. Training MUST include:
            1. Procedures, indications, contraindications and securing for the specific device.
        ii. Training must be submitted to MDHHS.
    c. MCAs selecting more than one supraglottic airway device must maintain and submit to MDHHS, a roster of agencies utilizing non-primary devices.
        i. A roster of all MFR agencies utilizing i-Gels (regardless if primary MCA SGA) must be maintained by the MCA and submitted to MDHHS.

MCA Selection of SGA Device (Must select at least one and a primary)

Primary MCA SGA	Allowable MCA SGA	
Select ONLY ONE	Select AT LEAST ONE	
◉	☑	i-Gel
☐		☑ MFR use of i-Gel
○	☑	Air Qsp3/Air Qsp3G
○	☑	King
○	☑	Combitube
○	☐	LMA Supreme

18. Orotracheal Intubation under direct laryngoscopy should be considered when less invasive methods are ineffective, or inappropriate.
    a. Adult patients (> 14 years of age) who do not have a gag reflex, are unable to protect their own airway, require sustained positive pressure ventilation, or are in cardiac arrest.
    b. Pediatric patient (≤ 14 years of age) **MUST** meet **ALL** the following criteria:
        i. Do not have a gag reflex and are unable to protect their own airway.
        ii. Require sustained positive pressure ventilation and all basic airway techniques have been exhausted or proven inadequate (2-person mask ventilation with oropharyngeal airway and/or nasopharyngeal airway, suctioning)
        iii. Supraglottic airway is unavailable or has been attempted and proven ineffective.
    c. Pediatric patient (<14 years of age) refer to MI MEDIC cards for airway device sizes.
19. Deep tracheal suctioning may be performed when indicated using sterile technique and suctioning only during withdrawal of catheter.
    a. Maximum suction time:
        i. Adult patients > 14 years of age: maximum 10 seconds
        ii. Pediatric patients ≥ 1 year of age and ≤ 14 years of age: maximum 10 seconds
        iii. Pediatric patients< 1 year of age): maximum 5 seconds

20. Needle and/or other cricothyroidotomy procedure (per MCA selection) may be performed when:
    a. Airway compromise from injury is present that prevents ventilation with basic techniques and makes supraglottic airway insertion or orotracheal intubation impractical.
    b. The patient needs immediate airway management.
    c. A complete airway obstruction that cannot be corrected by any other means (see **Foreign Body Airway Obstruction – Treatment Protocol**)

(Cricothyroidotomy per MCA Selection)

- ○ NO Cricothyroidotomy
- ◉ Cricothyroidotomy (select all that apply below)
    - ☑ Surgical cricothyroidotomy
    - ☑ Needle cricothyroidotomy
    - ☑ MCA approved commercial percutaneous cricothyroidotomy device

21. Sedation for tube tolerance following successful tube placement may be indicated in accordance with the **Patient Procedural Sedation-Procedure Protocol.**

Helmet Removal

Treatment of the injured patient with protective gear presents unique challenges. For preplanned events an emergency action plan that has been discussed prior to the event may provide organized consistent treatment.

1. High Impact Helmets (i.e., motorcycle, car racing)
   A. Whether the helmet is a closed or open-faced style helmet, the helmet must always be removed.
   B. Provide constant spinal precautions.

2. Low Impact Helmets WITH Shoulder Pads (i.e., football, ice hockey, etc.)
   A. In those patients wearing a well-fitted helmet which conforms closely to the patient's head, **unless there is a prearranged agreement between team training/medical staff, EMS providers and the likely receiving facility**, helmet and shoulder pads should be removed as spinal precautions are maintained. Removal of all equipment at the scene provides the best access to the athlete for treatment.
   B. If prearrangement is in place to keep the helmet and shoulder pads in place the procedure would be as follows (or as determined by agreement):
      1. If the patient is awake and able to protect his/her airway, the helmet should be left in place and the patient should have spinal precautions maintained using the helmet to assist with spinal precautions. The face shield must be removed prior to transport.
      2. If the patient has an altered level of consciousness or, for any other reason, is unable to protect his/her airway, the helmet should be left in place and the patient should have spinal precautions maintained using the helmet to assist with spinal precautions. The face shield should be immediately removed to allow access to the airway.
      3. If the face shield cannot easily be removed for any patient, the helmet and shoulder pads should be removed using in-line stabilization.
      4. If the airway cannot be controlled for any reason with the helmet in place, the helmet and shoulder pads should immediately be removed, using in-line stabilization.

3. Low Impact Helmets WITHOUT Shoulder Pads (i.e., baseball, bicycle, rollerblade, etc.):
   A. Whether the helmet is a closed or open-faced style helmet, the helmet must always be removed.
   B. Provide constant spinal precautions.

Oxygen Administration

Assuring adequate patient oxygenation is a fundamental responsibility of EMS providers at all levels. Supplemental oxygen when clinically indicated and through the proper delivery system can have an important impact on patient outcome.

Indications

1. Real or suspected hypoxia
2. Patients in respiratory or cardiac arrest
3. Respiratory distress
4. Chest pain, stroke, seizures, or altered mental status when pulse oximetry is unavailable or when oxygen saturation is less than 94%
5. General trauma (more than isolated trauma). Regardless of pulse oximeter reading, all patients with significant trauma should receive oxygen administration.
6. Shock
7. Suspected carbon monoxide and/or cyanide poisoning (including smoke inhalation) regardless of pulse oximetry value
8. Complicated childbirth
9. Patients who normally use supplemental oxygen as part of their routine care
10. Any condition in which pulse oximetry (when available) is <94%.

Contraindications

1. There are no absolute contraindications to oxygen administration.
2. In general, supplemental oxygen should be guided by pulse oximetry (when available) to maintain oxygen saturations ≥94%.
3. Patients with COPD may develop a hypoxic drive to breath. High concentrations of oxygen may suppress their respiratory drive. Oxygen should still be administered when clinically indicated. Providers should monitor for respiratory depression and assist ventilations when indicated.

Procedure

1. Assure the patient has an adequate airway or establish an airway in accordance with the **Airway Management-Procedure Protocol** and whenever possible the patient's head should be elevated up to 30 degrees**.**
2. In spontaneously breathing patients administer supplemental oxygen by appropriate means.
    A. Nasal cannula at 2-6 LPM: This is appropriate for most patients with mild to moderate hypoxia and minimal or no respiratory distress. Most patients tolerate nasal cannulas.
    B. Non-rebreather (NRB) mask at 8-15 LPM (adjust flow rate to keep reservoir bag inflated). A NRB should be used on all spontaneously breathing patients with moderate to severe respiratory distress and all patients with suspected carbon monoxide and/or cyanide poisoning (e.g., smoke inhalation).
    C. If continuous positive airway pressure (per **CPAP-Procedure Protocol**) is utilized, using a nasal cannula to supplement oxygenation while a patient is on CPAP is acceptable, if seal remains adequate.

3. In patients not breathing or breathing inadequately
    A. Use a bag-valve-mask with two rescuers when available to provide ventilations with oxygen connected at 15 LPM. See **Airway Management-Procedure Protocol.**
        i. Maintain face seal with one rescuer with two hand technique.
        ii. Utilize second rescuer to ventilate every six seconds.
    B. Passive oxygenation via nasal cannula may be used to augment bag-valve-mask ventilations before advanced airway placement.
4. Augment rapid but ineffective respiration with BVM and/or CPAP as applicable.
5. Pediatric “blow-by” oxygen is an ineffective means of delivering supplemental oxygen to pediatric patients and should be avoided when possible. Pediatric nasal cannulas are well tolerated by most children. When using, blow-by technique, keep mask as close to face as possible and use high flow (e.g., ~15 LPM).
6. When caring for patients with stomas, use pediatric size masks.

Pain Management

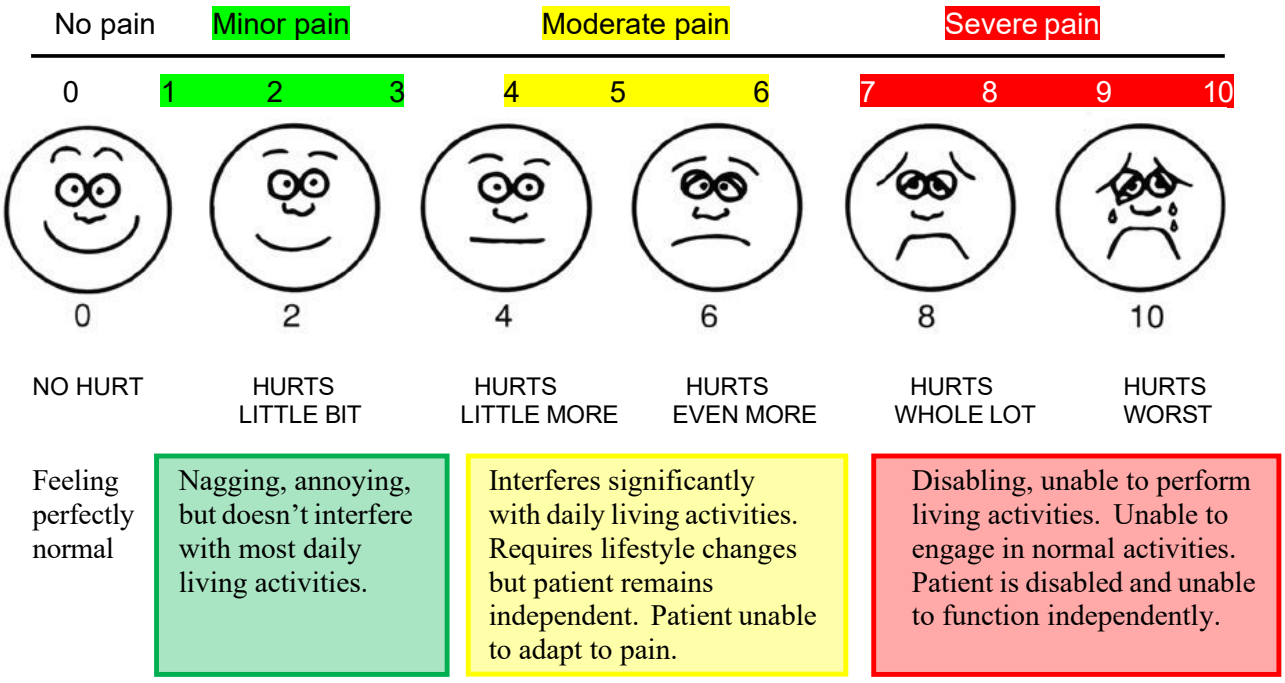
Aliases: Analgesia, pain control, acute pain

For patients with suspected cardiac chest pain, refer to the **Chest Pain/Acute Coronary Syndrome-Treatment Protocol.**

The goal is to reduce the level of pain for patients in the pre-hospital setting.

All pain should be assessed and scored according to the "Wong Pain Scale". Reassessment should be timed according to medication onset of action, changes in patient condition, patient positioning and other treatments. Pain treatment should be based on pain scale but may need modification based on patient assessment or condition being treated.

Wong Pain Scale: Pain Assessment Scale
Choose a number from 1 to 10 that best describes your pain



Note: Medical Control contact is required for patients with labor pains, established care plans that deter opioid pain management, or have established pain management care plans.,

1. Place the patient in the position of comfort.
2. Pediatric patients (≤ 14 years) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol
3. Verbally reassure the patient to control anxiety.

4. Administer BLS interventions per applicable protocol (e.g., positioning, splinting, ice, etc.)
5. If not improved with BLS intervention, consider analgesia.
6. Start an IV if required for medication administration or per applicable treatment protocol being followed. **Vascular Access & IV Fluid Therapy-Procedure Protocol**.
7. Per MCA selection, for mild to moderate pain (described as 1-6 on the Wong Pain Scale), consider non-opioid analgesia.

MCA Selected Non-Opioid Analgesia
(MCA must select at least one)

☑ **Acetaminophen**:
1. Adults (patients > 14 years of age), administer 650 mg PO
2. Pediatrics refer to MI MEDIC cards. When MI MEDIC cards are unavailable refer to dosing table below.

☑ **Ibuprofen**
1. Adults (patients > 14 years of age), administer 400 mg.
    a. Do NOT use in pregnant patients.
2. Pediatrics (patients > 6 months of age and ≤ 14 years of age), refer to MI MEDIC cards. When MI MEDIC cards are unavailable refer to dosing table below.

☑ **Ketorolac** (Toradol ®)
1. Adults (patients >14 years of age), administer 15 mg IM/IV
    a. Do NOT use in pregnant patients
2. Pediatrics (patients > 5 years of age and ≤ 14 years of age refer to MI MEDIC cards. When MI MEDIC cards are unavailable:
    a. administer 1 mg/kg IM/IV (max dose 15 mg)

Children's Elixir Dosing Table			
Child's Weight	Child's Age	**Acetaminophen** 160 mg/5mL	**Ibuprofen** 100 mg/5mL
3-5 kg (6-12 lbs.)	0-2 mos.	1.25 mL (40 mg)	DO NOT GIVE
6-7 kg (13-16 lbs.)	3-6 mos.	3 mL (96 mg)	DO NOT GIVE
8-9 kg (17-20 lbs.)	7-10 mos.	4 mL (128 mg)	4 mL (80 mg)
10-11 kg (21-25 lbs.)	11-18 mos.	5 mL (160 mg)	5 mL (100 mg)
12-14 kg (26-31 lbs.)	19 mos.-35 mos.	6 mL (192 mg)	6 mL (120 mg)
15-18 kg (32-40 lbs.)	3-4 yrs.	7 mL (224 mg)	7.5 mL (150 mg)
19-23 kg (41-51 lbs.)	5-6 yrs.	9 mL (288 mg)	9.5 mL (190 mg)
24-29 kg (52-64 lbs.)	7-9 yrs.	12 mL (384 mg)	13 mL (260 mg)
30-36 kg (65-79 lbs.)	10-14 yrs.	15 mL (480 mg)	15 mL (300 mg)

8. For patients with suspected kidney stone pain of any score, **ketorolac** should be considered first line if available.
9. For patients with severe pain (described as 7 or greater on the Wong Pain Scale), consider **ketamine** if applicable per MCA selection.

MCA Selection for **ketamine** use in pain management

☐ **Ketamine** not permitted.

☐ Contact Medical Control prior to **ketamine** administration

☑ Administer **ketamine**

10. **Ketamine** may be administered IV/IO/IN as outlined below.
    a. **Ketamine** for pain management given IV/IO should be diluted.
        i. Dilution: the patient specific dose mixed with 100 ml **NS** and administer via slow infusion over 5-10 minutes to avoid dissociation symptoms.
    b. Administer **ketamine** IV/IO/IN
        i. Adults (patients > 14 years of age)
            1. 0.2 mg/kg IV/IO (diluted) maximum single dose 25 mg
            2. 0.5 mg/kg IN (undiluted) maximum single dose 50 mg
            3. May repeat after 10 minutes.
        ii. Pediatrics (> 6 years of age and ≤ 14 years of age) refer to MI MEDIC cards. If MI MEDIC cards are unavailable follow below.
            1. 0.2 mg/kg IV/IO (diluted) maximum single dose 7.2 mg
            2. 0.5 mg/kg IN (undiluted) maximum single dose 18 mg
            3. May repeat after 10 minutes.

iii. Pediatrics (> 6 months of age and ≤ 6 years of age) refer to MI MEDIC cards. If MI MEDIC cards are unavailable follow below.
   1. 0.5 mg/kg IN (undiluted) maximum single dose 18 mg
   2. May repeat after 10 minutes.

11. For patients with refractory pain after **ketamine** administration, contact Medical Control prior to opioid administration.

12. If a patient is unable to tolerate **ketamine** or **ketamine** is not available and the patient has significant pain (described as 7 or greater on the Wong Pain Scale), opioid analgesia may be administered per MCA selection.
   a. Patients should receive only one opioid medication.
   b. If an IV is not available a single dose of opioid may be given IM.
   c. Do not administer additional pain medications after IM administration without on-line medical direction.

MCA Selected Opioid Analgesia
(Must select at least one)

☐ **Morphine**
1. Adults (patients > 14 years of age), administer 0.1 mg/kg IV/IO (maximum single dose 5 mg). May repeat three times. Total dose may not exceed 20 mg.
2. Pediatrics (patients > 18 months of age and ≤ 14 years of age), refer to MI MEDIC cards. When MI MEDIC cards are unavailable administer:
   a. 0.1 mg/kg IV/IO (maximum single dose 5 mg). May repeat three times. Total dose may not exceed 20 mg.
3. Do NOT administer Morphine to children ≤ 18 months of age.

✓ **Fentanyl**
1. Adults (patients > 14 years of age and ≤ 65 years of age) administer 1 mcg/kg IV/IO/IN, max single dose 100 mcg, may repeat one time. Total dose may not exceed 200 mcg.

Adults > 65 years of age administer 0.5 mcg/kg IV/IO/IN, max single dose 50 mcg, may repeat three times. Total dose may not exceed 200 mcg.

Pediatrics (patients ≤ 14 years of age), refer to MI MEDIC cards. When MI MEDIC cars are unavailable administer:
   a. 1 mcg/kg IV/IO/IN

If an IV is not available a single dose of opioid may be given IM. DO NOT ADMINISTER ADDITIONAL PAIN MEDICATIONS after IM administration without on-line medical direction.

13. Administer opioids slowly when using IV or IO routes. Systolic BP should be maintained at >100 mm Hg for adult patients and > 80 + (2 x age) mm Hg for pediatric patients.

14. If nausea develops with pain medication administration, refer to **Nausea and Vomiting-Treatment Protocol**
15. For patients with evidence of hypotension or hypoperfusion, contact Medical Control

Medication Protocols
Acetaminophen
Fentanyl
Ibuprofen
Ketamine
Ketorolac
Morphine

Patient Assessment

Scene Size Up and General Impression

1. Recognize environmental hazards to rescuers, and secure area for treatment.
2. Recognize hazard for patient and protect from further injury.
3. Identify number of patients. Follow the **Mass Casualty Incident-Special Operations Protocol** if appropriate.
4. Observe position of patient, mechanism of injury, surroundings.
5. For pediatric patients, utilize the Pediatric Assessment Triangle.
6. Identify self.
7. Utilize universal precautions in all protocols.
8. Determine if patient has a valid Do-not-resuscitate bracelet/order or a valid MI POST.

Primary Survey

1. Airway:
    A. Protect spine from movement in trauma victims. Provide continuous spinal precautions. Follow the **Spinal Injury Assessment-Treatment Protocol**.
    B. Observe the mouth and upper airway for air movement.
    C. Establish and maintain the airway. Follow the **Airway Management-Procedure Protocol.**
    D. Look for evidence of upper airway problems such as vomitus, bleeding, facial trauma, absent gag reflex.
    E. Clear upper airway of mechanical obstruction as needed.
2. Breathing: Look, Listen and Feel
    A. Note respiratory rate, noise, and effort.
    B. Treat respiratory distress or arrest with oxygenation and ventilation.
    C. Observe skin color and level of consciousness for signs of hypoxia.
    D. Expose chest and observe chest wall movement, as appropriate.
    E. Look for life-threatening respiratory problems and stabilize.
    F. Tension pneumothorax: Follow **Pleural Decompression-Procedure Protocol.**
3. Circulation
    A. Check pulse and begin CPR if no central pulse. Follow **Pediatric or Adult Cardiac Arrest-Treatment Protocol** or **Newborn and Neonatal Assessment and Resuscitation-Treatment Protocol**.
    B. Note pulse quality and rate; compare distal to central pulses as appropriate.
    C. Control hemorrhage by direct pressure. (If needed, use elevation, pressure points or follow the **Tourniquet Application-Procedure Protocol** and/or **Bleeding Control-Treatment Protocol.**)
    D. Check capillary refill time in fingertips.
    E. If evidence of shock or hypovolemia begin treatment according to **Shock-Treatment Protocol.**
4. Level of consciousness:
    A. Note mental status (AVPU)
        a. Alert
        b. Verbal stimuli response
        c. Painful stimuli response

d. Unresponsive

B. Measure Glasgow Coma Scale

Patient age > 2 years old		Patient age < 2 years old

Eye opening

Spontaneous	4	Spontaneous
To speech	3	To speech
To Pain	2	To Pain
No response	1	No response

Verbal response

Oriented and talking	5	Smiles, recognizes sounds, follows objects, interacts
Disoriented and talking	4	Cries, consolable, inappropriate interactions
Inappropriate words	3	Inconsistently inconsolable, moaning
Incomprehensible sounds	2	Agitated, restless, inconsolable
No response	1	No response

Motor response

Obeys command	6	Spontaneous movement
Localizes pain	5	Withdraws from touch
Withdraws to pain	4	Withdraws from pain
Flexion to pain	3	Abnormal flexion to pain (decorticate posturing)
Extension to pain	2	Abnormal extension to pain (decerebrate posturing)
No response	1	No response

Any combined score of less than eight represents a significant risk of mortality.

If the patient is not alert and the cause is not immediately known, consider:

A – Alcohol
E – Epilepsy
I – Insulin
O – Overdose
U – Uremia
T – Trauma
I – Ingestion
P – Psych
P – Phenothiazine
S – Salicylates
C – Cardiac
H – Hypoxia
E – Environmental
S – Stroke
S - Sepsis

5. The secondary survey is performed in a systematic manner.

(Steps listed are not necessarily sequential.)

A. Vital Signs:
   a. Frequent monitoring of blood pressure, pulse, and respirations
   b. Temperature as appropriate and as indicated in protocol.
   c. Blood glucose measurement as appropriate and as indicated by protocol. (May be MFR sill, see **Blood Glucose Testing-Procedure Protocol**).
   d. Pulse oximetry as appropriate and as indicated by protocol.
   e. ECG monitoring as appropriate and as indicated in protocol.
   f. 12 Lead as appropriate and as indicated by protocol (Per MCA selection, may be a BLS or Specialist procedure) follow **12 Lead ECG-Procedure Protocol**.
   g. Monitor capnography as appropriate and as indicted by protocol (refer to **End Tidal Carbon Dioxide Monitoring-Procedure Protocol**

B. Head and Face
   a. Observe and palpate for deformities, asymmetry, bleeding, tenderness, or crepitus.
   b. Recheck airway for potential obstruction: upper airway noises, dentures, bleeding, loose or avulsed teeth, vomitus, or absent gag reflex.
   c. Eyes: pupils (equal or unequal, responsiveness to light), foreign bodies, contact lenses, or raccoon eyes
   d. Ears: bleeding, discharge, or bruising behind ears.

C. Neck
   a. Maintain spinal precautions; follow the **Spinal Precautions-Procedure Protocol**, if appropriate.
   b. Check for deformity, tenderness, wounds, jugular vein distention, and use of neck muscles for respiration, altered voice, and medical alert tags.

D. Chest
   a. Observe for wounds, air leak from wounds, symmetry of chest wall movement, and use of accessory muscles.
   b. Palpate for tenderness, wounds, crepitus, or unequal rise of chest.
   c. Auscultate for bilateral breath sounds.
   d. Capnography/capnometry according to protocol

E. Abdomen
   a. Observe for wounds, bruising, distention, or pregnancy.
   b. Palpation.

F. Pelvis
   a. Palpate pelvis for tenderness and stability

G. Extremities
   a. Observe for deformity, wounds, open fractures, and symmetry.
   b. Palpate for tenderness and crepitus.
   c. Note distal pulses, skin color, and medical alert/DNR tags.
   d. Check sensation.
   e. Test for motor strength if no obvious fracture present.

H. Back
   a. Observe and palpate for tenderness and wounds.

Special Considerations:

1. If there is a specific mechanism of injury with only localized injury, a focused exam may be performed in lieu of the full patient survey provided the patient is alert.
2. Follow the appropriate protocol, per patient condition:
    A. **General Pre-hospital Care-Treatment Protocol**
    B. **Newborn and Neonatal Assessment and Resuscitation Treatment Protocol**
    C. **Cardiac Arrest-Treatment Protocol**
    D. **Pediatric Cardiac Arrest-Treatment Protocol**
    E. **General Trauma-Treatment Protocol**
    F. **Spinal Precautions-Procedure Protocol**
    G. **Crashing Adult/Impending Arrest-Treatment Protocol**
    H. **Crashing Pediatric Patient/Impending Arrest-Treatment Protocol**

Documentation and Patient Care Records

Purpose: Patient care records (PCR) are legal documents and a part of a patient's medical record. EMS Personnel must be accurate and thorough in their documentation of EMS incidents. This protocol defines the MINIMUM elements to be included in a patient care record.

I. Completion of records
   A. An electronic EMS PCR must be completed on any request for service to which a life support agency (per MCA selection):

☑ is dispatched
☐ arrives on scene

   Regardless of MCA selection, this includes all emergency and non-emergency EMS incidents and patients, ambulance inter-facility transfers, patient refusals, other patient contact, no patient found and cancellations.
   B. For responses that do not necessitate an EMS PCR, an alternative form of electronic documentation must be maintained (e.g., computer aided dispatch).
   C. If a patient is evaluated and/or treated and is not transported, a Refusal of Treatment and/or Transport Evaluation Form must be completed and a patient signature obtained per **Refusal of Care; Adult & Minor-Procedure Protocol**.
   D. Personnel completing PCRs must do so in a timely fashion. If an electronic record is not transmitted immediately upon leaving the receiving facility, an MCA approved paper form must be left at the receiving facility which includes at least the following:
      1. Patient demographic information
      2. Patient and history or medications obtained
      3. Vital signs and assessment information
      4. Any interventions performed
      5. Any diagnostics performed
   E. Patient care records must be completed within 24 hours of incident conclusion. If changes or documentation must be completed after 24 hours, an addendum to the record noting the circumstances must be created.

II. Documentation
   A. Electronic PCRs must be created on appropriate software as outlined in **Electronic Documentation & EMS Information-System Protocol**.
   B. Non-transporting agencies will turn over an MCA approved written report or field note, if available, to the transporting agency.
   C. Each PCR (regardless of patient type) should include:
      1. All demographic, response and other general information pertinent to the EMS personnel's actions related to the response or transfer.
      2. Patient care information including:
         a. Assessment findings, including EMS obtained vital signs. If a patient refuses EMS vitals, that refusal must be documented in the PCR.

b. Available patient history (including current medications and allergies).
c. Treatment and interventions (including who performed the intervention). For interventions that are performed prior to arrival, document as such, and attribute to appropriate other personnel.
d. Medications administered (including dose, route, and personnel administering). For medications that are administered prior to arrival, document as such, and attribute to appropriate other personnel.
e. Changes in patient status (or lack of change)
f. Narrative including elements and descriptors unable to be documented in other sections of the PCR. *Note: treatments, vitals, interventions, and medications must be included in the applicable data fields (e.g., flowchart), but may also be included in the narrative of the report, as appropriate.

3. Names and licensure level of each responder present on scene.
4. Signature of the personnel responsible for the documenting the encounter.

D. Specific requirements for other types of PCRs include all the above, plus:
1. For transported patients, at least two sets of EMS obtained vital signs based on patient condition and complaint. If less than two sets of vitals are recorded, documentation must be provided justifying the omission.
2. For patients transported with time sensitive emergencies (suspected stroke, myocardial infarction, trauma):
a. Symptom onset time (last know well time, time of injury)
b. Vitals/assessment specific to the complaint:
i. 12 Lead ECG (included as an attachment)
ii. Cincinnati Stroke Scale (or other MCA approved pre-hospital stroke scale)
iii. Physical assessment (noted types and locations of injuries)
iv. Mechanism of injury (including specific elements allowable such as vehicle information), as appropriate
3. Patient transfer of care between life support agencies.

E. If a PCR must first be generated on paper and entered secondarily into an electronic format:
1. Content must be directly copied from the original PCR to the electronic system
2. Ideally, a scanned copy of the paper record must be attached to the electronic PCR. Otherwise, a paper copy must be maintained (according to MCL 333.16213) and available to the jurisdictional MCA or the Department upon request.
3. If someone other than the original caregiver inputs the PCR into the electronic system, it must be noted in the record.

III. Confidentiality

A. The EMS patient care record is a confidential patient care document and is not to be released to anyone other than those involved in the patient's care or the MCA's Professional Standards Review Organization, without the patient's written release of information permission. Refer to **Protected Health Information (PHI)-Procedure Protocol**

Patient Restraint

Purpose: To ensure appropriate and safe restraint of patients whose behavior is suggestive of an imminent physical threat to personnel and/or themselves.

Indications:

1. When an ill or injured person who is behaving in such a manner as to interfere with their examination, care and treatment to the extent they endanger their life or the safety of others.
2. The patient has a clear or suspected inability to understand their medical situation and the need for treatment of a potentially life-threatening injury or illness.
3. Pediatric patients (≤ 14 years) utilize MI MEDIC cards for appropriate medication dosage. When unavailable utilize pediatric dosing listed within protocol

Escalation of Care:

1. Verbal de-escalation
2. Physical management and soft restraints
3. Physical management and pharmacological management

Verbal De-Escalation is defined as the use of communication or other techniques during an encounter to stabilize, slow, or reduce the intensity of a potentially violent situation without using physical force, or with a reduction in force. This should be continued throughout care.

Soft Restraint Procedure

1. When the placement of soft restraints requires physical management that poses risk to the patient and/or personnel, anticipate and prepare for physical management and pharmacological management.
2. Ensure that enough personnel are available to properly control the patient and establish the restraints.
3. Explain the purpose of the restraints.
4. Physically control the patient and apply restraints.
5. Complete primary and secondary assessments.
    A. Restrained extremities should be evaluated for pulse quality, capillary refill time, color, sensory and motor function continuously
        a. Restraints must be adjusted if any of these functions are compromised.
        b. Restraints must not interfere with medical treatment.
6. Attempt to identify common physical causes for patient's abnormal behavior.
    - Hypoxia
    - Hypoglycemia
    - Head Trauma
    - ETOH/ Substances use/ abuse
7. Patient should be secured to a backboard or stretcher only. Patients must never be secured directly to a vehicle or immovable object. Patients must NEVER be secured in a prone position.
8. Transport patient.

9. Inform hospital that restraints are in place and assistance will be necessary to continue restraint of the patient.

Pharmacological Management Procedure

1. Pharmacological management should only be utilized when soft restraint placement alone would pose a safety risk or is ineffective in calming the patient
2. Contact Medical Control prior to medication administration, unless extreme circumstances exist in which delaying administration poses an immediate danger to patient or others.
3. Administer **midazolam** 0.1 mg/kg IM or IN
    a. Adult patients (>14 years of age) maximum dose of 10 mg
        i. Consider lower range of dosing for Geriatric patients.
    b. Pediatric patients (≤14 years of age), administer 0.1 mg/kg IM, maximum single dose 5mg.
4. Monitor vital signs, ECG, pulse oximetry, and capnography.
5. If after 10 minutes additional medication is necessary, contact Medical Control for guidance.

Transport Considerations

1. Patients that are physically restrained and/or pharmacologically managed should be transported to the closest appropriate facility.
2. Receiving facilities should be notified as soon as possible of physical restraint use and/or pharmacological management.

Special Considerations

1. Physical restraints should be of a soft nature (e.g., hook and loop restraints, cravats, sheets, etc.) applied to the wrists and ankles. A restraint may also be needed across the chest and/or pelvis and shall NEVER restrict the patient's chest wall motion.
2. Stay with a restrained patient at all times, be observant for possible vomiting and be prepared to turn the patient onto their side and suction if necessary.
3. Documentation should include:
    A. A description of the circumstance/behavior which precipitated the use of restraints and/or pharmacological management.
    B. Time of application of the restraints.
    C. Type of restraint used.
    D. The positions in which the patient was restrained.
4. When restraint devices are applied by law enforcement officers for patients who are not under arrest:
    A. If a patient is restrained by law enforcement personnel with handcuffs or other devices EMS personnel cannot remove, a law enforcement officer must accompany the patient to the hospital.
    B. If the officer is unable to accompany the patient in the transporting EMS vehicle the patient will be placed in soft restraints. This can only occur if crew safety will not be compromised and the patient can be safely transported with this type of restraint.
    C. The restraint and position must not be so restrictive that the patient is in a

position that compromises patient care.

5. EMS Personnel may NOT use:
   A. Hard plastic ties.
   B. Any restraint device that cannot be immediately removed by the attending EMS provider
   C. Backboards to “sandwich” the patient.
   D. Restraints which secure the patient’s hands and feet behind the back.
   E. Restraints that “hog tie” the patient.
   F. Any device that restricts normal breathing.

6. EMS personnel shall NOT transport a restrained patient in the prone position.
7. Ketamine is NOT to be used as part of this protocol without on-line medical direction.

Medication Protocols
Midazolam

Protocol Source/References:

Authority to Restrain - EMS personnel are able to restrain and treat and transport an individual under authority of Sec 20969 of Public Act 368 which states: *"This part and the rules promulgated under this part do not authorize medical treatment for or transportation to a hospital of an individual who objects to the treatment or transportation. However, if emergency medical services personnel, exercising professional judgment, determine that the individual's condition makes the individual incapable of competently objecting to treatment or transportation, emergency medical services may provide treatment or transportation despite the individual's objections unless the objection is expressly based on the individual's religious beliefs."*

Patient Procedural Sedation
Paramedic Use Only

Purpose: Proper sedation of patients requiring a painful medical procedure.

Indications for Sedation

1. Electrical therapy (cardioversion or transcutaneous pacing)
2. Post intubation sedation
3. CPAP and/or HFNC only under direct Medical Control Order
    i. **Ketamine is NOT to be used for this indication

Contraindications

1. Inability to control the patient's airway
2. As an adjunct for establishing an airway
3. Known allergy to sedation medications

Assessment

1. Evaluate adequacy of airway, ventilation, and oxygenation
2. Monitor vital signs and level of consciousness
3. Monitor ECG
4. Monitor pulse oximetry
5. Monitor capnography

Procedure

1. Maintain airway, provide oxygenation, and support ventilation
2. Obtain vascular access
3. For electrical cardioversion, transcutaneous pacing, and post intubation sedation sedate patient to a level of consciousness where procedure can be performed, per MCA selection
4. Only one MCA authorized sedation medication may be given pre-radio. Medical Control MUST be contacted if a different sedation medication is needed subsequent to initial dose (adults and pediatrics).

Adult Procedural Sedation:
(Titrate to minimum amount necessary)

- ☑ **Midazolam** 1-5 mg (0.05 mg/kg) IV/IO titrated slowly (IN, if available); may repeat once in 5 minutes to a maximum of 0.1 mg/kg.
- ☐ **Diazepam** 5-10 mg (0.1 mg/kg) IV/IO titrated slowly, may repeat every 5 minutes to a maximum of 0.3 mg/kg.
- ☑ **Fentanyl** 50-100 mcg (1 mcg/kg) IV/IO titrated slowly (IN, if available); may repeat every 4 minutes to a maximum of 3 mcg/kg.
- ☑ **Ketamine** 4 mg/kg IM or 1.5 mg/kg IV/IO (IN if available) titrated slowly to sedation (max dose 500 mg). NOT for CPAP/HFNO sedation

5. For pediatrics, administer MCA selected medications per MI MEDIC cards. If MI MEDIC cards are not available administer as follows per MCA selection.

Pediatric Procedural Sedation:
(Titrate to minimum amount necessary)

- ☑ **Midazolam** 0.05 mg/kg IV/IO titrated slowly (IN, if available); may repeat once in 5 minutes to a maximum of 0.1 mg/kg.
- ☑ **Fentanyl** 1 mcg/kg IV/IO titrated slowly (IN, if available); may repeat every 5 minutes to a maximum of 3 mcg/kg.
- ☑ **Ketamine** 4 mg/kg IM or 1.5 mg/kg IV/IO (IN if available) titrated slowly to sedation. NOT for CPAP/HFNO sedation

Medication Protocols
Diazepam
Fentanyl
Ketamine
Midazolam

Pleural Decompression

Paramedic Use Only

Indications

1. Suspected Tension Pneumothorax (not simple pneumothorax) with hemodynamic compromise, severe respiratory distress, unilateral absent or severely diminished breath sounds
2. Considered for patients who remain in PEA after treatment of other reversible causes of PEA have been unsuccessful.
3. Traumatic arrest, refer to **Traumatic Arrest-Treatment Protocol**

Presentation of Tension Pneumothorax

1. A tension pneumothorax will have at least one of the following:
   A. Severe respiratory distress in the conscious/breathing patient with **hemodynamic compromise (hypotension)**.
   B. Difficult ventilation in the hypotensive, unconscious/apneic patient in the presence of a confirmed, correctly positioned endotracheal tube.

Technique

1. Evaluate and maintain the airway, provide oxygenation, and support ventilations.
2. Decompression procedure:
   A. Assemble equipment
      a. Adults (>14 years of age): large bore IV catheter - 14 gauge or larger and at least 3.5 inches in length (catheter should not have any type of flow restricting valve) OR other MCA approved commercial device, per MCA selection.
      b. Pediatrics (≤14 years of age): 18 gauge or 20 gauge over the needle catheter (catheter should not have any type of flow restricting valve) OR other MCA approved commercial device, (per MCA selection).

MCA Approved Commercial Device Use

Adults	Pediatrics
◉ Yes	◉ Yes
○ No	○ No

MCAs will be responsible for maintaining a roster of the agencies choosing to participate and will submit roster to MDHHS

   c. Antiseptic swabs
   d. Dressing and tape

B. Identify landmarks and insertion site

NOTE: Midclavicular is the preferred site for pediatrics (≤ 14 years of age)

   a. Anterior axillary at the fourth intercostal space just above the fifth rib.
   b. Midaxillary at the fourth intercostal space just above the fifth rib.
   c. Midclavicular (if unable to access axillary) line at the second intercostal space just above the third rib

      i. Midclavicular is the preferred site for pediatric patients.

C. Prep the area with antiseptic swab.
D. Remove flash chamber cap from IV catheter.
E. Insert the catheter over the top of the rib until air rushes out. Advance catheter over the needle. Remove needle leaving catheter in place.
F. Reassess breath sounds and patient's condition (patient's condition should improve almost immediately).
G. Secure catheter with tape.

NOTE: REMEMBER to go just above the rib due to all of the major structures (arteries, veins, and nerves) which lie below the rib. The closer you stay to the top of the rib, the less chance of complication.

Refusal of Care; Adult & Minor

EMS personnel have an affirmative duty to provide care to any patient presenting to them after a report of an emergency situation.

If during an emergency medical situation, EMS personnel, based on clinical judgement, consider a patient to be incapable of making their own medical decisions, that patient may be considered incapable of competently objecting to treatment or transportation under the law. Religious beliefs that lead a patient to refusal of treatment or transport are the exception. EMSMCL 333.20969 states:

> "If emergency medical services personnel, exercising professional judgment, determine that the individual's condition makes the individual incapable of competently objecting to treatment or transportation, emergency medical services may provide treatment or transportation despite the individual's objection unless the objection is expressly based on the individual's religious beliefs."

When EMS personnel, based on clinical judgement, consider a patient to be "capable," that patient may object to treatment and/or transport.

1. **Definition**
   - A. An individual who is capable to make medical decisions is:
     - a. One who is awake, oriented, and is capable of understanding the circumstances of the current situation. This includes risks, treatments, transport, and alternatives.
     - b. Does not appear to be under the influence of alcohol, drugs or other mind-altering substances or circumstances that may interfere with mental functioning.
     - c. Is not a clear danger to self or others.
     - d. Is 18 years of age or older, or an emancipated minor.
   - B. "Emancipated Minor" is one who is married, is on active duty with the Armed Forces of the United States or has been granted emancipation by the court.
   - C. A minor is any individual under the age of 18 and who is not emancipated.

2. **Procedure for an individual who, in the clinical judgement of the EMS provider <u>is capable</u> to object to treatment and/or transport.**
   - A. All patients with signs or symptoms of illness or injury shall be offered assessment, medical treatment, and transport by EMS.
   - B. Clearly explain the nature of the illness/injury and the need for emergency care or transportation.
   - C. Explain possible complications that may develop without proper care or transportation.
   -  D. For individuals with signs or symptoms of serious or potentially fatal illness or injury, contact medical control prior to obtaining the patient signature and leaving the scene.

E. Request that the individual sign an EMS Refusal Form. If the individual refuses to sign the EMS Refusal Form, attempt to obtain signatures of witnesses (family, bystanders, public safety personnel).
F. Document assessment and complete approved EMS Refusal Form, including risks of refusal.
G. Inform the individual that if they change their mind and desire evaluation, treatment, and/or transport to a hospital, to re-contact the emergency medical services system or seek medical attention.
H. Inability to obtain a signature does not preclude completion of documentation of a refusal.

3. Procedure for the Individual who, in the clinical judgement of the EMS provider, <u>is not capable</u> to object to treatment and/or transport.


A. Contact medical control as soon as practical. and provide all pertinent findings that lead the EMS provider to believe, in their clinical judgement, the patient is not capable to object to treatment and/or transport.
B. For urgent/life-threatening illness or injury initiate treatment according to applicable protocol and transport for further evaluation and treatment
C. For non-urgent/non-life-threatening illness or injury transport for further evaluation and treatment after consultation with on-line medical control.
D. Seek police assistance if needed.

4. Procedure for the individual who, in the clinical judgement of the EMS provider, <u>gains capability</u> to object to transport after treatment has been initiated,


A. Contact medical control in all cases when a patient (now refusing transport) has been given medications or other advanced treatment by EMS personnel (e.g., glucose, albuterol, naloxone, IV, etc.).
B. Such patients should be strongly encouraged to seek further evaluation and treatment.
C. Comply with Section 2 above and document treatment on a patient care record.

5. Procedure for the <u>minor patient</u> objecting to treatment and/or transport

A. Minor patients are unable to consent or refuse ~~consent for~~ medical care. Such permission can only be provided by the minor's parent or legal guardian.
B. Treatment and transport for potential life-threatening emergencies will not be delayed by attempts to contact the parent or guardian.


C. In events when the minor's parent or legal guardian cannot be reached, Contact medical control .

6. Procedure for <u>parent/guardian objecting</u> to treatment and/or transport of the minor patient

A. All patients with signs or symptoms of illness or injury shall be offered assessment, medical treatment, and transport by EMS.
B. Clearly explain the nature of the illness/injury and the need for emergency care and/or transportation.

C. Explain possible complications that may develop without proper care and/or transportation.
D. For individuals with signs or symptoms of illness or injury, contact medical control.
E. Request that the parent/guardian sign an approved EMS Refusal Form. If the parent/guardian refuses to sign the EMS Refusal Form, attempt to obtain signatures of witnesses (family, bystanders, public safety personnel).
F. Document assessment and complete an approved EMS Refusal Form.
G. Inform the parent/guardian that if they change their mind and desire evaluation, treatment, and/or transport to a hospital, to re-contact the emergency medical services system or seek medical attention.

7. Documentation

A. Document findings that support the clinical judgement of the EMS provider that the patient is capable or incapable to objecting to treatment and/or transport.

Note: A sample EMS Refusal Form has been included on a separate page.

SAMPLE EMS REFUSAL FORM

REFUSAL OF TREATMENT, TRANSPORT AND/OR EVALUATION

PLEASE READ COMPLETELY BEFORE SIGNING BELOW!

Because it is sometimes impossible to recognize actual or potential medical problems outside the hospital, we strongly encourage you to be evaluated, treated if necessary, and transported to a hospital by EMS personnel for more complete examination by a physician.

You have the right to choose to not be evaluated, treated or transported if you wish; however, there is the possibility that you could suffer serious complications or even death from conditions that are not apparent at this time.

By signing below, you are acknowledging that EMS personnel have advised you, and that you understand, the potential harm to your health that may result from your refusal of the recommended care; and, you release EMS and supporting personnel from liability resulting from refusal.

PLEASE CIRCLE THE FOLLOWING THAT APPLY:

I refuse:

EVALUATION **TREATMENT** **TRANSPORT**

☐ **IF YOU CHANGE YOUR MIND AND DESIRE EVALUATION, TREATMENT, AND/OR TRANSPORT TO A HOSPITAL, YOU MAY RE-CONTACT THE EMS SYSTEM AT ANY TIME.**

Patient's Printed Name _____Age____DOB_____Phone #_____
Patient's Address_____City_____State____Zip_____

Signature_____ Relationship, if applicable_____

Witness Signature_____ Witness Printed Name_____
Date and Time_____

BP_____Pulse_____Resp._____Skin_____Pupils_____LOC_____

1. Oriented to person, place, and time? ☐ Yes ☐ No
2. Coherent speech? ☐ Yes ☐ No
3. Auditory and/or visual hallucinations? ☐ Yes ☐ No
4. Suicidal or homicidal? ☐ Yes ☐ No
5. Able to repeat understanding of their condition and consequences of treatment refusal? ☐ Yes ☐ No
6. Narrative: describe reasonable alternatives to treatment that were offered; the circumstances of the call; specific consequences of refusal; and, names of family or witnesses present:

_____
_____
_____
_____

_____ _____ _____ _____
EMS Agency Name Printed Crew Names Signature of EMS Provider

Spinal Precautions

Indications & General Guidance

1. Refer to the **Spinal Injury Assessment Protocol**. Patients with a positive spinal injury assessment should have spinal precautions maintained during transport.
2. Major trauma patients who require extrication should have spinal precautions maintained using an extrication device (long backboard or equivalent) during extrication. If sufficient personnel are present, the patient may be log rolled from the extrication device to the ambulance cot during loading of the patient.
3. Patients may remain on the extrication device if the crew deems it safer for the patient considering stability, time and patient comfort considerations. This decision will be at the discretion of the crew.
4. Patients with penetrating traumatic injuries do not require spinal precautions unless a focal neurologic deficit is noted on the spinal injury assessment.
5. An ambulatory patient with a positive spinal injury assessment should have an appropriately sized cervical collar placed. Place the patient directly on the ambulance cot in a supine position or position with least amount of elevation to maintain comfort, limiting movement of the spine during the process.
6. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar. Limit movement of the spine during the process.
7. Patients over the age of 65 with evidence of a head strike mechanism of injury will have a cervical collar applied even if the spinal injury clinical assessment is negative.

Specific Techniques

1. Cervical Collars
    A. Cervical collar should be placed on patient prior to patient movement, if possible.
    B. If no collar can be made to fit patient, towel, blanket rolls, head block or similar device may be used to support neutral head alignment.
    C. The cervical collar may be removed if interfering with airway management or airway placement, or if causing extreme patient distress.
2. Self-Extrication Procedure
    A. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar.
    B. Limit movement of the spine during the process.
3. Emergency Patient Removal
    A. Indicated when scene poses an imminent or potential life-threatening danger to patient and/or rescuers, (e.g., vehicle or structure fire).

B. Remove the patient from danger while best attempt is made to maintain spinal precautions.
C. Rapid extrication is indicated when patient condition is unstable (i.e., airway or breathing compromise, shock, unconsciousness, or need for immediate intervention).

4. Long Extrication Device (e.g., long backboard, scoop stretcher, basket stretcher)
   A. Indicated when patient requires spinal precautions and the patient condition prevents self-extrication.
   B. Patient's head and cervical spine should be manually stabilized.
   C. Rescuers should place the patient in a stable, neutral position where space is created to place backboard or other long extrication device in position near the patient.
   D. Move the patient to supine position on the long extrication device.
   E. The patient is secured to the device with torso straps applied before head stabilization.
   F. Head stabilization material should be placed to allow for movement of the lower jaw to facilitate possible airway management.
   G. The extrication device is used to move the patient to the ambulance cot.
5. Log Roll Procedure
   A. Cervical collar should be placed when indicated.
   B. Place the backboard or equivalent behind the patient.
   C. Patient is log rolled, maintaining neutral alignment of spine and extremities.
   D. Log roll procedure requires 2 or more personnel in contact with the patient.
   E. If log roll is not possible, patient should be moved to board or equivalent while attempting to maintain neutral alignment spinal precautions.
   F. Patient is secured to the backboard or equivalent for movement to the ambulance cot.
   G. Head stabilization materials such as foam pads, blanket rolls may be used to prevent lateral motion. Pad under the head when feasible.
   H. If sufficient personnel are present, the patient should be log rolled from the extrication device to the ambulance cot during loading of the patient.
   I. When log roll on to the ambulance cot is impractical, secure the patient to the extrication device and ambulance cot for transport.
6. Spinal Precautions
   A. Once the patient is placed on the ambulance cot, if no extrication device is still in place, secure the patient with seatbelts in a supine position, or in position of comfort if a supine position is not tolerated.
   B. Head may be supported with head block or similar device to prevent rotation if needed. Padding should be placed under the head when practical. Do not tape the head to the ambulance cot.

Special Considerations

1. Hypoventilation is likely to occur with spinal cord injury above the diaphragm. Quality of ventilation should be monitored closely with support offered early.
2. Spinal/neurogenic shock may result from high spinal cord injury. Monitor patient for signs of shock. Refer to **Shock-Treatment Protocol**.
3. Spinal precautions in the patient wearing a helmet should be according to the **Helmet Removal-Procedure Protocol**.
4. Manual spinal precautions in the obtunded patient must be initiated and continued until the patient is secured to the ambulance cot.
5. Patients who are markedly agitated, combative or confused may not be able to follow commands and cooperate with minimizing spinal movement. Rigid immobilization should be avoided if it contributes to patient combativeness. Patients may remain on the backboard if the crew deems it safer for the patient, and this will be at the discretion of the crew.
6. Manual in line stabilization must be used during any procedure that risks head or neck movement, such as endotracheal intubation. If manual cervical stabilization is hampering efforts to intubate the patient, the neck should be allowed to move as needed to secure the airway. An unsecured airway is a greater danger to the patient than a spinal fracture.
7. Document spinal precautions techniques utilized.
8. Document the patient's neurologic status before and after establishing spinal precautions when possible.
9. Pediatric Patients and Car Seats:
    A. Infants restrained in a rear-facing car seat may be immobilized and extricated in the car seat. The child may remain in the car seat if the immobilization is secure and his/her condition allows (no signs of respiratory distress or shock).
    B. Children restrained in a car seat (with a high back) may be immobilized and extricated in the car seat; however, once removed from the vehicle, the child should have spinal precautions maintained as for an adult.
    C. Children restrained in a booster seat (without a back) need to be extricated and immobilized following standard procedures.
10. Pregnant Patients
    A. Monitor for decreased venous return and if required displace uterus to the left manually or by patient positioning

Blood Glucose Level Testing

Indications:

1. Altered mental status
2. Indicated in applicable treatment protocol

Contraindications:

1. None

Procedure: (may be MFR skill per MCA selection)

MCA approval for MFR Blood Glucose Level Testing

(•) YES

( ) NO

MCAs will be responsible for maintaining a roster of MFR agencies choosing to participate and will submit roster to MDHHS

1. Obtain and test blood sample according to manufacturer's instructions.
2. Treat patient according to applicable treatment protocol.
3. Document blood glucose level in electronic patient care record.

Tourniquet Application

Indications:

1. Life threatening extremity hemorrhage. An amputation with hemorrhage does not necessitate the use of a tourniquet; most bleeding from these injuries is controllable through use of direct pressure and elevation.
2. Amputation with uncontrolled active bleeding.
3. A mass causality incident may be an indication for the use of tourniquets for temporary control of hemorrhage while the situation is brought under control.

Contraindications:

1. Never use a tourniquet for more than the recommended period of time (product-specific). With any extrication plus transport time of less than 180 minutes, there is minimal risk of developing an ischemic limb.
2. Never apply a tourniquet over an impaled object.

Procedure:

1. If possible, check neurovascular status prior to tourniquet application (pulse, sensation, motor function distal to hemorrhage).
2. Apply tourniquet directly to the skin, proximal to the area of bleeding, at least 2-3 inches (5-8 centimeters) from the wound margins.
3. Secure the tourniquet in place; continue to tighten the tourniquet until arterial occlusion (bleeding stops).
4. A successfully placed tourniquet may cause significant paint. (Refer to **Pain Management-Procedure Protocol**).
5. Document the time the tourniquet was applied.
6. Note neurovascular status every five minutes post application.
7. Notify the receiving hospital that a tourniquet is in place.
8. Do not adjust or remove a tourniquet once bleeding is controlled.
9. A second tourniquet adjacent to the first may be necessary.

Notes:

1. Tourniquets should not be applied over joints. Application over the peroneal nerve (knee or ankle) or ulnar nerve (the elbow) may result in nerve damage or paralysis.
2. Any limb with an applied tourniquet should be fully exposed and the tourniquet should not be covered with any other bandage.
3. Continued bleeding (other than medullary oozing from fractured bones) distal to the site of the tourniquet is a sign of insufficient pressure and a need to tighten the tourniquet further. A second tourniquet adjacent to the first may be necessary. Refer to **Bleeding Control-Treatment Protocol**.
4. A clinically indicated and appropriately applied tourniquet should not be loosened once applied. If clinical judgement indicates that the tourniquet is not indicated, is nonfunctional or is not appropriate, contact Medical Control prior to removal or loosening.

Protocol Source/References: https://books.allogy.com/web/tenant/8/books/b729b76a-1a34-4bf7-b76b-66bb2072b2a7/#ida54cdbed-5555-47f0-b791-2c86de208f76

Vascular Access & IV Fluid Therapy

Indications

1. Patients with potential need for either fluid resuscitation or medication administration.
2. External jugular cannulation should be initiated in patients in whom access is necessary and other peripheral vascular access is not accessible or is contraindicated.
3. IO indications: Adult and pediatric life-threatening situations where venous access using peripheral veins has been unsuccessful. IO access should be considered early in situations where IV access is unsuccessful or technically challenging. Indications include:
   A. Cardiac Arrest
   B. Severe burn injury with shock
   C. Shock
   D. Severe multi-system trauma with shock
   E. For other situations contact Medical Control. Do not delay transport.

Contraindications

1. To peripheral vascular access:
   A. No peripheral sites available
   B. Burns overlying available peripheral sites unless no other sites available
   C. Infection overlying available peripheral sites
2. To intraosseous infusion and placement:
   A. Infiltration of previously placed IO. If infiltration occurs (rare), do not reuse the same bone as fluid will leak out of the original hole; select another site.
   B. Placement in fractured extremity. If the femur is fractured do not use the tibia of same leg.
   C. Burns overlying available peripheral sites unless no other sites available
   D. Infection overlying available peripheral sites
3. To fluid bolus:
   A. Pulmonary edema
      a. Contact Medical Control when pulmonary edema is present yet clinical presentation indicates the need for fluid resuscitation.

Special Considerations (Side effects/Complications)

1. Initiation of vascular access generally should not delay patient transport to the hospital.
2. General side effects or complications: infection, air embolism, catheter shear, hematoma, arterial puncture, and fluid overload.
3. Intraosseous placement:
   A. Complications include subperiosteal infusion, osteomyelitis, sepsis, fat embolism, and bone marrow damage.

Standards for IV attempts

1. Two (2) attempts per provider, maximum 4 attempts.
2. Consider IO early, as indicated above.
3. Document any reasons for deviation.

Needle size for IV placement

1. Adult KVO 18 ga - 20 ga angiocath
2. Adult uncompensated shock or cardiac arrest 14 ga - 18 ga angiocath.
3. Pediatrics 20 ga - 24 ga angiocath

Solutions – Unless otherwise specified, the IV solution may be **normal saline 0.9%** (**NS**) or **lactated ringers** (**LR**). **NS** is to be used for dilution and/or reconstitution unless otherwise specified in applicable protocol.

Flow Rates and Volume

1. Saline lock (KVO) IV is preferred, unless fluid administration is needed.
2. Flow rates, changes in flow rates, and total volume administered must be documented on the EMS Patient Care Record.
3. Fluid Bolus – for fluid resuscitation (i.e., dehydration, hypotension, etc.)
   a. Adults (>14 years of age): 1 liter IV/IO wide open with repeat of 1 additional liter as necessary (maximum total of 2L), unless otherwise noted by protocol.
   b. Pediatrics (≤ 14 years of age): 20 mL/kg IV/IO wide open with repeat of 20 mL/kg as necessary (maximum total of 40 mL/kg), unless otherwise noted by protocol,
4. IV/IO fluid bolus is contraindicated in patients with pulmonary edema.
5. Non-resuscitative fluid administration should be at KVO unless otherwise specified by protocol.
6. Medicated drips should be piggybacked into a **NS** main IV line or saline lock.

IV Tubing

1. Macrodrip is the preferred tubing.

Procedure IV/IO Placement

1. Utilize universal precautions for all IV/IO placements.

Procedure for Peripheral Vascular Cannulation:

1. Gather and prepare equipment.
2. Place the tourniquet on the extremity.
3. Cleanse the skin
4. Make your puncture while maintaining vein stability.
5. Watch for flashback. Once you have a blood return, advance the catheter as per normal IV technique and attach the IV tubing or saline lock tubing and cap.
6. If you have no blood return and you are in the vein, remove the needle hub and attach your syringe to assist in aspirating for blood.
7. Instill 2-3 mL of normal saline if normal saline lock placed.

8. Secure catheter and IV tubing.

Procedure for External Jugular Cannulation:

1. Gather and prepare equipment
2. Position patient supine (Trendelenburg, if possible)
3. Turn head to opposite side of venipuncture (if no C-spine injury is suspected)
4. Cleanse the skin
5. Occlude the vein by using the side of your finger above the clavicle to facilitate filling the vein.
6. Make your puncture midway between the angle of the jaw and the middle of the clavicle.
7. Watch for flashback. Once you have a blood return, advance the catheter as per normal IV technique and attach the IV solution or normal saline lock cap, covering catheter with gloved finger while preparing to attach the IV tubing. If you have no blood return and you are in the vein, remove the needle hub and attach your syringe to assist in aspirating for blood.
8. Instill 2-3 mL of normal saline if normal saline lock placed.
9. Secure IV catheter and tubing.

Procedure for Intraosseous Placement:

1. Have all IO equipment ready prior to bone penetration.
2. Expose the extremity.
3. Stabilize the extremity to minimize motion.
4. Selection of site:
    A. Medial aspect of proximal tibia or proximal humerus.
    B. In children less than six years of age, the preferred site is the proximal tibia.
    C. In cardiac arrest, the preferred site is the proximal humerus.
5. Insertion:
    A. Follow the manufacturer's recommendations for IO insertion with the above indications.
6. Scrub the insertion site with alcohol prep/chlorhexidine. Strict adherence to aseptic technique is essential.
7. Insert the IO needle.
8. Attempt to confirm marrow placement by removing the stylet and aspirating blood and/or bone marrow.
    A. If unable to aspirate, attach 10 – 20 mL syringe with **NS** and gently infuse fluid .
    B. Observe for normal saline leakage or SQ tissue swelling.
        a. If neither occurs, proceed.
        b. If either occurs, select a different site.
9. Connect the appropriate IV equipment (normal saline locks not indicated in IO placement).
10. Administer the appropriate fluids and/or drugs.
11. Stabilize the entire intraosseous set-up as if securing an impaled object.
12. In conscious patients experiencing pain with IO infusion, consider **lidocaine 2%,**

a. Adult 20 mg IO
b. Pediatrics 0.5 mg/kg, IO maximum dose of 20 mg.

13. If the IO is unsuccessful after 2 attempts, contact Medical Control

Medication Protocols
Lidocaine

End-Tidal Carbon Dioxide Monitoring (Capnometry and Capnography)

Aliases: ETCO2, End Tidal, Capnography

Definitions: For the purpose of all protocols the mention End Tidal Carbon Dioxide monitoring, these are the definitions:

S 1. Capnography is a graphic representation of exhaled carbon dioxide displayed as a waveform along with a numeric (quantitative) representation.
   a. Capnography is mandatory for endotracheal tube airway confirmation.
   b. Capnography via nasal cannula is mandatory during certain medication administrations per applicable protocol as it is also a valuable assessment tool in critically ill patients.

MCA approval to utilize capnography.

☑ EMT

MCAs will be responsible for maintaining a roster of BLS agencies choosing to participate and will submit roster to MDHHS

2. Capnometry is a numeric representation of exhaled carbon dioxide.
   a. A colorimetric (qualitative) end tidal carbon dioxide monitor is a rudimentary form of capnometry and is acceptable for use in MFR and BLS applications.
   b. Capnometry that includes a numerical (quantitative) read out is preferred to colorimetric capnometry.

Indications:

1. Determining appropriate placement of an airway has taken place.
   A. Capnography **must** be utilized to confirm endotracheal tube placement.
   B. Capnography or Capnometry **must** be utilized on all supraglottic airways per licensure level requirements.

2. Continuous monitoring of the integrity of the ventilatory circuit.
   A. Capnography **may** be utilized in patients receiving assisted ventilations without advanced airways (used between the face mask and the bag-valve).
   B. Capnography **must** be used for patients on transport ventilators.

3. Monitoring severity of pulmonary disease (bronchospasm) and evaluating response to therapy
   A. Capnography **may** be utilized in patients with respiratory distress, or with signs and symptoms suggestive of acidosis.

4. Monitoring therapy intended to increase coronary blood flow, reflected in CO_2 elimination

A. Capnography **may** be utilized in patients receiving CPR (even without advanced airway placement), cardiac pacing, or when receiving medications that are intended to increase cardiac output, as a means to determine the physiological effectiveness of interventions
B. Capnography **must** be utilized for critically ill patients and for patients with ROSC in ALS/LALS units.

Contraindications:

1. There are no absolute contraindications to Capnography/Capnometry

Procedure:

1. Attach the colorimetric device to airway device (supraglottic or between facemask and BVM)
2. Note presence or absence of color change.
    a. If no change in color on device, verify placement of device.
3. Document findings in patient chart.
4. When ALS arrives, switch to capnography (if available) from capnometry.
5. Attach the CO_2 sensor to the monitoring device and to the advanced airway, or between the mask and the bag valve in the ventilated patient that does not have an advanced airway placed or using the nasal cannula style sensor for patients not receiving assisted ventilation.
6. Note the CO_2 level and waveform characteristics
7. Any loss of CO_2 detection or waveform may indicate an airway or ventilation problem and should be investigated, corrected and documented.
8. Document the use and results in the Patient Care Record (PCR).

Note: If a **"0"** value, no value, or no color change is noted for a patient:

- Ensure that the patient has adequate spontaneous circulation and ventilation, or that effective CPR is being performed
- Verify that the tubing is properly connected to the monitor and that there are no kinks in the tubing.
- If the tubing is found not to be the problem and an advanced airway has been placed, remove the advanced airway immediately and assist ventilations as needed with manual ventilation techniques.

Michigan Physician Orders for Scope of Treatment (MI-POST)

Aliases: POST

Purpose: The purpose of this policy is to provide a guideline to prehospital providers, who under certain circumstances may accommodate patients who do not wish to receive and/or may not benefit from certain interventions. This protocol is drafted in accordance with Public Act 154 of 2017. This protocol is intended to facilitate kind, humane, and compassionate service for patients who have executed a valid MI-POST under the law.

I. Definitions
   A. Attending health professional – means a physician, physician's assistant, or certified nurse practitioner, who has primary responsibility for the treatment of a patient and is authorized to issue the medical orders on a POST form.
   B. Patient – means an adult with an advanced illness or means an adult with another medical condition that, despite available curative therapies or modulation, compromises his or her health so as to make death within 1 year foreseeable though not a specific or predicted prognosis.
   C. Guardian – means a person with the powers and duties to make medical treatment decisions on behalf of a patient to the extent granted by court order under section 5314 of the Estates and Protected Individuals Code, 1998 PS 386, MCL 700.5314.
   D. Patient Advocate – means an individual designated to make medical treatment decisions for a patient under Section 496 of the revised Probate Code, Act No. 642 of the Public Acts of 1978, being section 700.496 of the Michigan Compiled Laws.

II. Introduction - EMS providers who encounter an approved MI-POST in the field should be aware of the different levels of care in Sections A and B of the form.

III. Procedure for Use of Form
   A. If there are issues with the form, the orders contained therein, or the circumstances of the situation are unclear, personnel may initiate treatment and contact Medical Control for direction.
   B. Section A – Applies to only individuals who do NOT have a pulse and are not breathing upon arrival of EMS personnel or become pulseless or apneic during treatment.
      a. If *Attempt Resuscitation* is checked, provide treatment according to appropriate **Cardiac Arrest-Treatment Protocol.**
      b. If *DO NOT attempt resuscitation* is checked, refer to **Dead on Scene and Termination of Resuscitation-Procedure Protocol** or **Medical Examiner Notification and Body Disposition Protocol** as appropriate.
   C. Section B – For patients who have a pulse and/or are breathing
      a. Comfort-Focused Treatment box is selected:

1. Patients should receive full palliative treatment for pain, dyspnea, hemorrhage, or other medical conditions (including medication by any route) according to applicable protocols.
2. Relief of choking caused by a foreign body is appropriate, but if breathing has stopped and the patient is unconscious, ventilation should not be assisted.
3. Follow appropriate transport and destination protocols as needed.

b. Selective Treatment box is selected:
   1. All patients receive comfort treatment plus:
   2. Treat medical conditions according to protocol including IV therapy, cardiac monitoring, medications, and non-invasive airway support.
   3. Do not use invasive airways (including supraglottic airways).

c. Full Treatment box is selected:
   1. All patients receive comfort treatment, plus:
   2. Full treatment should be provided. This includes, but is not limited to, intubation, other invasive airways, and mechanical ventilation.

d. If no box is checked, Full Treatment is implied.

IV. MI POST Form

A. An example form is contained in this protocol. The original form will generally be pink, but copies of the form are valid (paper or digital).
B. The form must be dated within the last year. Note: reaffirmation dates should be counted as the most recent date, see Section G.
C. The form must be signed by the attending health professional and the patient or the patient advocate/durable power of attorney for healthcare. A verbal order notation is valid for 72 hours.
D. All previous versions of the form are valid, if all the above are true and there are no marks indicating a revocation on the form.
E. The form is voluntary and may be revoked:
   a. By the patient, at any time when the patient can communicate their wishes.
   b. By the patient advocate/durable power of attorney for healthcare when it is considered to be consistent with the patient's wishes or in the patient's interest when the patient's wishes are unknown.
   c. By the attending health professional when there is a condition change that makes the orders contained on the POST contrary to accepted healthcare standards.

Protocol Source/References: MCL 333.20967, MCL 333.5679, **MCL 333.56**

MDHHS-5836, MICHIGAN PHYSICIAN ORDERS FOR SCOPE OF TREATMENT (MI-POST)
Michigan Department of Health and Human Services (MDHHS)
(Revised 8-22)

HIPAA permits disclosure of MI-POST to other Health Care Professionals, as necessary. This MI-POST form is void if Part 1 or Section D are blank. Leaving blank any section of the medical orders (Sections A, B, or C) does not void the form and is interpreted as full treatment for that section.

PART 1 – PATIENT INFORMATION

Patient Last Name | Patient First Name | Patient Middle Initial

Date of Birth (mm/dd/yyyy) | Date Form Prepared (mm/dd/yyyy)

Diagnosis supporting use of MI-POST

This form is a Physician Order sheet based on the medical conditions and decisions of the person identified on this form. Paper copies, facsimiles, and digital images are valid and should be followed as if an original copy. This form is for adults with an advanced illness. It is not for healthy adults.

PART 2 – MEDICAL ORDERS

Section A – Cardiopulmonary Resuscitation (CPR)
Person has no pulse and is not breathing. See MDHHS-5837 for further details.

☐ Attempt Resuscitation/CPR (Must choose Full Treatment in Section B).
☐ DO NOT attempt Resuscitation/CPR (No CPR, allow Natural Death).

Section B – Medical Interventions
Person has pulse and/or is breathing. See MDHHS-5837 for further details on medical interventions.

☐ **Comfort-Focused Treatment**
Primary goal of maximizing comfort. May include pain relief through use of medication, positioning, wound care, food and water by mouth, and non-invasive respiratory assistance.

☐ **Selective Treatment**
Primary goal of treating medical conditions while avoiding burdensome measures. May include IV fluids, cardiac monitoring including cardioversion, and non-invasive airway support.

☐ **Full Treatment**
Primary goal of prolonging life by all medically effective means. May include intubation, advanced invasive airway interventions, mechanical ventilation, other advanced interventions.

Section C – Additional Orders (optional)
Medical orders for whether or when to start, withhold, or stop a specific treatment. Treatments may include but are not limited to dialysis, medically assisted provisions of nutrition, long-term life-support, medications, and blood products.

Send form with Patient whenever transferred or discharged.

MDHHS-5836 (Rev. 8-22) Previous edition obsolete. 1

Section D – Signature of Attending Health Professional
My signature below indicates that these orders are medically appropriate given the patient's current medical condition, reflect to the best of my knowledge the patient's goals for care, and that the patient (or the patient representative) has received the information sheet.

Print Name | Date

Signature | Phone Number

Print Name of Collaborating Physician | Phone Number

Section E – Signature of Patient or Patient Representative
My signature indicates I have discussed, understand, and voluntarily consent to the medical orders on this MI-POST form. I acknowledge that if I am signing as the patient's representative, these decisions are consistent with the patient's wishes to the best of my knowledge.

☐ Patient ☐ Patient Advocate/Durable Power of Attorney for Health Care (DPOAHC)
☐ Court-Appointed Guardian

Print Name of Patient | Print Name of Patient Representative

Signature | Date

Information of Legally Authorized Representative
Complete this section if this MI-POST form was signed by a Patient Advocate/DPOAHC or Court-Appointed Guardian.

Address | City | State | Zip Code

Phone Number | Alternate Phone Number

Section F – Individual Assisting with Completion of MI-POST Form

Print Preparer's Name | Title | Date

Preparer's Signature | Organization | Phone Number

Section G – To Reaffirm or Revoke this Form
This MI-POST form can be reaffirmed or revoked at any time, verbally or in writing. See MDHHS-5837 for further details on reaffirmation or revocation. **If this document is revoked or is not reaffirmed, and a new form is not completed, full treatment and resuscitation will be provided.**

Healthcare Provider Name/Collaborative Physician (if applicable) | Healthcare Provider Signature

Patient/Representative Name | Patient/Representative Signature | Reaffirmation Date

Send form with Patient whenever transferred or discharged.
HIPAA permits disclosure of MI-POST to other Health Care Professionals, as necessary.

The Michigan Department of Health and Human Services will not exclude from participation in, deny benefits of, or discriminate against any individual or group because of race, sex, religion, age, national origin, color, height, weight, marital status, partisan considerations, or a disability or genetic information that is unrelated to the person's eligibility.

MDHHS-5836 (Rev. 8-22) Previous edition obsolete. 2

Interfacility High Flow Nasal Oxygen (MCA Optional Protocol)

This protocol is for paramedic use only

Purpose: To outline the process for paramedics who have received MCA approved training, to transport a patient on a high flow nasal cannula during an interfacility transport.

☑ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol.

In conjunction the MCA must also select the option for Interfacility High Flow Nasal Oxygen on the **Interfacility Facility Patient Transfers Protocol**.

I. Indications
- A. Order from sending facility/physician
- B. Hypoxic respiratory failure, hypoxic respiratory distress, respiratory distress
- C. Availability of an MCA approved high flow nasal cannula device and necessary supplies required to facilitate transport of patient.
- D. Adults (> 14 years of age)
- E. Pediatrics (≤ 14 years of age) per MCA selection for allowance and/or staff requirements.

MCA approval for pediatric HFNO (≤ 14 years of age) WITHOUT accompanying hospital staff

☐ NO – Staff must accompany patient

☐ YES - Enhanced Paramedic or Critical Care Paramedic only

☑ YES – Paramedic who has received additional MCA approved training.

MCAs will be responsible for maintaining a roster of the agencies choosing to participate and will submit roster to MDHHS

II. Contraindications
- A. Inability to provide continuous, humidification using an approved delivery device
- B. Inability to provide therapy through appropriately sized nasal prongs
- C. Insufficient supply of oxygen to complete the transport

III. Procedure

A. Ensure that an adequate supply of oxygen is available for the transport.
   i. Calculate the amount of oxygen needed prior to departure.
   ii. Ensure that you have at least two times the amount of oxygen anticipated.
B. Perform appropriate patient assessment, including obtaining vital signs, pulse oximeter reading, cardiac rhythm, and current device settings
C. Set FiO2 to maintain SpO2 at or above 94% or to patient's targeted baseline oxygen saturation as directed by the sending physician. Utilize facility settings as starting point, if available.
D. Set flow rate in liters per minute (L/min) to decrease work of breathing.
   i. Utilize facility settings as starting point, if available.
   ii. Flow calculation: 2 L/kg/min up to the first 12 kg, plus 0.5 L/kg/min for each kg thereafter, up to a maximum flow rate of 60 L/min.
E. Reassess vitals, work of breathing, mental status, and breath sounds. Reassessment should be continuous, but documentation of vitals must occur at least every five minutes throughout patient contact.
F. Consider the need for escalation of respiratory support if patient remains in respiratory failure on more than 2 L/kg/min of flow or maximum settings for the delivery device.
G. If patient deterioration occurs, terminate HFNO and begin positive pressure respiratory support via CPAP, BIPAP, BVM, or intubation, if necessary.

NOTES:

A. For suspected or confirmed COVID-19 patients, personnel must don respirators, eye protection, gowns, and gloves for transport.
B. Patients with congenital heart conditions may have baseline saturations considerably lower than 90% and driving saturations higher than the target can be harmful for these patients.

Transport of Adult Ventilator-Dependent Patient

The purpose of this protocol is to establish a uniform procedure for using mechanical ventilation for the transport of patients who are otherwise stable and do not meet criteria for MICU or Air Medical transport.

Criteria

A. BLS may transport patients on their own ventilator if:
   a. Patient caregiver trained on the ventilator accompanies patient
   b. Waveform capnography if available per MCA selection in **End-Tidal Carbon Dioxide Monitoring-Procedure Protocol**
      i. If waveform capnography not available, capnometry that includes a numerical (quantitative) read out is required.
   c. One of the following conditions:
      i. Scheduled transport (interfacility, facility to home, home to appointment, etc.) OR
      ii. Low acuity 9-1-1 that requires BLS level care.

B. ALS (non-Critical Care, non-Enhanced Paramedic) in which all agency paramedic personnel are trained on and carry ventilators.

Procedure

A. Always keep a bag valve mask resuscitator close by in case of ventilator failure.

B. Patients who are ventilator dependent may be transported on their own ventilator (home ventilator) if desired. Assure the BVM is available for back up use if transporting with a home ventilator. Patient caregiver trained in the use of ventilator should attend during transport if possible.
   1. Verify tube placement with waveform capnography.
   2. Patient lung sounds should be checked and documented. Tube placement must be rechecked via lung sounds and continuous waveform capnography every time the patient is moved, i.e., stretcher to stretcher or in or out of a vehicle. Continuous monitoring with the pulse oximeter will be used on all patients.

C. Patients on agency supplied ventilator:
   1. Newly vented - Ventilatory status should be established via Venous Blood Gas (VBG) in the newly intubated patient and documented when available. Continuous monitoring with the pulse oximeter and capnography will be used on all patients. If pulse oximetry is not attainable due to poor circulation, an ABG may be used to ensure adequate oxygenation. If unavailable, consider MICU or air medical transport.
   2. Ventilator and circuit must be set up according to manufacturer's recommendations.
   3. Patient should be placed on the ventilator approximately 5 minutes prior to departure to ensure the patient tolerates the ventilator. Appropriate adjustments should be made prior to departure.
   4. Assist Control (AC) and Synchronized Intermittent Mandatory Ventilations (SIMV) are acceptable modes of operation. Set Positive End Expiratory Pressure (PEEP)

and Sigh as established by sending facility. PEEP greater than 5 cmH2O should be referred to MICU or Air Medical Services for transport or appropriate hospital staff must accompany the patient.

a. Verify tube placement with waveform capnography prior to placing the patient on the transport ventilator.
b. Patient lung sounds should be checked and documented. Tube placement must be rechecked via lung sounds and continuous waveform capnography every time the patient is moved, i.e., stretcher to stretcher or in or out of a vehicle. Continuous monitoring with the pulse oximeter will be used on all patients.

Left Ventricular Assist Device

A Left Ventricular Assist Device (LVAD) is an implanted device that pumps blood from the left ventricle into the aorta to support circulation. For some of these patients this device is a bridge to transplant but for others it is a life prolonging therapy if transplant is not an option. Care of patients supported by these devices can present a challenge for care givers in the pre-hospital environment. This document provides guidance for the provision of emergency care for patients in the pre-hospital environment who have an LVAD in place. Contact VAD coordinator/center for devices which you are unfamiliar with or require assistance with.

Contact Information:
Program Name:
Phone: _ Request VAD Coordinator and state patient's name
VAD Pager number:

Contact Information:
Program Name:
Phone: _ Request VAD Coordinator and state patient's name
VAD Pager number:

1. LVAD's create non-pulsatile flow; it may be difficult to obtain vital signs using standard equipment and or methods. Utilize skin color, mental status and capillary refill to assess the patient.
2. The device supports left ventricular function and is dependent on some right heart function and adequate circulating volume. Even minor volume depletion may cause diminished perfusion and require fluid administration.
3. All LVAD patients are anticoagulated.
4. LVAD's are powered electrically, a driveline exits the body, connects to a "controller" which in turn is connected to a power source. Proper functioning of the device is dependent on the integrity of these connections. Exercise caution related to the drive line, which exits through the skin in the upper abdomen. Do not cut, pull or damage it in any way. It will be secured by some type of binder or other device to protect it.
5. Connections should not be forced together or apart. All connections are secured by a locking device.
6. Generally, patients, their families and caregivers are familiar with the operation of the device and should accompany the patient as a resource for operation of the device if promptly available.
7. All LVAD patients are assigned a hospital-based coordinator who is available by phone and should be contacted urgently.

8. All LVAD patients should have a "go bag" close by which contains an additional power supply as well as an extra controller. This should be brought with the patient to the hospital. This should contain charged batteries, a back-up controller and a power-based unit.
9. If possible, the patient should be transported with four fully charged batteries. Two will be connected to the patient and the other will serve as backups.
10. Most issues will be the result of medical problems rather than device failure.

Procedure

Do NOT use the following devices on an LVAD patient

- AED
- Mechanical Compression Device

1. Assess the patient for signs of life and function of the device
   A. Awake and or alert
   B. Satisfactory capillary refill
   C. Audible whine/hum in the region around the heart and or left upper abdomen
   D. Check all connections, tighten as indicated to be sure they are secure
   E. Identify any alarms that are heard or visible on controller and relay information to VAD coordinator.
   F. If able, begin to assemble components or have the patient's designated LVAD companion gather components that will accompany patient
      a. Extra controller
      b. Extra batteries
      c. Power unit (charger) and or A/C adapter

2. Assess for other medical issues


A. Start an IV and a fluid bolus if volume depletion is felt to be present
B. Control bleeding


C. Attach monitor and assess rhythm
   a. LVAD patients may have life threatening arrhythmias at baseline including VF or VT. Ask the patient, companion, or LVAD coordinator what the patient's baseline rhythm is.
   b. If the patient is unstable and they are in an arrhythmia that is not their baseline treat the arrhythmia
   c. Defibrillation, cardioversion, and external pacing are allowed if indicated. You do not need to disconnect the device.
D. Follow appropriate medical protocol
E. CPR compressions should only be performed as a last resort.


   a. Consult with Medical Control immediately if the device is non-functioning and you are starting CPR.
F. Prepare for transport to MCA approved LVAD hospital

3. Consult with LVAD coordinator
   A. Patient or companion should have emergency contact information
   B. Report information from the controller including any alarms
   C. Change battery or power source as requested
   D. Change controller as requested-be sure patient is laying or sitting down as pump will stop briefly

4. Transport to an MCA approved LVAD Center
   A.
   B.
   C.

Mechanical Chest Compression Device (MCA Optional Protocol)

Manual chest compressions remain the standard of care for the treatment of cardiac arrest. Mechanical chest compression devices may only be used as alternative to conventional CPR in specific settings where the delivery of high-quality manual compressions may be challenging or dangerous for the provider (e.g., limited rescuers available, CPR during hypothermic cardiac arrest, CPR in a moving ambulance).

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MCAs will be responsible for maintaining a roster of the agencies choosing to participate and will submit roster (including brand name/model number of device) to MDHHS.

Requirements:

1. FDA approved MCA authorized mechanical chest compression devices as listed below (brand name and model if applicable)

☑ Zoll Autopulse Resuscitation System

☑ Stryker Physio-Control Lucas

☑ Defibtech's Lifeline ARM Automated Chest Compression Device

☐

☐

2. Providers utilizing the device are trained on use of the device per MCA requirements
3. Follow manufacturer's instructions for use unless otherwise directed by the MCA.

Indications:

1. Cardiac Arrest

Contraindications:

1. Return of Spontaneous Circulation
2. Age and weight restrictions per manufacturers recommendations.
3. Patients with LVAD

Procedure:

1. Perform high-quality CPR while the device is being prepared for use.
2. Utilize device according to manufacturer's recommendations.
3. Refer to **Adult or Pediatric General Cardiac Arrest -Treatment Protocol**
4. Document use of Mechanical Chest Compression Device in patient care record including but not limited to:
    A. Type/brand of device
    B. Applicable times Mechanical Chest Compression Device was in use.
    C. Rate at which the device is set/delivering mechanical chest compressions.

Downgrade of Response

Purpose: To allow downgrading of EMS vehicles responding to an EMS incident.

I. If information is received, while en route, that the incident is not life-threatening, then that ambulance may use that information to alter response accordingly.

II. No EMS vehicle shall be canceled, once a request for emergency assistance is received, unless one of the following occurs.

A. A police/fire department unit reports that no person/accident can be found at the location,

B. Any licensed EMS personnel on the scene cancels the responding EMS vehicles.

C. A 1st party caller (the potential patient) states they no longer require a response from emergency medical services AND an EMS response is no longer requested AND there is not another indication that an emergency exists.

MCL 333.20967 If an emergency has been declared, the declaration that an emergency no longer exists shall be made only by a licensed EMS provider or a licensed health professional who has training specific to the provision of emergency medical services in accordance with protocols established by the local medical control authority.

Note: For the purposes of this protocol, a situation in which injuries or illness have not been confirmed does not constitute an “emergency” (i.e. motor vehicle crash with unknown injuries, unknown medical alarm).

Patient Prioritization and Use of Lights and Siren

This protocol is designed to provide a safe and orderly response to all requests for emergency medical care in the State of Michigan.

A. **Michigan Motor Vehicle Code** *(§257.603 and 257.653)*
The Michigan Motor Vehicle Code governs the driving of emergency vehicles. All licensed life support vehicles will abide by the Michigan Motor Vehicle Code.

1. This protocol does not supersede the Michigan Motor Vehicle Code.

B. **Authority to Require Lights and Siren Use**
Neither the patient's sending nor receiving physician has the authority to require the use of lights and siren during transport; this policy shall be followed at all times. Only the EMS transport crew can determine transport mode, based on patient priority.

C. **Use of Emergency Medical Dispatch**
Where Emergency Medical Dispatchers (EMD) and/or a tiered EMS response are/is available, the EMS Agency is encouraged to develop procedures that reduce unnecessary use of lights and sirens. The procedures may include, but are not limited to, the use of established EMD call screening protocols and evaluation of the scene/patient by first responder personnel.

D. **Prudent Use of Lights and Siren During Transport**
Lights and sirens may be used to clear traffic and then shut down, if prudent, where no obstruction or delay is present, provided both lights and siren are activated at least 500 feet before any intersection or obstruction to be cleared. When lights and siren are not in use, the vehicle must be operated as a typical non-emergency vehicle, per the Motor Vehicle Code.

E. **Returning from the transport, returning to a service area**

1. EMS units may ONLY utilize lights and sirens to return to their area IF THEY ARE RESPONDING TO AN EMERGENCY CALL.
2. Lights and sirens will **NOT** be used to return to an area when the unit is not responding to another emergency call.

F. **Education**
Life Support Agencies shall ensure MCA approved annual training surrounding the Michigan Motor Vehicle Code, safe use of lights and siren, this protocol and related agency polices.

G. **Agency and Medical Control Authority Specific Policies**
This protocol does not preclude MCAs from developing protocols and/or individual agencies from developing internal policies on this subject, as long as it includes the contents of this protocol as a minimum.

H. When in doubt, contact medical control to determine if there is an urgent need to transport with lights and siren.

I. **Response and Transport**

Response to the scene and transport to the hospital is determined by patient priority.

1. If the on-scene patient priority is different from the dispatch priority, follow the on-scene patient priority for transport.
2. If the patient priority changes during transport follow the appropriate use of lights and sirens for the new patient priority.

1. Unstable Patients

Priority	Description	Example(s) include, but not limited to

Unstable	**Unstable** patients with a critical and immediate life-threatening illness or injury, or require time sensitive interventions	A patient that has an acutely life-threatening illness or injury and is unstable.
		• Unstable or deteriorating vital signs
		• Compromised airway that cannot be secured by EMS.
		• Severe respiratory distress/failure
		• Cardiac arrest or post cardiac arrest
		• STEMI
		• Tonic Clonic seizures unresponsive to treatment
		• Significant blunt or penetrating trauma including but not limited to:
		  ○ Airway compromised
		  ○ Respiratory distress
		  ○ Signs of inadequate perfusion

Response to the scene and transport to the hospital:

MCA Selection Response to Unstable Patient Incidents and Transports

☐ Life support vehicles, in compliance with Michigan Motor Vehicle Code, use lights and sirens while responding to the scene and/or transporting to the hospital

☐ Response ☐ Transport

☑ Life support vehicles, in compliance with Michigan Motor Vehicle Code, use lights and siren only when necessary to circumvent significant traffic delays and obstructions responding to the scene and/or transporting to the hospital (per MCA selection).

☑ Response ☑ Transport

2. Potentially Unstable Patients:

Priority	Description	Example(s) include, but not limited to
Potentially Unstable	**Potentially unstable** patients that are ill or injured *without immediate* life-threatening condition and do not require time sensitive interventions	A patient that is currently stable but is felt to have a condition that may become unstable or life-threatening if not evaluated and treated rapidly. • Hemodynamically stable chest pain without signs of STEMI • Altered mental status – not acutely deteriorating • Seizure - Post-ictal not actively seizing • Hemodynamically stable abdominal pain • Hemodynamically stable >65 y/o fall with confirmed or suspicion of head injury and currently taking blood thinner medications

a. Response to the scene.

MCA Selection for Response to Potentially Unstable Patients and Transports

☑ Life support vehicles, in compliance with Michigan Motor Vehicle Code, use lights and sirens while responding to the scene, transports without lights and siren.

☐ Emergency Vehicles, in compliance with Michigan Vehicle Code, respond with no lights and sirens to the scene or during transport.

☐ Only the first responding life support vehicle, in compliance with Michigan Motor Vehicle Code, responds lights and sirens to the scene. All other life support vehicles respond with no lights and sirens to the scene unless upgraded.

b. Do not transport using lights and sirens unless the patient's condition deteriorates.

3. Stable Patients:

Priority	Description	Example(s) include, but not limited to
Stable	**Stable** patients are Ill or injured patients not fitting the above two categories who require medical attention but do not have a life-threatening condition.	A patient that does need to receive medical evaluation but does NOT have a potentially life-threatening illness or injury at the time of assessment or transport by EMS.

a. Respond and transport using normal traffic patterns to the incident and to the hospital

4. Dead Patients:

Priority	Description	Example(s) include, but not limited to
Dead	**Dead** patients are absent of all vital signs and do not require further medical attention, per protocol.	**See Patient Death, Termination of Resuscitation and Pronouncement Protocol**

a. Do not transport using lights and sirens.

Transport Destination and Diversion

Purpose: To define the decision-making process regarding EMS destination.

I. **Transport Destination Decisions**
   A. In matters of imminent threat to life or limb, transport to the closest appropriate facility.
      Closest appropriate is a facility capable of providing definitive care or, if definitive care is not readily available, resuscitative care for the patient's condition in consultation with on-line medical control or as defined by MCA specific protocol.
   B. Patients that are stable will be transported according to the following ranking given below unless the patient becomes unstable during transport:
      1. Patient request
      2. Family request
      3. Patient's personal physician request
   C. No other individuals are permitted to determine destination of patient without prior approval of on-line medical control: (police, fire, bystander physician, etc.)
   D. Exception: If transportation to the requested facility removes the EMS vehicle from the service area for an extended time, consult medical control and an alternative may be considered

II. Transportation Procedure
   A. Priority 3 patients (medical or trauma): Shall be transported to an Emergency Facility of the patient's or patient's family choice
   B. Priority 1 and 2 (medical) Patients: shall be transported to the closest appropriate facility, based on the following guidelines:
   C. ST Elevation Myocardial Infarction (STEMI)
      1. Transport to a facility capable of interventional cardiac care.
   D. Return of Spontaneous Circulation (ROSC)
      1. Transport to a facility capable of interventional cardiac care. Notify receiving facility, as soon as possible and give ETA.
   E. Stroke
      1. Notify closest MCA approved stroke center as soon as possible if Cincinnati Stroke Scale or other validated MCA approved stroke scale is abnormal with "Stroke Alert" and ETA
   F. Trauma Patients – follow **Adult and Pediatric Trauma Triage-Treatment Protocol**
      1. A patient may be transported to a Provider Based Emergency department if they are:
         i. Priority 3 patient who requests transport to the Provider Based Emergency department.
         ii. A stable patient (priority 2) who has been approved by medical direction for transport to a Provider Based Emergency department.

iii. An unstable Priority 1 patient who is unstable for transport to an acute care facility where the Provider Based Emergency department can provide additional care not available in the ambulance (the primary example is a patient being transported by an ALS unit with an airway that cannot be secured or maintained by EMS personnel).
iv. A trauma patient with minor injuries such as sprains and minor fractures without deformity or without high velocity mechanism who requests transport to the Provider Based Emergency Department.

G. Documentation of destination will be the reason the facility was chosen (specialty care, trauma center). Closest facility will only be indicated when the facility is geographically the closest facility.

III. Patient Diversions

A. Once the decision is made to transport a patient to a facility, the patient may be diverted to another facility if:
    1. On-line medical control for the initially selected destination requests diversion to another facility. A receiving facility may not refuse a patient unless it does not have the staff or resources to accept the patient.
    2. The patient experiences an imminent threat to life or clinical deterioration and, in the medical judgment of the EMS personnel, the patient should be diverted to the closest appropriate facility.
        i. Documentation of the reason for the diversion shall be included in the EMS patient care record.
B. Immediate on-line medical direction shall be established with the newly chosen receiving facility.
C. If EMS personnel determine diversion is necessary, contact the initial receiving facility as quickly as possible to inform it of the diversion.,.
D. Patients requesting transport to a facility, which is currently on diversion, should be advised of the diversion and that the appropriate resources to care for them are not currently available at that institution. An alternative facility destination should be requested from the patient.

1. If the patient persists in the request of the facility currently on diversion, contact medical control.

Note: Each facility has the authority to develop and administer written policies concerning the temporary closing of emergency departments, however a facility on diversion must notify the MCA of the diversion status. By statute, the medical control authority, based on needs of the EMS system, may determine the destination of the patient thus overriding the diversion status.

MARQUETTE-ALGER DESTINATION MATRIX

Purpose: To guide the decision-making process to be followed by EMS personnel in the Marquette-Alger County Medical Control Authority regarding determination of destination hospital for patients.

	Munising Memorial	UPHS-Bell	UPHS-Marquette
TRAUMA PHYSIOLOGIC CRITERIA			
GCS ≤ 13	DIVERT	DIVERT	YES
SBP < 90 mmHg	DIVERT	DIVERT	YES
RR <10 >29 or Ventilatory Support	DIVERT	DIVERT	YES
*RR <20 in infants or <10 >29 or Ventilatory Support	DIVERT	DIVERT	YES
TRAUMA ANATOMIC CRITERIA			
All Penetrating Injuries Head/Torso/Extremities Proximal to Elbow/Knee	DIVERT	DIVERT	YES
Chest wall Instability/Deformity	DIVERT	DIVERT	YES
Amputation Proximal to Wrist/Ankle	DIVERT	DIVERT	YES
2 or More Proximal Long Bone Fx	DIVERT	DIVERT	YES
Crushed/Degloved/Mangled/Pulses Extremity	DIVERT	DIVERT	YES
Pelvic Fracture	DIVERT	DIVERT	YES
Open/Depressed Skull Fracture	DIVERT	DIVERT	YES
Paralysis	DIVERT	DIVERT	YES
TRAUMA MECHANISM OF INJURY CRITERIA			
Falls >20 Feet	Call Med Ctrl	Call Med Ctrl	YES
*Fall > 10 Feet	DIVERT	DIVERT	YES
Intrusion > 12 inches Occupant Site; > 18 inches Any Site	Call Med Ctrl	Call Med Ctrl	YES
Ejection	Call Med Ctrl	Call Med Ctrl	YES
Death in Same Passenger Compartment	Call Med Ctrl	Call Med Ctrl	YES
Vehicle Telemetry Data Consistent w High Injury Risk	Call Med Ctrl	Call Med Ctrl	YES
Auto Vs Pedestrian/Bicyclist Thrown, Run over, or with Significant (>20 mph) Impact	Call Med Ctrl	Call Med Ctrl	YES
Motorcycle Crash > 20 mph	Call Med Ctrl	Call Med Ctrl	YES
TRAUMA SPECIAL CONSIDERATIONS			
>55 years of Age	Call Med Ctrl	Call Med Ctrl	YES
SBP <110 mmHg in person >65 years	Call Med Ctrl	Call Med Ctrl	YES
Falls in Older Adults (ground level falls)	Call Med Ctrl	Call Med Ctrl	YES
Anticoagulant Use/Bleeding Disorder	Call Med Ctrl	Call Med Ctrl	YES
Burns (without associated additional trauma)	Call Med Ctrl	Call Med Ctrl	YES
Pregnancy >20 weeks	Call Med Ctrl	Call Med Ctrl	YES
EMS Provider Judgement	Call Med Ctrl	Call Med Ctrl	YES
*Burn (without associated additional trauma)	DIVERT	DIVERT	YES

The pink criteria are specific to pediatric patients only

The goal is to get the patient to the most appropriate medical facility in a timely and efficient manner. Any patient who meets bypass transportation guidelines and has a ≥35-minute estimated transport time to the appropriate hospital, an attempt should be made to have the patient transported via rotary wing ambulance from the scene or a rendezvous point (if air is available). It must be understood that the request for air transport must be initiated early. As soon as the possibility of air evacuation is recognized, the request for rotary wing ambulance should be made. This may be made simultaneously with initial dispatch information.

Reviewed 2023

MARQUETTE-ALGER DESTINATION MATRIX

Purpose: To guide the decision-making process to be followed by EMS personnel in the Marquette-Alger County Medical Control Authority regarding determination of destination hospital for patients.

ADULT MEDICAL	Munising Memorial	UPHS Bell	UPHS Marquette
Possible CVA <6 hours	DIVERT	DIVERT	YES
STEMI/ ACS ≤ 60 minutes transport to PCI	DIVERT	DIVERT	YES
STEMI/ ACS 60-90 minutes transport to PCI	DIVERT	DIVERT	YES
Unstable VS, Unstable Airway, Respiratory Failure, Cardiac Arrest/ROSC, GCS <10, Active Seizure	Call Med Ctrl	Call Med Ctrl	YES
GCS 11-14, Sepsis, Respiratory Distress	Call Med Ctrl	Call Med Ctrl	YES
Stable Illness or Minor Injury	YES	YES	YES
PEDIATRIC MEDICAL			
Unstable VS, Unstable Airway, Respiratory Failure, Cardiac Arrest/ROSC, GCS <10, Active Seizure	DIVERT	DIVERT	YES
GCS 11-14, Sepsis, Respiratory Distress	DIVERT	Call Med Ctrl	YES
Stable Illness or Minor Injury	YES	YES	YES

** *The pink criteria are specific to pediatric patients only***

The goal is to get the patient to the most appropriate medical facility in a timely and efficient manner. Any patient who meets bypass transportation guidelines and has a ≥35-minute estimated transport time to the appropriate hospital, an attempt should be made to have the patient transported via rotary wing ambulance from the scene or a rendezvous point (if air is available). It must be understood that the request for air transport must be initiated early. As soon as the possibility of air evacuation is recognized, the request for rotary wing ambulance should be made. This may be made simultaneously with initial dispatch information.

Reviewed 2023

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ALS and LALS Intercept/Transfer of Care

Purpose: The purpose of this protocol is to establish indications and procedures for ALS intercept for patients being managed by a BLS or LALS unit who might benefit from ALS care or LALS intercept for patients being managed by a BLS unit when ALS is not available.

I. If a transport has begun by a Basic Life Support (BLS) unit, a rendezvous with an Advanced Life Support (ALS) unit or Limited Advanced Life Support (LALS) if available and ALS unit is not available, should be attempted at a mutually agreed upon location, if indicated and available.

II. If a transport has begun by a Limited Advanced Life Support (LALS) unit, a rendezvous with an Advanced Life Support (ALS) unit should be attempted at a mutually agreed upon location, if indicated and available.

III. Indications
   a. Patients presenting with conditions for which ALS interventions would be potentially beneficial for patients, if the intercept can be completed 10 or more minutes from the receiving facility, including, but not limited to patients with:
      i. Chest pain with suspected cardiac etiology
      ii. Seizure
      iii. Uncontrolled pain
      iv. Hypoglycemia
      v. Altered mental status
      vi. Worsening respiratory distress
      vii. Major trauma
   b. Patients presenting with conditions where ALS may be needed for life saving interventions may be intercepted at any distance from the hospital:
      i. Those with an uncontrolled airway
      ii. Patients in cardiac arrest without a mechanical CPR device in place

III. Contraindications
   a. Low acuity patients for which advanced intervention would likely not be beneficial to the patient.
   b. Patients with time sensitive emergencies where advanced intervention would likely not be beneficial to the patient

NOTE: BLS unit may contact Medical Control for assistance with any situation as necessary.

Procedure & Documentation

1. BLS/LALS personnel are required to provide the receiving ALS (or if applicable LALS) personnel with a complete hand-off report including medical history, pertinent physical exam findings, vital signs, treatment provided and response to treatment.
    a. The hand-off procedure (i.e., verbal report, field notes, air drop, etc.) must be MCA approved.
2. ALS (or if applicable LALS) personnel will include the complete hand-off report from BLS/LALS within or attached to (i.e., scannable field note) the ALS (or if applicable LALS) patient care record.
3. Both the initial unit (BLS/LALS) and unit receiving the rendezvous (ALS or if applicable LALS) shall complete an electronic Patient Care Report (PCR) and include the following in addition to patient care information:
    a. Agency name/unit number/providers names from whom patient was received or transferred to.
    b. If both transferring and receiving units are from the same agency, all personnel should be listed as crew in both the ALS and BLS run when possible.

Dispatch

Purpose:
As mandated under Public Act 368 of 1978, as amended, Section 20919 (1)(b): "A local medical control authority shall establish written protocols for the practice of life support agencies and licensed emergency medical services personnel within its region. The protocols shall be developed and adopted in accordance with procedures established by the department and shall include medical protocols to ensure the appropriate dispatching of a life support agency based upon medical need and the capability of the emergency medical services system."

Local municipalities shall determine, in accordance with the rules and regulations of their local Medical Control Authority, the level of agency licensure, as well as who will provide EMS service in their area.

Protocol

1. Public Safety Answering Points and/or Life Support Agency dispatch centers shall use Enhanced 911 technology, where available, and shall dispatch appropriate resources as quickly as possible.
2. Since ALS may provide additional medical care and delay may negatively impact patient outcome, in areas where ALS is available it shall be simultaneously dispatched to certain medical emergencies including, but not limited to:
    a. Cardiac Arrest
    b. Chest Pain
    c. Stroke
    d. Drug Overdose / Poison
    e. Altered Mental Status / Unconscious
    f. Allergic Reaction
    g. Difficulty Breathing
    h. Drowning or Near Drowning
    i. Injury with Bleeding or Immobility
    j. Seizures / Convulsions
    k. Diabetic Reactions
    l. Child Birth
    m. Burns
    n. or as determined through prioritized dispatch developed through an MCA approved EMD program.

All medical callers shall be evaluated based on symptoms provided and/or observed, and provided with pre-arrival instructions where applicable as determined through an Emergency Medical Dispatch program. Evaluation, instructions and prioritization shall be made through an Emergency Medical Dispatch program approved by the MCA which conforms to nationally recognized guidelines.

ALS to BLS Transfer of Care (MCA Optional Protocol)

☑ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol.

Purpose
Patients who need or desire transport to a hospital and do NOT meet criteria for ALS interventions, may have care transferred from an ALS unit to a BLS unit if all criteria are met.

1. Criteria for transfer of care from ALS to BLS must include:
    a. Patient assessed by on scene paramedic and deemed appropriate for BLS care.
    b. Patient's airway is patent, maintained without assistance or adjuncts.
    c. Patient is hemodynamically stable with medical complaints or injuries that would be cared for at the BLS level.
    d. No imminent changes are anticipated in the patient's present condition.
    e. Patient presents at baseline mentation and GCS or if unknown, GCS ≥ 14.
    f. The EMT in attendance must be willing to accept the transfer of care given the patient's condition.
    g. ALS may consider transfer to BLS for the patients who have meet the above criteria and have had the following ALS interventions:
        i. IV placement with saline lock
        ii. Dextrose administration with return to baseline mental status
        iii. Naloxone administration with return to baseline mental status and without respiratory complaints
        iv. Analgesia administration, with no other excluding criteria and not requiring additional doses during transport.
     h. For any other patients with ALS interventions performed, contact medical control prior to ALS to BLS transfer of care.

2. Transport by the ALS unit shall be considered if the transfer of care to the BLS staffed ambulance would incur a time delay greater than the projected transport time to the intended receiving facility.

Procedure & Documentation
1. ALS personnel are required to provide BLS personnel with a complete hand-off report including medical history, pertinent physical exam findings, vital signs, treatment provided and response to treatment.
    a. The hand-off procedure (i.e., verbal report, field notes, air drop, etc.) must be MCA approved.

2. BLS personnel will include the complete hand-off report from ALS within or attached to (i.e., scannable field note) the BLS patient care record.
3. Both ALS and BLS shall complete an electronic Patient Care Report (PCR) and include the following in addition to patient care information:
    a. Agency name/unit number/providers names from whom patient was received or transferred to.
    b. If both transferring and receiving units are from the same agency, all personnel should be listed as crew in both the ALS and BLS run when possible.

Quality Improvement/Quality Assurance (QA/QI)

1. The MCA shall establish a QA/QI process for review of ALS to BLS transfers of care.

Air Ambulance Personnel Scope of Practice (MCA Optional Protocol)

The purpose of this protocol is to provide guidance for providers who are treating patients as part of an aeromedical service response.

☑ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol.

Scope:

Air ambulance programs may provide care over and above that specified in the local MCA protocols, including (but not limited to): administration of blood products, placement of central venous access devices, placement of thoracostomy tubes, establishment of a surgical airway, and administration of medications not included in the local MCA protocols. Policies and procedures regarding the use of equipment and medications not included in the local MCA Protocols will be made available by the flight service's medical director to the local MCA EMS Medical Director. Responsibility for training and quality assurance regarding these additional protocols will be the responsibility of the air ambulance program.

Helicopter Utilization

I. Indications for Use – in the presence of one or any combination of the following:

NOTE: These guidelines are offered as examples of patients who might benefit from helicopter transport. Additional considerations would include the physical exam, additional contributing factors such as age, mechanism of injury, the level of care available in the area, and ground service availability.

A. Trauma Patients that meet the red criteria per **Adult/Pediatric Trauma Triage-Treatment Protocol** and one or more of the following:
   1. Long transport times
   2. Poor road conditions
   3. Entrapment with prolonged extrication

B. Medical Patients
   1. If in the estimation of the paramedic, that the use of helicopter resources would be beneficial to patient outcome.

NOTE: Appropriate helicopter utilization is determined by a combination of factors with the goal of responsible resource utilization for the seriously ill or injured to reach definitive care in the least amount of time.

II. Procedure

A. Request for helicopter service response may require prior medical control approval per MCA selection:

○ **YES** - Online Medical Control pre-approval required

◉ **NO –** Online Medical Control pre-approval not required. Follow established Medical Control guidelines

B. Patient should be prepared for transport by air in the following manner:
   1. Patient should be stabilized and immobilized with ground ambulance equipment per existing protocol.
   2. Ground ambulance personnel will stay with the patient until released by the helicopter personnel.

C. Communications
   1. Communication with the helicopter dispatch should include information regarding location.
   2. Helicopter dispatch will request pertinent medical information to relay to the flight crew.
   3. Communications between the helicopter and ground ambulance shall be coordinated through dispatch and preferentially take place on AirLZ1 or AirLZ2 as dictated by local policies and procedures.

D. Landing Site
   1. Utilize trained personnel whenever possible.
   2. Locate a level, 100’ x 100’ area clear of obstacles (i.e. wires, trees)

3. Mark landing zone with a marker at each corner and one upwind.
4. Public safety vehicles should leave on flashers to assist in identifying site from the air.
5. Identify obstacles close to the landing zone and communicate all pertinent information about the landing zone to the flight crew.
6. Landing zone personnel will communicate by radio with the flight crew.

E. Safety
1. Under NO circumstances should the helicopter be approached from the rear due to the extreme danger of the tail rotor.
2. The flight crew will direct all actions around a helicopter including personnel approach/departure of the helicopter, and loading/unloading of patients and/or equipment.
3. Personnel should be in a crouched position in the vicinity of the helicopter and NEVER near the tail rotor.

F. Patient Destination
1. Patient will be transported to appropriate facility as directed by medical control.

G. Quality Assurance
1. Upon request, helicopter services will forward copies of their patient care record(s) to the Medical Control Authority. The Medical Director may review all helicopter activations for appropriateness.

Infection Control and Communicable Disease

PURPOSE: To outline procedures for infection control through personal protective equipment use and decontamination for people, equipment, and vehicles utilized in assessment, treatment, and transport of patients along with categorization and response for exposure. ALL patients are considered potentially infectious.

NOTE: Any information obtained or exchanged regarding communicable disease exposures must be handled with strict confidentiality.

I. PRECAUTIONS AND PREVENTION

A. Standard Precautions and Body Substance Isolation (BSI)

1. Purpose: To prevent the transmission of all bloodborne pathogens that are spread by blood, tears, sweat, saliva, sputum, gastric secretions, urine, feces, CSF, amniotic fluid, semen, breast milk, skin rash and open wounds.
2. Rationale: Medical history and examination cannot identify all patients infected with bloodborne pathogens.
3. Practice: Standard Precautions/BSI will be done for patient encounters in which the risk of exposure to blood or body fluid exists.

B. Respiratory Precautions

1. Purpose: To prevent the transmission of airborne infections for patients with respiratory complaints.
2. Rationale: Medical history and examination cannot fully identify all patients with transmissible respiratory pathogens. Respiratory complaints include but are not limited to dyspnea, cough, shortness of breath, etc.
3. Practice: Respiratory precautions will be used for every patient with respiratory complaints and/or receiving aerosolized treatments.

C. Precautions for patients highly suspicious communicable disease including but not limited to:

1. Fever > 100.5 F with headache or malaise or myalgia, and cough or shortness of breath or difficulty breathing.
2. Pustular, papular or vesicular rash distributed over the body (trunk, face, arms, or legs) preceded by fever with rash progressing over days (not weeks or months) and the patient appears ill.
   a. Consider the patient to be both airborne and contact contagious.
   b. Crew PPE and procedures:
      i. N95 or higher protective mask/respiratory protection
      ii. Goggles or face shield
      iii. Gowns

iv. Utilized waterless hand sanitizer between glove changes and upon removal of gloves.

c. Source Control:
   i. Patient wear a paper surgical mask if tolerated.
   ii. Cover patient with linen sheet to reduce chance of contaminating objects in area.
   iii. Patients should be encouraged to use hand sanitizer when tolerated.

d. Notify the receiving facility as soon as possible of the patient's condition to facilitate preparation of the facility and institution of appropriate infection control procedures
   i. Confirm entrance and procedure for transfer of patient into facility.
   ii. Ensure proper notification and preparation of receiving facility for inter-facility transfers.

e. Vehicles that have separate driver and patient compartments and can provide separate ventilation to these areas are preferred for patient transportation. If a vehicle without separate compartments and ventilation must be used, the outside air vents in the driver compartment should be turned on at the highest setting during transport of patient to provide relative negative pressure in the patient care compartment.

f. DO NOT REMOVE protective equipment during patient transport.

g. Discourage non-essential personnel and family members from entry or accompanying patient in ambulance.

h. Patient cohorting may occur if resources are exhausted and patients are grouped with same disease. Cohorting should only be utilized as a last resort.

i. The ambulance(s)/transport vehicle will not be used to transport other patients (or for any other use) until it is decontaminated using the CDC guidelines for decontamination.

D. Procedures

1. Handwashing will be done before and after contact with ALL patients.
2. Nonsterile disposable gloves will be worn with patients that pose a potential exposure through blood or body fluids. Gloves will be changed in-between patients and not used repeatedly.
3. Outerwear (example: gown, coveralls, turnout gear) will be worn if contact with blood or body fluids contamination may occur.
4. Face Protection (including eye protection) will be worn if aerosolization of blood or body fluids may occur (examples include but are not limited to suctioning,

insertion of endotracheal tubes, patient with excessive coughing, invasive procedures).

5. Mouth-to-mouth resuscitation: CDC recommends that EMS personnel NOT perform mouth to mouth, instead use adjunctive aids (pocket masks, face shields, BVM).
6. N95 or higher will be worn during contact with patients with respiratory complaints, during any aerosolizing treatments, and with all mechanically ventilated patients.
7. Mechanically Ventilated Patients (including bag-valve-mask)
   a. HEPA filtration of airflow exhaust shall be used.
   b. Consult ventilator equipment manufacturer to confirm appropriate filtration capability and the effect of filtration on positive pressure ventilation.
   c. If the mechanical ventilator is not equipped with HEPA filtration, the EMS provider must wear an N95 while accompanying the patient.
   d. If the mechanical ventilator is equipped with HEPA filtration, the EMS provider must still don a simple facemask while accompanying the patient.

II. CLEANING AND DECONTAMINATION

A. Wear gloves for ALL decontamination

B. Non-disposable contaminated articles:
   1. Bag according to agency procedures.
   2. Articles must be decontaminated prior to being placed back into service. Refer to manufacturer's recommendations for proper cleaning and disinfecting

C. Disposable contaminated articles
   1. Articles contaminated with blood or body fluids must be bagged and discarded in accordance with MIOSHA guidelines.

D. Medication/IV Bags or Boxes shall be inspected and all contaminated waste removed prior to bag exchange. If the medication/IV bag or box is contaminated, it must be spot cleaned or laundered prior to being placed back into service.

E. Linens soiled with blood or body fluids shall be placed in appropriately marked container.

F. Needles and syringes shall be disposed of in a rigid, puncture-resistant container. Any grossly contaminated container, or one that has reached the 'fill line', should be disposed of appropriately.

G. Blood spills shall be cleaned up promptly with a solution of 5.25% sodium hypochlorite (household bleach) diluted 1:10 with water or other FDA approved disinfectant.

H. Non contaminated but utilized equipment will be disinfected after every patient encounter in accordance with MCA approved agency guidelines.

I. Vehicle surfaces will be disinfected after every patient encounter in accordance with MCA approved agency guidelines.

III. RADIO COMMUNICATIONS

A. Radio communications of any kind regarding a communicable disease should be done so in a format that ensures patient confidentiality.

IV. EXPOSURES

A. Definitions:

1. "Emergency source patient" means an individual who is transported to an organized emergency department located in and operated by a licensed hospital or a facility other than a hospital that is routinely available for the general care of medical patients.

2. Definition of Reportable Exposure:

a. Any breach of the skin by cut, needle stick, absorption, or open wound.

b. Blood/body fluid splash to the moth, nose, eye, or other parenteral route.

c. Blood/body fluid splash into non-intact skin area

B. Reporting Exposures:

1. Police, Fire or EMS personnel who, in the performance of their duty, sustain a needle stick, mucous membrane or open wound exposure to blood or other potentially infectious material (OPIM) may request, under Public Act 368, Section 333.20191, that the patient be tested for HIV/Hepatitis B and C surface antigen. The exposed individual shall make the request on a MDHHS Form (DCH-1179): First Responder Provider Request for HIV and/or Hepatitis B Testing of Emergency Patient.

C. Cooperating Hospitals' Responsibilities

1. Each cooperating hospital in the Medical Control region will designate an infection control contact to serve as liaison(s) with the staff of medical control and all EMS agencies for the purpose of communicating information about infectious patients or potential exposures.

2. Hospitals, upon learning that any patient has a reportable infectious or communicable disease, will check the patient chart to determine if any EMS agencies were involved with the patient prior to hospitalization. When determined that EMS may have had contact with the patient, designated individual will notify the EMS agency for further follow-up and complete the required State forms.

3. Hospitals, when requested to do so, will obtain lab tests and results on source patients when exposure to a pre-hospital provider has occurred.

a. Hospitals will report the results of testing on MDHHS Form (DCH-1179) and return to the address indicated on the form.

4. Hospitals will notify transporting agencies at the time a transfer is scheduled if any infection potential exists with the patient and the precautions necessary (standard precautions and/or mask).

D. Pre-hospital Agency Responsibilities

1. Each pre-hospital provider agency will be responsible for assuring that their personnel, trainees and students are familiar with infection control procedures, epidemiology, modes of transmission and means of preventing transmission of communicable disease per CDC guidelines and MIOSHA regulations.
2. Each pre-hospital provider agency will be responsible for supplying personnel with the appropriate personal protective equipment.
3. It is recommended that each pre-hospital provider agency ensures adequate immunizations per CDC Immunization Guidelines for Health Care Workers.

E. Follow-up Care/Counseling

1. Follow-up care and counseling of exposed personnel shall be the responsibility of the pre-hospital provider agency and shall be carried out without delay upon notification of exposure.

F. Summary of EMS Personnel Post-Exposure Procedures

1. Irrigate and wash exposed area very well.
2. Notify agency supervisor of possible exposure.
3. Each exposed individual complete section 1 and sign form DCH-1179 (E) and sign
4. If source patient is transported submit (in person or via fax) DCH-1179 (E) form at hospital receiving the source patient
5. Contact (preferably in person but may be by phone) the emergency department of the health care facility receiving the source patient and review Section 1 of DCH-1179 (E).
    a. The health care facility authorized staff member will complete Section 2 of the form and determine if an exposure did or did not occur. If determined exposure did occur, the health care facility will:
        i. Complete testing of source patient for HIV, Hepatitis B, and other pathogens, as applicable
        ii. Rapid HIV testing should be conducted
        iii. If HIV rapid testing is positive, the health care facility will coordinate appropriate post exposure prophylaxis for the exposed individual.
        iv. Section 3 of form DCH-1179 (E) will be completed
    b. If determined that an exposure did not occur, the health care facility will explain the rationale of determining that it was a non-exposure.

c. The exposed individual, health care facility, agencies and the Medical Control Authority will comply with all parts of Public Act 368, Section 333.20191

6. The exposed personnel shall follow up with the agency occupational health in accordance with agency requirements.
7. If the patient is deceased and not transported to a hospital
   a. If the source patient remains on scene or is transported to somewhere other than a hospital, collaboration between the medical examiner's office (if applicable), EMS agency, the agency occupational health provider and/or the medical control authority should be notified to facilitate source patient testing.
8. If the source patient is living and not transported the exposed individual should work with the EMS agency, the agency occupational health provider and/or the medical control authority for potential testing of the source patient.
   a. The EMS agency may contact the individual with a request for prompt testing.
   b. The exposed personnel and EMS agency shall follow up with agency occupational health and the medical control authority.

G. Any first responders (Police, Fire or EMS personnel) who may have had an exposure should be encouraged to follow the protocol as described.

Protocol Source/References: Testing and Reporting (including HIV and STI Case Reporting Forms and Aphirm) (michigan.gov)

DCH-1179, FIRST RESPONDER PROVIDER REQUEST FOR HIV AND/OR HEPATITIS B TESTING OF EMERGENCY PATIENT

Michigan Department of Health and Human Services (MDHHS)
In Accordance with Michigan Public Act 419 of 1994 (MCL 333.20191)
(Revised 11-22)

NOTICE TO EXPOSED INDIVIDUAL:

- Test results will not be provided over the telephone.
- This request should be made before the emergency patient is released from the health care facility.
- Contact the health care facility if the interpretation of test results on the emergency patient is not received by you within ten (10) days.
- **Information contained on this form is confidential.**
- See page 3 for PA 431 and non-discrimination information.

SECTION 1 – To be completed by EXPOSED INDIVIDUAL (Please Print)

1. Name of Exposed Individual | 2. Job Classification | ☐ Good Samaritan

3. Home Address (Number & Street, etc.) | City | State | Zip Code

4. Home Phone Number

5. Name of Employer | 6. Employer Phone Number

7. Employer Address (Number & Street, etc.) | City | State | Zip Code

8. Emergency Source Patient ID Number | 9. Date of Exposure | 10. Approximate time of Exposure __ __

11. Route of Exposure
☐ Open Wound ☐ Mucous Membrane ☐ Percutaneous ☐ Other

12. Provide a detailed description of the exposure (attach an additional sheet as needed)

13. Personal Protective Equipment used when exposed (check all that apply)
☐ Glove ☐ Gown ☐ Eye Protection ☐ Face Mask
☐ Turnout Gear ☐ None ☐ Other **explain**

14. Based on my exposure described above, I am requesting that this source individual be tested for the following (check all that apply)
☐ HIV ☐ Hepatitis B ☐ Other **explain**

Immunization & Testing

Purpose:
To allow paramedics or other Medical Control Authority (MCA) approved personnel to provide testing and vaccinations for agency personnel and the community. Community immunization and other public health applications are important duties that EMS personnel may perform as determined necessary in cooperation with the medical control authority, local hospitals, and the local public health department. Training will be approved by the EMS Medical Director and the MCA, and may be accomplished under the direction of the MCA and/or local public health department.

1. **Indications for immunization and/or testing:**
   A. Public or EMS agency personnel may be immunized or tested under guidelines developed by the public health department or MCA. Testing may include tests for infectious diseases or other diagnostic testing as needed.
   B. Age groups for immunization will be determined by the MCA or public health department as appropriate.
   C. Timing of immunizations or testing will be determined by the MCA, hospital, EMS agency and public health department to comply with public health needs or agency immunization requirements as determined by agency infection control guidance.
   D. Immunizations or testing may be performed in clinic, NEHC, mass immunization or agency setting as approved by the MCA and/or local public health department.
2. **Immunization or testing**
   A. Immunizations may be administered via intramuscular (IM), subcutaneous (SQ), or intranasal (IN) route in dosing determined by guidance provided by the MCA or local public health department as required for the agent administered.
   B. Screening will be performed as determined appropriate for the agent administered by the MCA or local health department.
   C. TB tests are intradermal and require additional training and certification in order to perform. Tests will be interpreted by paramedics performing the tests or personnel trained to review TB tests under MCA approved training programs.
3. **Training**
   A. Training for immunization will be provided by local public health department personnel or under an approved MCA program.
4. **Personnel requirements**
A. Immunizations or testing may be performed by paramedics trained by local public health department personnel or under approved MCA training programs.
5. **Record keeping**
   A. A record of public or agency personnel receiving immunizations or TB testing will be maintained by the agency performing the immunizations or TB testing as determined by the local public health department/Medical Control Authority.
   B. The Michigan Care Improvement Registry (MCIR) record keeping is required for immunizations.

Initial Date: 09/2004
Revised Date: 12/27/2022 Section: 8-12

Communications Failure

Purpose: To allow for continued patient care activities in the event of a communications failure or inability to contact medical control.

Procedure

1. With a communications failure or inability to contact medical control, EMS personnel may initiate medical treatment protocols and procedures including interventions identified after the “Post-Medical Control” section.

2. Contact medical control as soon as communications can be established and inform them of the situation, including care or procedures rendered.

3. Notification to the MCA of the communication failure will occur within 24 hours.

4. The electronic patient care record will have a protocol deviation noted and the circumstances around the communication failure described in the narrative section.

NOTE: This procedure is considered a protocol deviation and will only be used in exceptional circumstances.

Initial Date: 08/28/2020
Revised Date: 05/30/2023 Section 8-13

Electronic Records & EMS Information System

I. **Responsibility for Records**
   A. Any PCR software utilized by an EMS agency must be compliant with the National EMS Information System (NEMSIS) system and the Michigan EMS Information System (MIEMSIS) as determined by the department.
   B. All PCR are considered confidential medical records and must be treated in accordance with state and federal law.
   C. Signed electronic or paper PCR shall be maintained by the EMS agency as the official medical record for each patient treated and/or transported.
   D. All original PCR reports will be made available to the receiving facility, the MCA and the Bureau of EMS, Trauma and Preparedness, in electronic format, upon request.

II. **Submission to MIEMSIS Data Repository**
   A. All agencies must transfer data at least monthly. Reporting period begins at 00:00:01 hours on the 1st day of the calendar month, ending at midnight on the last day of the calendar month. Data must be uploaded by the 15th of the month following the close of the reporting period. MCAs may require data to be transferred more frequently.
   B. Agencies performing invasive skills (including supraglottic airways) must transfer data at least daily. PCR that include invasive skills will be available in MIEMSIS within 24 hours of incident completion.
   C. If technology permits, transfer should occur at the time of incident completion.
   D. Agencies are responsible to work with their MCA(s) and the department to ensure that the quality of the data submitted to the MIEMSIS repository is an accurate reflection of the information entered into their EMS information system. Agencies are responsible for ensuring accuracy in data element mapping, accuracy in data value coding, list compliance, and accuracy in data transfer between the vendor and the MI-EMSIS system. Agencies may access MIEMSIS to verify the submission of their records at any time.
   E. Agencies entering data from paper PCR after-the-fact are responsible for entering those PCR in accordance with the above time frames.
   F. All PCR transferred to MIEMSIS must be compliant with the Michigan Required Elements.
   G. All PCR transferred into MIEMSIS will use values from Department provided lookup lists.

III. **Utilizing Data**
   A. The MCA professional standards review organization (PSRO) will utilize data submitted by the life support agencies for the purpose of providing professional oversight and for improving the quality of medical care within the MCA region.
   B. MCAs may utilize aggregate data that does not identify the patient or agency to support EMS system and public health activities.

C. MCAs may choose to maintain its own repository and in turn submit the data to the Department of Health and Human Services.
D. The information accessed by the MCA is confidential in nature and is intended for the medical control PSRO. Data protection is critical and is provided for through 1967 PA 270, MCL 331.531 to 331.533, other applicable confidentiality laws, and use and user agreements. The MCA will:
    1. Only use or disclose data for the purposes described in Part 209 of the Public Health Code and the Michigan Administrative Code R 325.22101 through R 22217. Any other uses or disclosures will be made only as required by applicable laws.
    2. Use appropriate safeguards to prevent use or disclosure of the information other than as provided by this agreement.
    3. Limit access to the data to only those employees assigned to perform the functions under the above statute and administrative rules and who have signed a data user agreement on file with the Department.
    4. Report any actual or suspected breach, intrusion, or unauthorized use or disclosure to the Department and the affected life support agency within 10 days of becoming aware of such breach, intrusion, or unauthorized use or disclosure or such shorter time period as is reasonable under the circumstances.
    5. Mitigate the effects of any breach, intrusion, or unauthorized use or disclosure.
    6. Notify the Department when anyone with a signed user agreement and access to data systems leaves their position. Notification should occur within 24 hours.
    7. Comply with the Michigan Identity Theft Protection Act notification procedures at MCL 445.61 et seq.
    8. As a public body subject to the Freedom of Information Act (FOIA), redact all personal identifiers or other information pursuant to applicable FOIA exemptions. 1976 PA 441: MCL 15.231 et seq.

E. **CARES Data**
    1. The LSA will submit data for out-of-hospital cardiac arrest (OHCA) patients to the Cardiac Arrest Registry to Enhance Survival (CARES).
    2. If multiple agencies are on scene the transporting agency is responsible for CARES data entry.
    3. The agency completing the CARES record will collect applicable CARES dispatch elements.

F. **Confidentiality**
    1. The EMS patient care record is a confidential patient care document and is not to be released to anyone other than those involved in the patient's care or Professional Standards Review Organization, without the patient's written release of information permission.

Initial Date: 09/2004
Revised Date: 12/27/2022 Section: 8-14

Protected Health Information

Purpose:

I. To provide a standard for sharing protected health information (PHI) with entities that function in the capacity of a life support agency.

II. To promote and improve overall patient care and pre-hospital EMS activities, Medical Control Authorities shall establish patient care quality improvement programs. Patient care information will be utilized in these programs for quality improvement activities only and shall conform to all state and federal patient confidentiality and privacy laws.

Policy:

I. Medical Control Authorities and their Professional Standards Review Organization (QI Committee) will collect patient care information through retrospective review of patient care records generated and supplied by all life support agencies.

II. Patient care records will be completed on all patients where any type of care or assessment has occurred.

III. Each responding pre-hospital care provider shall complete Medical Control approved documentation, a copy of which may be forwarded to Medical Control Authority for quality improvement purposes.

IV. The Medical Control Authorities shall hold all patient care information in strictest confidence.

V. Quality Improvement within the Medical Control Authority shall be conducted under the Professional Standards Review Organization, which may be comprised of representatives from various pre-hospital agencies. No patient identifiers will be used or shared during reporting of any retrospective QI reviews of patient care.

VI. Patient outcomes may be tracked by pre-hospital agencies and/or Medical Control Authorities and may be shared among pre-hospital agencies, including Medical First Response agencies, responsible for patient care. No patient identifiers will be used or shared during reporting.

VII. Patient care audits may occur as part of the QI process. No patient identifiers will be used or shared during reporting. Aggregate data will be shared with pre-hospital agencies using no patient identifiers. This data will be used for education, remediation and overall improvement of system processes.

Initial Date: 09/2004
Revised Date: 7/28/23 Section: 8-15

Inter-facility Patient Transfers

Purpose: The purpose of this protocol is to establish a uniform procedure for inter-facility transfers. Providers of inter-facility transfers must have MCA privileges in the MCA in which the transfer begins or ends unless otherwise indicated (per MCA selection).

MCA Approval for Inter-Facility Transfer Resource Expansion

☑ Inter-facility transfers initiated within the MCA may be carried out by providers that hold MCA privileges in an MCA other than the sending or receiving MCA.

The MCA is responsible for establishing guidelines and communications for this process and maintain a roster of providers . Providers will provide care under their originating MCA protocols unless otherwise specified.

1. Responsibility:
   - A. Patient transfer is a physician-to-physician referral. The transferring physician is responsible for securing the acceptance of the patient by an appropriate physician at the receiving facility prior to the transportation. The name of the accepting physician must be included with the transfer orders.
   - B. It is the responsibility of the transferring facility to:
     - a. Perform a screening examination.
     - b. Determine if transfer to another facility is in the patient's best interest.
     - c. Initiate appropriate stabilization measures prior to transfer.
   - C. During transport, the transferring physician is responsible for patient care until arrival of the patient at the receiving facility.
   - D. It is the transferring physician's responsibility to know and understand the training and capabilities of the transporting EMS personnel.
   - E. BLS may transport the following (per MCA selection)
     - a. IV fluids without medications added on dial-a-flow or gravity run – peripheral site.

MCA Approval for BLS care during Interfacility transfer

☑ IV Fluids on a pump

☑ IV Antibiotics that have been infusing for at least 15 minutes prior to departure.

☑ IV Lipids/TPN

☑ PCA Pump

F. Additional/Accompanying Staff (Non-EMS personnel) assigned for transfer by physician:
    a. The transferring physician is responsible for ensuring the qualification of accompanying staff.
    b. Accompanying staff will render care to the patient under the order of the transferring physician.
    c. It is the responsibility of the transferring facility to arrange for the return of staff, equipment, and medications.

2. Transportation
    A. Pre-transport
        a. Care initiated by the transferring facility that requires continuation during transport, along with additional treatment(s) will be determined by the transferring physician.
        b. Orders for treatment shall be provided in writing to the EMS personnel prior to initiation of the transport by the transferring Physician.
            1. A mutually agreed upon primary form of communication with the transferring physician for the duration of the transfer.
        c. Ordered medications not contained within the EMS System Medication Box must be supplied by the transferring hospital.
        d. EMS personnel must be trained in all the equipment, procedures, and medications being used in the patient's care during the transfer. see **ENHANCE PARAMEDIC INTERFACILITY CARE/CRITICAL CARE PROTOCOL**
        e. Patient care, procedures, equipment, or medications that exceed EMS personnel training require additional/accompanying staff (see section 1.F. above).
        f. EMS personnel have the right to decline transport that is outside their scope of practice and/or training when additional/accompanying staff is unavailable.
        g. The following information should accompany the patient (but not delay the transfer in acute situations):
            1. Copies of pertinent hospital records
            2. Written orders during transport
            3. Any other pertinent information including appropriate transfer documents.
    B. During Transport
        a. Hospital supplied medications not used during transport must be appropriately tracked, wasted and documented.
            1. All controlled substances and Propofol must have a documented chain of custody.
        b. The concentration and administration rates of all medications being administered will be documented on the patient care record.
        c. Interventions performed en route, and who performed them, will be documented on the patient care record.

d. Intervention beyond the written orders provided by the transferring Physician, require contact with the transferring Physician.

e. Order of operation for care and communication when unable to contact the transferring physician.
    1. Follow Medical Control approved Protocols under which the EMS agency has Medical Control privileges and initiate contact with:
        a. Receiving physician
        b. On-line Medical Control Physician from the sending facility.
        c. On-line Medical Control Physician from the receiving facility
        d. Closest appropriate on-line Medical Control facility.

3. Special Treatments

A. Interfacility High Flow Nasal Oxygen (HFNO) (per MCA selection)

Interfacility High Flow Nasal Oxygen Included?
(●) Yes ( ) No

a. See **Interfacility High Flow Nasal Oxygen-Procedure Protocol**
b. Ensure adequate supply of oxygen is available for transport.
    1. Calculate amount of oxygen needed prior to departure.
    2. Must have minimally two times the amount of oxygen calculated.

Medication Custody Form

Patient Name _____

EMS Staff Receiving Medication

_____	_____
Name	**Signature**

Hospital Staff Sending Medication

_____	_____
Name	**Signature**

Medication	Amount Received From Hospital	Administered	Wasted

EMS Staff Wasting Medication

_____	_____
Name	**Signature**

Hospital Staff Witnessing Waste

_____	_____
Name	**Signature**

Licensure Level Requirement of Attendant during Transport (MCA Optional Protocol)

☑ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol.

Purpose: To provide a protocol to fulfill the requirement that allows for EMS personnel to transport patients up to their individual licensure level in the event that the vehicle is licensed at a higher level as set forth in Michigan Administrative Code Part 3, Ambulance Operations R325.22133 (f).

Michigan Administrative Code Part 3. Ambulance Operations R 325.22133 (f) states: that an individual whose license is at least equal to the level of vehicle license is in the patient compartment when transporting an emergency patient, or consistent with department approved medical control authority protocols.

I. Patient care transport level is to be determined by the individual(s) whose license is at least equal to the level of the vehicle license. This individual will perform a patient assessment to determine the level of patient care transport. The electronic patient care record must reflect this assessment both as a procedure and in components of the assessment.
   A. EMT-Basic may attend in the patient compartment during transport on a patient deemed to be within the scope of practice for an EMT-Basic as defined by the State of Michigan.
   B. EMT-Specialist may attend in the patient compartment during transport on a patient deemed to be within the scope of practice for an EMT-Specialist as defined by the State of Michigan.
   C. EMT-Paramedic may transport a patient at any level.

II. Ambulance(s) must maintain minimum staffing in accordance with Public Health Code Act 368 of 1978 Section 333.20921:
   (3a) If designated as providing basic life support, with at least 1 emergency medical technician and 1 medical first responder.
   (3b) If designated as providing limited advanced life support, with at least 1 emergency medical technician specialist and 1 emergency medical technician.
   (3c) If designated as providing advanced life support, with at least 1 paramedic and 1 emergency medical technician.

III. An appropriate licensed health professional, designated by a physician with an established patient relationship may be present in the patient compartment of the ambulance in place of EMS staffing, according to 333.20921 (6).

Medical Control Privileges

Purpose: To establish minimum requirements for licensees applying for and retaining medical privileges within the jurisdiction of this medical control.

I. Minimum requirements for providers
   A. EMS personnel shall possess a valid State of Michigan license.
   B. EMS personnel shall possess a valid BLS Healthcare Provider card.
   C. Personnel licensed at EMT-Basic and above are subject to other MCA specific requirements as outlined below

II. Minimum Life Support Agency Requirements
   A. Valid State of Michigan license.
   B. Medical Control approved electronic documentation tool for submitting patient care records.
   C. Responsibility for their EMS personnel meeting the requirements of this and other applicable protocols.
   D. Compliance with protocols.
   E. Notification of the medical control authority if they are unable to meet or comply with any protocol, statutory or regulatory requirement.
   F. Compliance with the minimum staffing and equipment requirements as defined in P.A. 368 of 1978, as amended.

III. Scope of Privileges
   A. A licensee's scope of medical privileges shall be granted to the equivalent of those granted his/her employer agency operating within the jurisdiction of this medical control authority.
   B. In circumstances where a licensee is dually employed, he/she may exercise privileges to the limit of his/her employer agency of the moment (i.e., a paramedic who is employed by an advanced life support agency and a medical first responder agency may only practice to the level of privileges granted to the agency on whose behalf he/she is acting).

IV. Disciplinary Notifications
   A. A licensee must inform the MCA within (1) business day of any suspensions or revocations of MCA privileges in any other MCA in which the licensee has privileges.
   B. A licensee must inform the MCA within (1) business day of the receipt of an MDHHS issued Notice of Intent to Suspend (NOIS), Notice of Intent to Revoke (NOIR), Emergency Order (of any kind), or Compliance Order.

IV. Training Standards Required by MCA: mark and specify as applicable

<u>Applicable to all EMT and above</u>

- [x] Written Exam
- [x] ICS 100
- [x] ICS 700
- [x] MCA Orientation
- [ ] Pre-hospital Trauma Certification (PHTLS, ITLS, FTC)
- [ ] Practical Competency (EMT Skills)

- [x] Upon application for MCA privileges the licensee must disclose to the MCA disciplinary actions pending or within the past 12 months, received from any Michigan MCA and/or MDHHS involving a Level 1 or Level 2 infraction.
- [ ] Other MCA requirements as specified/listed below:

Applicable to all Specialist and above

- [ ] Practical Competency (Specialist Skills)
- [ ] Other MCA requirements as specified/listed below:

Applicable to all Paramedic

- [x] Advanced Cardiac Life Support (ACLS)
- [ ] Pre-hospital Pediatric Certification (PALS, PEPP)
- [ ] Practical Competency (Paramedic Skills)
- [ ] Enhanced Paramedic Interfacility Care
- [ ] Other MCA requirements as specified/listed below:

V. Specialty Care Privileges

- [ ] Enhanced Paramedic Interfacility Care (EPIC)
  - A. Trained according to Enhance Paramedic Interfacility Care Protocol
  - B. Access to necessary equipment for Enhanced Paramedic Interfacility Care Protocol
- [ ] Critical Care Interfacility Transport
  - A. Trained according to MCA approved standards
  - B. Access to necessary equipment at time of transport
- [ ] Community Integrated Paramedicine
  - A. Trained according to CIP Program Policy Protocol
  - B. Access to necessary equipment for MCA approved CIP protocols

Responsibilities of the Participants in the Medical Control Authority System

Purpose:

This protocol defines the responsibilities of each administrative segment of the Medical Control Authority system. These segments include the Medical Control Authority itself; the hospitals and freestanding emergency departments (FSED) providing on-line medical direction; and the EMS agencies providing direct EMS services to the public.

I. Responsibilities of the Medical Control Authority
   - A. The Medical Control Authority is responsible for providing medical oversight for EMS. Hospitals are responsible for administering the Medical Control Authority.
   - B. The Medical Control Authority will issue protocols, with Department approval, as defined by Part 209 of P.A. 368 of 1978, as amended, that reflect current medical practice and address issues as necessary to assure quality pre-hospital patient care.
   - C. In cooperation with the EMS agencies, the Medical Control Authority will coordinate training to implement protocols not included in initial EMS education.
   - D. Ensure that all significantly affected parties in the MCA will have sixty-days' notice for protocol changes (aside from emergency protocols).
   - E. The Medical Control Authority will establish a Professional Standards Review Organization (PSRO).
     - a. PSRO will implement a system wide Continuous Quality Improvement program.
     - b. PSRO will provide an impartial, fair and medically appropriate peer review process.
   - F. The Medical Control Authority will forward to the Department within (1) business day any ODA issued to a licensee that restricts their ability to practice (i.e., suspension or revocation of MCA privileges)

II. Responsibilities of Participating Hospitals and Free Standing Emergency Departments (FSED) Providing On-Line Medical Direction
   - A. A hospital or FSED within the Medical Control Authority system providing on-line medical direction to EMS providers will assure that any physician or physician designee authorized to providing such direction:
     - a. Has access to the current MCA approved protocols
     - b. Provides medical direction consistent with MCA approved protocols.
   - B. Each hospital or FSED providing on-line medical direction will encourage the participation of a representative of its Emergency Department physician staff with the Medical Control Authority.
   - C. Hospitals or FSEDs will promptly inform their Emergency Department physicians and staff of Medical Control Authority policy and protocol changes.

III. Responsibilities of EMS Agencies

A. Agencies will operate under the Medical Control Authority and comply with Department approved protocols.
B. Assure only persons currently authorized to do so by the Medical Control Authority will provide pre-hospital patient care.
C. Each EMS agency will assure that their personnel have current training and certifications as required by **Medical Control Privileges Protocol**.
D. Each EMS agency will immediately notify the Medical Control Authority and the Department if the EMS agency is unable to provide staffing at the level required by its State license.
E. Licensed EMS vehicles will be equipped with all Medical Control Authority required equipment, if applicable, in addition to that equipment required by the State of Michigan.
F. EMS agencies will promptly inform their EMS personnel of Medical Control Authority policy and protocol changes.
G. EMS agencies will provide an annual listing of EMS personnel. This listing shall note the license and Medical Control Authority authorization status of each individual.
H. If an employee of an EMS agency is found to be in violation of a Medical Control Authority protocol, the EMS agency will cooperate with the Medical Control Authority in addressing the violation and taking corrective measures.
I. Assure training and competency of personnel in the case of new or expanding department approved protocols.

IV. Accountability

A. The Department designates the Medical Control Authority for a specific geographic area. As such, the Medical Control Authority is accountable to the Department in the performance of its duties.
B. The hospitals and possibly the FSEDs within the Medical Control Authority system collectively administer this Medical Control Authority. Each individual hospital and FSED that receives emergency patients by ambulance is accountable to the Medical Control Authority to meet the responsibilities listed above. Failure to meet those responsibilities may result in a termination of the ability of a hospital or FSED to provide on-line medical direction or receive emergency patients (by ambulance).
C. EMS agencies within the Medical Control Authority system are accountable to the Medical Control Authority, as detailed and defined in protocol. Failure to comply with approved protocols may result in sanctions against that EMS agency.

On-Scene Physician Interaction

The EMS system will be available at all times to provide support for health professionals in emergency medical settings. It is ready to assume responsibility for patient care upon request of a physician who has initiated treatment of a patient with whom he has an established physician-patient relationship.

The EMS system On-Line Medical Control Physician is considered the highest medical authority at the scene of a medical emergency with a patient unattended by a physician. An on-scene physician who does not have an established physician-patient relationship and wishes to assume responsibility must seek permission from the Medical Control physician in order to do so.

EMS Personnel are to receive orders for interfacility patient care from the referring physician provided those orders are consistent with the training of the paramedic and the **Interfacility Patient Transfer Protocol**. If the patient's condition changes to the point that the sending facilities orders did not meet the needs of the patient, the patient will become the responsibility of the EMS system. Appropriate treatment will be performed based on the MCA protocols or from an on-line medical direction.

Procedure:

A. Physician's Office, Clinic or Ambulatory Patient Care Facility
   1. Physician Office, Clinic or Ambulatory Patient Care Facility to hospital transfers are considered scene calls unless a physician-to-physician transfer is designated by the Physician Office, Clinic or Ambulatory Patient Care Facility. EMS personnel will take responsibility for the patient as if the patient were coming from a prehospital scene.
   2. EMS personnel should obtain pertinent history, from the patient and physician (or designee).
      a. If no destination chosen, follow MCA transport protocol
      b. If physician to physician destination decision has been determined, honor that established agreement when possible.
         
         i. If a valid reason exists to not honor the established transport agreement, contact Medical Control.

B. Free Standing Emergency Department (FSED) to Hospital Transfers
   1. FSED is defined in the MCA Transport Protocol.
   2. A FSED to hospital transfer is considered a physician-to-physician interfacility transfer.
   3. EMS personnel responding to a FSED should receive a patient report from the treating physician (or designee). This report should include the physician's assessment, the requested destination, name of the person who accepted the transfer, care to be given during transport, and any potential problems felt likely to occur in route.
   4. If EMS personnel do not agree with the destination or proposed orders, they

should discuss this with the transferring physician. If an agreement is not reached, medical control should be contacted to determine the destination and care to be given by EMS personnel in route to the hospital.

5. The scope of practice for EMS when performing a FSED to Hospital transfer is determined by the **Interfacility Patient Transfer Protocol**.
6. At the discretion of the FSED physician, the FSED physician or designated facility staff may treat and accompany the patient during transport with the assistance of the EMS system.
7. Upon departure from the scene, contact Medical Control as would be done for any EMS scene patient.

C. Physician On-scene

1. As time and patient condition permit, EMS personnel should make a reasonable effort to establish the identity or credentials of anyone at the scene of a medical emergency (not a covered by previous sections of this protocol) who professes to be a Michigan licensed physician who expresses an interest in participating in patient care activities.
2. An on-scene physician must identify themself and verify to Medical Control either the fact of an established physician-patient relationship with the patient, or willingness to assume responsibility for the patient and to accompany the patient to the hospital. The Medical Control physician may allow the on-scene physician to provide on-scene Medical Direction and then not accompany the patient to the hospital. Should this occur the Medical Control physician re-assumes responsibility for the patient during transport.
3. The Medical Control physician will verify over the radio his delegation of responsibility to the physician on-scene and the nature of that delegation.
4. A physician on-scene may participate with paramedic(s) in the resuscitation of a patient with permission of Medical Control without assuming full responsibility for the patient. This responsibility will, in this case, remain with the Medical Control physician and the ALS system.
5. It should be noted that responsibility for the patient at the scene rests with the on-line medical control physician. Decisions releasing medical care responsibility to another physician should be considered carefully.
6. If an on-scene health care professional has identified themself, and obstructs efforts of the paramedic(s) to aid a patient for whom they are called, or who insists on rendering patient care inconsistent with the system standards and resists all invitation to function appropriately to the point where his continued intervention will result in obstruction to rendering good and reasonable patient care, EMS personnel should:
   a. Request Public Safety Officers become involved, if necessary, so that the team members can continue to provide patient care according to system protocol.
   b. Communicate the situation promptly to On-Line Medical Control.
   c. Document the behavior of the on-scene health care professional on the patient care record.

D. For on scene interaction with Emergency Medicine Residents, Fellows, Medical Control Physicians, and the EMS Medical Director: MCAs may have an optional protocol specific to programs within their area.

Protocol Deviation

I. It is acknowledged that there are situations in which deviation from the protocols, policies and procedures may be needed in the interest of patient care.

   A. In those situations, EMS personnel should request permission for deviation from on-line medical direction whenever possible.

   B. Unavailability of on-line medical direction and the immediacy of patient care needs may, in very rare instances, prohibit such requests, but those situations should occur rarely.

II. All instances of protocol deviation must be documented in the EMS patient care record, noting the deviation which occurred and the reason for that deviation.

III. All deviations performed without online medical control approval must be reported to the MCA with 24 hours.

IV. All reported deviations will be reviewed within the MCA Professional Standard Review Organization.

Initial Date: 09/2004
Revised Date: 12/27/2022 Section: 8-21

Violent/Chemical/Hazardous Scene

Note: This policy applies to any situation, which may expose EMS personnel to known or potentially violent (e.g., shooting, stabbing, assault, other violent crimes) or other known or potentially hazardous (e.g., hazardous material, chemical, biological) situations.

The medical component of the response to a violent or hazardous incident will operate under the Incident Command System.

I. Procedure
   A. Upon notification of a known or potentially violent situation, the EMS personnel will determine through dispatch, the nature and location of incident and:
      1. Violent Situations
         a. Is assailant/weapon present?
         b. Assure law enforcement notification?
         c. Is scene secure?
      2. Hazardous materials situation
         a. Is scene secure?
         b. Nature and identification of material?
         c. Assure FD/Hazmat Team notification?

NOTE: The above information should be communicated to responding crews.

II. If the scene is not secured:
   A. EMS personnel will stage an appropriate distance away from the scene to protect themselves from danger.
   B. In hazardous material situations stage upwind, uphill and upstream.
   C. In violent situations EMS personnel will NOT enter a potentially unsecure scene until coordinated by law enforcement command and MUST maintain law enforcement protection.

III. Once on the scene, if the situation changes posing an immediate life or limb threat to EMS personnel:
   A. Attempt to safely exit scene.
      1. Exit scene with patient, if possible.
      2. Medical treatment protocols may be limited or deferred to assure safety of EMS personnel and patient.
   B. Notify the dispatcher of the assistance needed.
   C. Provide any additional information available – e.g., number of assailants, weapons present/involved, any additional information.

Special Considerations: For those patients, who have been contaminated in a hazardous material incident, refer to **Hazard Contaminated Patient-Special Operations Protocol**.

Medical Examiner Notification and Body Disposition (MCA Optional Protocol)

The intent of this policy is to establish standards for proper and respectful disposition, handling, and notifications for a deceased person.

- Refer to **Dead on Scene & Termination of Resuscitation-Procedure Protocol** for determination of when and when not to initiate CPR, and when to terminate efforts.

I. Out of hospital death – Notification of the Medical Examiner

A. The Medical Examiner's office shall be notified for any out-of-hospital death under the following circumstances:
   1. The individual dies by violence
   2. The individual's death is unexpected
   3. The individual dies without medical attendance by a physician, or the individual dies while under home hospice care without medical attendance by a physician or registered nurse, during the 48 hours immediately preceding the time of death, unless the attending physician, if any, is able to determine accurately the time of death.
   4. If the individual dies as a result of an abortion, whether self-induced or otherwise.
   5. Death of a prisoner in a jail or prison.

B. Responsibility to notify the Medical Examiner
   1. If a patient is transported to a hospital from the scene, having met the above criteria, EMS shall notify the hospital of the criteria which requires notification. Responsibility for the notification of the Medical Examiner resides with the hospital.
   2. If a patient meeting the above criteria is pronounced dead without being transported to the hospital, the responsibility for notification of the Medical Examiner is shared between law enforcement and EMS personnel having authority for the management of the patient.
   3. Patients who do not meet the above criteria and who are pronounced dead outside of a hospital do not require notification of the medical examiner.
      a) Any patient who is attended by a physician or registered nurse at the time of death (nursing home)
      b) Any patient who was under home hospice care and had medical attendance by a physician or registered nurse within the 48 hours immediately preceding the time of death (hospice patient either at home or in hospice facility)

II. Out of Hospital Death – Management, Handling and Movement of Body

A. A body shall not be moved from the location of death if any mandatory Medical Examiner reporting criteria are present, **unless the ME's office provides**

official notification that an autopsy or external examination will not be performed and that the body will be released to the funeral home.

B. Alternately, the body of a person who has unexpectedly died in a public location may be moved by EMS only after approval from the ME's office. Such approval shall not be requested if there is any indication of violence, criminal activity or if the physical environment may contain evidence related to a cause of death or an injury pattern.

C. **A situation which does not require notification of the ME's office does allow for movement of the body pending retrieval by the funeral home.**

D. Bodies must remain attended in the case of an unexpected death. Police should take custody of the body in the instance of an ME case. If there is a significant delay of the funeral home, the body may be left with the family.

E. Medical devices utilized during care by EMS may be removed from the patient if the body is released by the ME's office to the funeral home (IV's, advanced airways, defibrillation pads, etc.)

F. Medical devices utilized during care by EMS must remain in place if the ME's office advises that an autopsy of examination will be performed.

G. If there is evidence of suspicious, violent, or unusual cause of death, caution should be taken to avoid contamination of the scene.

1. In the instance of a scene resuscitation and termination, the identification may be removed from the body. No other personal items may be removed.
2. Bodies may be covered with a sheet when the body is visible to the public or bystanders.

H. If a body is moved, as permitted in the prior criteria, the location should be to a private, secure and nearby location pending retrieval by the funeral home or the ME's staff.

I. Bodies must be handled with care and respect for the deceased, the family and the public.

III. Death in an Ambulance – termination of care

A. Patients with valid DNR orders being transported for any reason, whether due to an emergency condition or during an interfacility transfer, who experience cardiac or respiratory arrest shall have the DNR honored unless, before arresting, the patient expressly withdraws their DNR.

B. Patients for whom transport was initiated but who, during transport, meet the criteria for either Dead on Scene or Termination of Resuscitation protocols, and for whom On-line Medical Control (OLMC) has approved a termination of resuscitation (as required by those protocols respectively), may have care terminated while still en route to the hospital.

IV. Death in an Ambulance – transportation of body

A. In the event of a patient death in an ambulance, the body shall be transported to the original destination hospital if the call was originally from a scene to a hospital or from a facility to a hospital (transfer).
   1. The patient's body shall be brought to the Emergency Department
   2. The patient will be registered to accommodate both the transfer of custody and for preservation of evidence, if indicated
   3. The Medical Examiner shall be contacted by the hospital and the disposition of the body shall be according to the direction of the ME.

B. If a patient is being transferred to a nursing home or to their home, immediately following discharge from a hospital, and death is determined, the body should be brought back to the hospital from which they were discharged, unless the patient is a hospice patient.
   1. If the patient is a hospice patient and hospice will be meeting you at the destination, or the destination is a hospice facility, you may continue on to the destination and relinquish the body to hospice personnel. This is permitted, without notification of the Medical Examiner, since the patient was both a hospice patient and received medical attendance within the 48 hours immediately preceding the time of death. However, if the death was unexpected, the Medical Examiner must be notified.
   2. If the patient is a hospice patient, and hospice personnel will not be meeting you at the destination, continue on toward the destination, contact a supervisor from your agency and evaluate the situation. Where you ultimately go is dependent on how far you are from the destination, if family was intending to meet you at the destination, if the death was unexpected and any confounding factors. The body may not be left without there being a custodial transfer from EMS to an appropriate healthcare provider.
      a) Consider contacting the hospice care provider
      b) Consider consultation with online medical control
      c) If the death was unexpected, contact the Medical Examiner

C. If a patient is being transferred from a facility to an appointment, or vice versa, where neither the starting or ending destination was a hospital:
      a) If no DNR exists, treat and transport the patient to a hospital
      b) If a DNR exists but the patient is not a hospice patient, determine death, honor the DNR, and transport the body to a hospital
      c) If a DNR exists and the patient is a hospice patient, determine death; honor the DNR, refer to IV(B)(1) and (2) above.

Safe Delivery of Newborns

Purpose

According to Public Act 488 of 2006 and Public Acts 232, 233, 234, and 235 or 2000, parents may surrender their newborn child to any hospital, fire department, police station, or call 911 from any location and remain anonymous. This protocol outlines steps to be taken in this circumstance. ***IMPORTANT* While there is opportunity for information gathering through forms, the surrendering parent has the option of remaining completely anonymous and disclosing no information.**

Definitions

Newborn: A child who a physician reasonably believes to be not more than 72 hours old.

Emergency Service Provider (ESP): A uniformed or otherwise identified employee or contractor of a fire department, hospital, or police station when such an individual is inside the premises and on duty. ESP also includes a paramedic or an emergency medical technician (EMT) when either of those individuals is responding to a 9-1-1 emergency call.

Surrender: To leave a newborn with an emergency service provider without expressing an intent to return for the newborn.

Procedures

1. The surrender of the infant must occur inside the fire department, police station or in response to a 9-1-1 emergency call to paramedics or EMT.
2. In the instance of a parent attempting to surrender a newborn to a staffed ambulance, not on an emergency call, immediately notify dispatch and establish an emergency call.
3. To protect the parent's right to anonymity/confidentiality, the EMS agency responding to a 9–1–1 emergency call from a parent(s) wanting to surrender a newborn, should not use the vehicle sirens or flashing lights.
4. The firefighter, police officer, paramedic or EMT personnel cannot refuse to accept the infant and must place the infant under temporary protective custody.
5. Fire departments, police stations, paramedics and EMTs have statutory obligations under the law, including:
    a. Assume that the child is a newborn and take into temporary protective custody.
    b. Ask surrendering person(s) if they are the biological parent(s). If they are not the biological parent(s) the newborn cannot be surrendered under the Safe Delivery of Newborns law.
    c. Make a reasonable effort to inform the parent(s) that:
        i. By surrendering the newborn, the parent(s) is releasing the newborn to a child placement agency to be placed for adoption.
        ii. He or she has 28 days to petition the Circuit Court, Family Division to regain custody of the newborn.

iii. There will be a public notice of this hearing and the notice will not contain the parent(s) name.
iv. The parent(s) will not receive personal notice of the hearing.
v. Information the parent(s) provides will not be made public. A parent(s) may contact the Safe Delivery of Newborns hotline for information. The toll-free number is: **866-733-7733**

6. Provide the parent(s) with written material from the Department of Health and Human Services that includes:
    a. Safe Delivery Program FACT Sheet (DHHS Pub 867)
    b. What Am I Going To Do? (DHHS Pub 864) Optional
7. Make a reasonable attempt to:
    a. Reassure parent(s) that shared information will be kept confidential.
    b. Encourage parent(s) to identify him/herself.
    c. Encourage the parent(s) to share any relevant family/medical background, Voluntary Medical Background Form for a Surrendered Newborn (DHHS Form 4819).
    d. Inform the parent(s) of the newborn he or she can receive counseling or medical attention.
    e. Inform parent that in order to place the child for adoption the state is required to make a reasonable attempt to identify both parents. Ask for the non-surrendering parent's name. Do not press if the name is refused.
    f. Inform the parent(s) that he or she can sign a release for the child that could be used at the parental rights termination hearing, Voluntary Release for Adoption of a Surrendered Newborn (DHHS Form 4820).
8. Fire and Police may contact emergency medical services (EMS) to transport newborn to hospital. ESP will accompany newborn to the hospital to provide hospital with any forms completed by the parent(s) and to transfer temporary protective custody.
    a. Note: Temporary protective custody cannot be transferred to EMS. A representative of the fire department or police station must go to the hospital to transfer temporary protective custody to the hospital.
9. The responding EMS crew will transport the newborn to closest appropriate facility, according to the MCA transport protocol, provide any forms completed by parent(s) and transfer temporary protective custody to hospital staff.

* For Safe Delivery purposes EMS is defined as a paramedic or emergency medical technician.

Michigan's

Safe Delivery of Newborns Law

FACT Sheet

SAFE. LEGAL. ANONYMOUS.

Background:

Michigan lawmakers passed the Safe Delivery of Newborns law to end the tragedy of unwanted newborns being hidden and left to die in unsafe places. More than 100 newborns were surrendered in the first 10 years the law was in effect, with the majority of these infants adopted by loving families.

What the law provides?

- Unharmed newborns, up to 72 hours old, can be taken to an Emergency Service Provider (ESP), meaning a uniformed or otherwise identified employee or contractor of a fire department, hospital or police station who is inside the building and on duty. ESP includes a paramedic or EMT when either responds to a 9-1-1 call. The parent(s) has the choice to leave the infant without giving any identifying information to the ESP.
- The ESP is authorized to accept the infant and provide whatever care may be necessary.
- The ESP will make a reasonable effort to provide the parent(s) with the following information:
  1. A written statement of the parent's rights following surrender of the infant.
  2. Information about other confidential infant placement options, as well as information about the availability of confidential medical and counseling services, such as Public Health, Community Mental Health, Family Planning Clinics, Adoptions Agencies.

What are the rights of the surrendering parent?

- To be informed that by surrendering the newborn, the parent is releasing the newborn to a child placing agency to be placed for adoption.
- To petition the court to regain custody of the newborn within 28 days of surrender or notice of surrender.
- Any information the parent(s) provides the ESP will **not** be made public.
- A criminal investigation shall not be initated solely on the basis of a newborn being surrendered to an ESP.
- To file a consent to release identifying information with the Adoption Central Registry.

CONFIDENTIAL
VOLUNTARY MEDICAL BACKGROUND FORM FOR A SURRENDERED NEWBORN
Michigan Department of Human Services

Preference for Child's Name	Date of Birth
Where was the child born?	Sex

SURRENDERING PARENT BACKGROUND (Optional)

Name	Marital Status ☐ S ☐ M ☐ D	Date of Birth	Phone Number
Address			
Race	Affiliated with American Indian Tribe ☐ YES ☐ NO	Identify Tribe	
Height	Weight	Hair Color	Eye Color

Any Family History of:	Yes	No		Yes	No	
Sickle Cell Disease	☐	☐	Cancer	☐	☐	If Yes Type _____
Heart Disease	☐	☐	Genetic Disease	☐	☐	If Yes Type _____
Diabetes	☐	☐	Family History of Mental Illness	☐	☐	If Yes Explain _____
HIV	☐	☐	Drug Usage	☐	☐	If Yes Explain _____
Hepatitis	☐	☐	Alcohol Usage	☐	☐	If Yes Explain _____
Other _____						

Surgical History

OTHER PARENT BACKGROUND (Optional)

Name	Marital Status ☐ S ☐ M ☐ D	Date of Birth	Phone Number
Address			
Race	Affiliated with American Indian Tribe ☐ YES ☐ NO	Identify Tribe	
Height	Weight	Hair Color	Eye Color

Any Family History of:	Yes	No		Yes	No	
Sickle Cell Disease	☐	☐	Cancer	☐	☐	If Yes Type _____
Heart Disease	☐	☐	Genetic Disease	☐	☐	If Yes Type _____
Diabetes	☐	☐	Family History of Mental Illness	☐	☐	If Yes Explain _____
HIV	☐	☐	Drug Usage	☐	☐	If Yes Explain _____
Hepatitis	☐	☐	Alcohol Usage	☐	☐	If Yes Explain _____
Other _____						

Surgical History

INFORMATION ABOUT THE PREGNANCY

Length of Pregnancy	Weight Gain Lbs.	Drug or Alcohol Use During Pregnancy ☐ Yes ☐ No, If yes, Explain

EMERGENCY SERVICE PROVIDER OBSERVATIONS

Comments			
ESP Signature	Date	Phone Number	
Address:	City	State	Zip Code

DHS-4819 (Rev. 4-11) Previous edition obsolete. MS Word 1

VOLUNTARY RELEASE FOR ADOPTION OF A SURRENDERED NEWBORN BY PARENT

Michigan Department of Human Services

In the matter of _____, a newborn child.

1. I, _____, DOB ___/___/_____ am the ☐ mother ☐ father of the above child, who was born on ___/___/_____ at _____ (place).

2. I understand that I have parental rights to this child and that by signing this release, I voluntarily release all of my parental rights to my child. (Subject to number three below.)

3. I understand that I have 28 days after surrendering my newborn child to petition the court to reclaim custody of my child.

4. I understand that I will not receive notice of any hearings.

5. Understanding the above provisions, I release completely and permanently my parental rights to my child, and release my child to a child placing agency for the purpose of adoption.

6. I acknowledge receipt of the following:
   ____ Fact Sheet (Pub 867)

Date ___/___/_____ Parent Signature _____

Address _____

City _____ State _____ Zip _____

Witnessed by _____
Name (type or print)

on _____ (Date), at _____ (Agency and Address)

_____
Signature

IF A NOTARY IS AVAILABLE: Notary Public

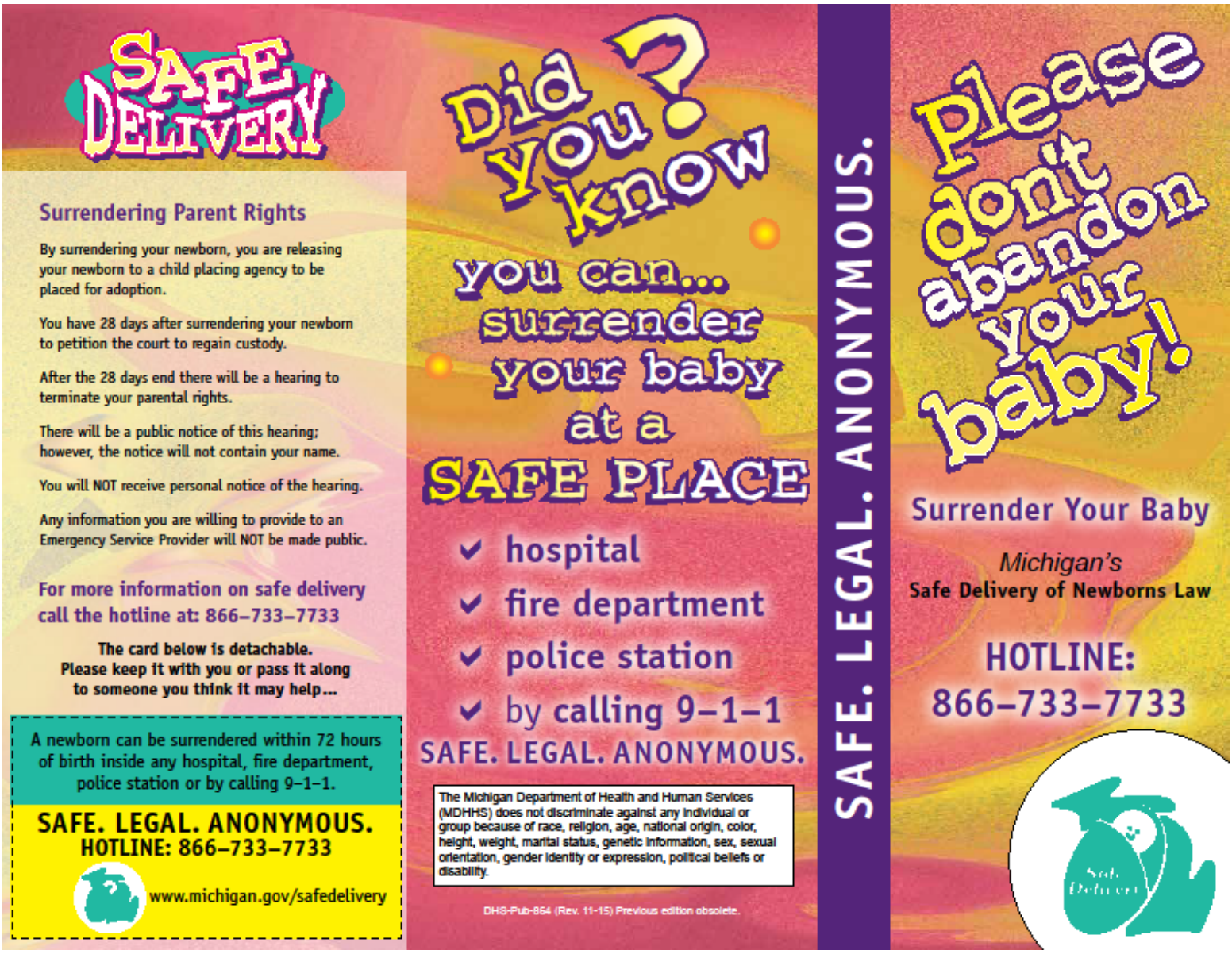
Subscribed and sworn to before me on _____ (Date), _____ (County and State)

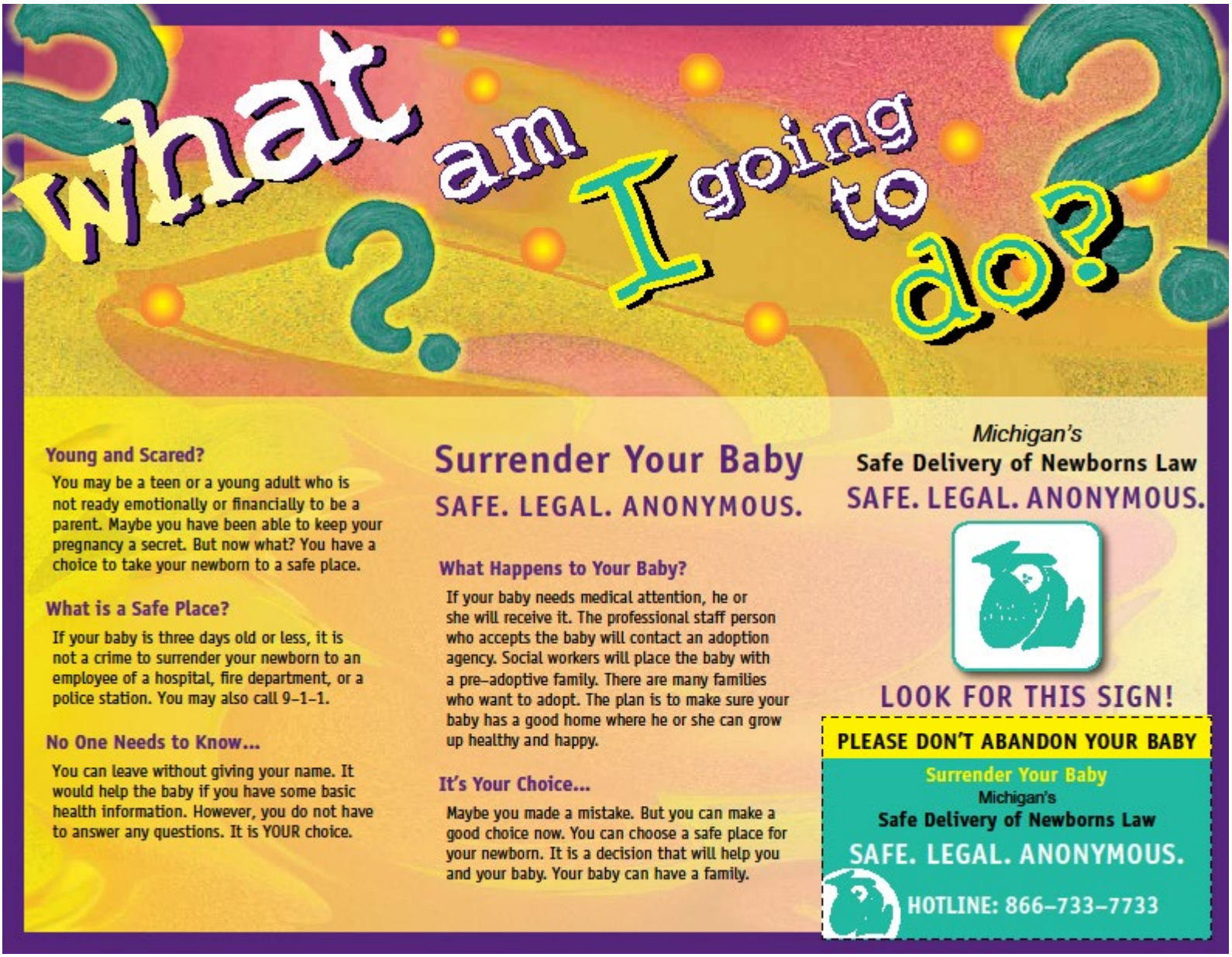
My commission expires: _____ (Date) Signature: _____

_____
Name (type or print)

AUTHORITY: State P.A. 232 of 2000 RESPONSE: Voluntary PENALTY: None	Department of Human Services (DHS) will not discriminate against any individual or group because of race, sex, religion, age, national origin, color, height, weight, marital status, political beliefs or disability. If you need help with reading, writing, hearing, etc., under the Americans with Disabilities Act, you are invited to make your needs known to a DHS office in your area.

DHS-4820 (Rev. 5-07) MS Word


SAFE DELIVERY
Surrendering Parent Rights
By surrendering your newborn, you are releasing your newborn to a child placing agency to be placed for adoption.
You have 28 days after surrendering your newborn to petition the court to regain custody.
After the 28 days end there will be a hearing to terminate your parental rights.
There will be a public notice of this hearing; however, the notice will not contain your name.
You will NOT receive personal notice of the hearing.
Any information you are willing to provide to an Emergency Service Provider will NOT be made public.
For more information on safe delivery call the hotline at: 866-733-7733
The card below is detachable. Please keep it with you or pass it along to someone you think it may help...
A newborn can be surrendered within 72 hours of birth inside any hospital, fire department, police station or by calling 9-1-1.
SAFE. LEGAL. ANONYMOUS.
HOTLINE: 866-733-7733
www.michigan.gov/safedelivery
Did you know
you can... surrender your baby at a SAFE PLACE
hospital
fire department
police station
by calling 9-1-1
SAFE. LEGAL. ANONYMOUS.
The Michigan Department of Health and Human Services (MDHHS) does not discriminate against any individual or group because of race, religion, age, national origin, color, height, weight, marital status, genetic information, sex, sexual orientation, gender identity or expression, political beliefs or disability.
DHS-Pub-864 (Rev. 11-15) Previous edition obsolete.
SAFE. LEGAL. ANONYMOUS.
Please don't abandon your baby!
Surrender Your Baby
Michigan's
Safe Delivery of Newborns Law
HOTLINE:
866-733-7733


what am I going to do?
Young and Scared?
You may be a teen or a young adult who is not ready emotionally or financially to be a parent. Maybe you have been able to keep your pregnancy a secret. But now what? You have a choice to take your newborn to a safe place.
What is a Safe Place?
If your baby is three days old or less, it is not a crime to surrender your newborn to an employee of a hospital, fire department, or a police station. You may also call 9-1-1.
No One Needs to Know...
You can leave without giving your name. It would help the baby if you have some basic health information. However, you do not have to answer any questions. It is YOUR choice.
Surrender Your Baby
SAFE. LEGAL. ANONYMOUS.
What Happens to Your Baby?
If your baby needs medical attention, he or she will receive it. The professional staff person who accepts the baby will contact an adoption agency. Social workers will place the baby with a pre-adoptive family. There are many families who want to adopt. The plan is to make sure your baby has a good home where he or she can grow up healthy and happy.
It's Your Choice...
Maybe you made a mistake. But you can make a good choice now. You can choose a safe place for your newborn. It is a decision that will help you and your baby. Your baby can have a family.
Michigan's
Safe Delivery of Newborns Law
SAFE. LEGAL. ANONYMOUS.
LOOK FOR THIS SIGN!
PLEASE DON'T ABANDON YOUR BABY
Surrender Your Baby
Michigan's
Safe Delivery of Newborns Law
SAFE. LEGAL. ANONYMOUS.
HOTLINE: 866-733-7733

Complaint Investigation & Resolution

Purpose: This policy is provided as a means to receive, investigate, and resolve complaints regarding licensees falling under the purview of the Medical Control Authority (MCA).

I. Definitions:

A. Allegation/Complaint Invalid:
The allegation or compliant was found to have no administrative rule or protocol violation or the protocol deviation was considered acceptable for the situation.

B. Allegation Valid Minor:
This can be viewed two ways:
1. The licensee's role in the administrative rule or protocol violation was small.
2. The result of the administrative rule or protocol violation had a minor effect.

C. Allegation Valid Serious:
This can be viewed two ways.
1. The licensee's role in the administrative rule or protocol violation was great.
2. The result of the administrative rule or protocol violation had a major effect.

D. Appeal Hearing:
A hearing to appeal an Order of Disciplinary Action. This hearing is to re-examine any new facts and/or review the incident to ensure due process has been followed.

E. Order of Disciplinary Action (ODA):
An Order of (ODA) is a written document developed by the MCA and sent to a subject licensee for the purposes of clearly and plainly identifying the findings of the MCA, any disciplinary action and any required remediation.

F. Complaint:
For the purpose of this policy, a complaint shall be defined as any notification of dissatisfaction or concern regarding medical care rendered by the MCA licensed EMS provider/agency, or any issues that involve the performance of the EMS system in whole or in part.

G. Due Process:
A course of formal proceedings carried out regularly and in accordance with established rules and principles

H. Formal Inquiry:
Formal inquiry means that a complaint has been found to either be valid, or that more detailed inquiry is necessary to determine the validity of the complaint; either of which will require that the subject licensee (individual/agency) be notified of the specific complaint. A formal inquiry may involve the gathering of incident reports which provide explanations for care rendered or justification for actions, as well as subject/witness interviews. Some information gathering may not necessitate a formal inquiry.

I. Just Culture Guidelines:
A just culture policy is a high-level statement of the values and commitment of an organization to treat healthcare workers and agencies fairly in all complaint investigations.

J. Licensee:
A licensee is defined as an individual or an agency (fire department, rescue squad, life support agency, etc.) holding a valid State of Michigan Medical First Responder, Emergency Medical Technician, Specialist, Paramedic, or agency licensed to operate within the Medical Control Authority service area. Said individual licensee shall be an employee of a provider licensed to operate within the Medical Control Authority.

K. Privileged Documents:
Privileged documents are those which are collected by the Professional Standards Review Organization (PSRO) of the MCA.

L. Quality Improvement Action:
An action taken to remediate a valid complaint to the MCA.

M. Sentinel Event:
A sentinel event is any complaint which involves at least one single level I infraction, a violation of Michigan or Federal laws, EMS rules, or 2 or more level II infractions, as described in the Medical Incident Review and Corrective Action Policy.

N. Subject Licensee:
The individual provider that is the subject of the complaint received by the MCA

II. Complaints Received:

A. Complaints may be received at the MCA directly, at life support agencies or by individuals. Those in receipt of a complaint which involves violations of protocols, statutes, or administrative rules shall inform the MCA. The MCA will determine if further investigation is necessary.

B. The complainant for a case should be asked if they would like to be contacted by the agency/individual that is the subject of the complaint. This will allow the complainant the opportunity to voice a request to remain anonymous or to allow their information to be provided to the subject of the complaint.

C. All complaints, in order to be considered for action by the MCA, shall meet the following Inclusion Criteria:

1. A complaint may be submitted either verbally or in writing. Hearsay or "second hand" complaints may not be accepted or investigated by the MCA.
2. The complainant must provide the MCA with his/her name, address, and telephone number. A request for anonymity by a complainant shall be honored by the MCA to the extent possible.

3. The complaint must be directed toward a licensee (individual or agency) within the MCA.
4. The complaint must include a potential violation of Michigan or Federal laws, EMS rules, or MCA protocol
    i. All complaint reviews will be based on MCA approved protocols that were approved and active on the date of the EMS call for service.

D. Complaints That Might Not Be Considered
1. Complaints regarding conduct of a licensee, exclusive of medical practice or actions bearing upon medical practice, may be referred to the employer of the individual. These complaints may also be referred to the PSRO for investigation at the discretion of the MCA.
2. MCA reserves the right to retain the complaint investigation.

III. Complaint Delegation:

A. Complaints directed toward an individual acting while employed by an agency outside of the jurisdiction of the MCA shall not be accepted or investigated but will be forwarded, or the complainant directed to, the MCA/agency under whose jurisdiction it does fall.

B. MCAs may cooperate on investigations which overlap jurisdictional boundaries. For the purposes of Quality Improvement Actions, the MCA granting Medical Control to the provider or agency where the primary action or actions being investigated took place shall be considered the jurisdictional MCA.

C. Complaints more appropriately investigated at the agency or operational level may be turned over to the life support agency or hospital involved. Investigation results should be reported to the MCA.

IV. Investigation of Complaints:

A. Once a complaint is received by the MCA, the complaint will be assigned to the PSRO.
1. The person(s) charged with complaint investigation will gather information to determine the validity of the complaint, if valid:
    i. The investigator will utilize the following list to determine if the complaint is a formal inquiry or sentinel event. These criteria are for example purposes and do not form an all-inclusive list of potential violations. Violations that are substantively similar in type or severity will fall under the closest, most appropriate classification category.
        1. The following categories of incidents are defined as Level I incidents:
            a. Willful neglect of a patient

b. Abandonment of a patient
c. Failure to obey medical control physician's legitimate orders either by omission or commission in the presence of good communications.
d. Improper and inappropriate care which may result in compromise of wellbeing of the patient.
e. Conviction of a felony or misdemeanor
f. Two or more Level II offenses in any six-month period *
g. Breach of Confidentiality
h. Intentional falsification of EMS documentation, including patient care records.
i. Found to be under the influence of drugs or intoxicants while involved with patient care.
j. Violation of the EMS statute and its attendant rules and regulations, including care outside the scope of practice, as defined by protocol.
k. Practicing in the MCA without a current Michigan EMS provider license.
l. Practicing in the MCA without current privileges on two separate occasions within a single licensure period. Certifications required by the MCA in order to maintain privileges are identified in the **Medical Control Privileges Protocol.**
m. Any other patient care offense resulting from violation of policies, protocols and procedures of similar severity not listed above at the discretion of the EMS Medical Director.
n. Failure to complete prescribed Quality Improvement Actions from a previous incident. (Or see (n) of LEVEL II)
o. Arrest or criminal charges for criminal sexual conduct of any degree, violent crime, drug diversion or illegal possession or distribution of controlled substances.
p. Failure to notify the MCA of a criminal charge, arrest or conviction within 1 business day
q. Gross negligence or willful misconduct

* Time measured from the time of occurrence of the initial incident to the time of occurrence of the succeeding event.

2. The following categories of incidents are defined as Level II incidents:
    a. Failure to adhere to system protocols, policies and procedures that had the potential to negatively impact patient care, as determined by the EMS Medical Director.
    b. Failure of personnel or agency to respond within 96 hours of receipt of requests for information or documentation regarding an incident under investigation by the MCA. A response shall be submitted in writing and with a signed delivery receipt to MCA staff within the allotted time period.
    c. Abuse and/or loss of system equipment due to neglect.
    d. Significant documentation errors
    e. Failure to accurately perform procedures as defined in protocols, policies and procedures.
    f. Failure to check and maintain functional equipment necessary to provide adequate patient care at the level of licensure, the failure of which may lead to an inability to communicate with medical control, inability to administer appropriate medications, or otherwise negatively affecting the ability of the personnel to function at his/her level of training in the field. This includes verification that a sealed drug and IV box, functional monitor/defibrillator, functional airway equipment, etc. are present on the unit.
    g. Improper or unprofessional medical communications including, but not limited to, any violation of Federal Communications Regulations, and falsification of identification during medical communications.
    h. Failure to appear before the EMS Medical Director, designated PSRO committee or MCA Governing Body when so requested by the MCA, as defined in the Complaint Investigation, Quality Improvement and Disciplinary Action Policies.
    i. Furnishing of information known to be inaccurate in response to any official request for information relative to quality improvement activities or other investigations subsequent to this policy.
    j. Two or more orders of disciplinary action within a 6-month period **

k. Any other patient care offense resulting from violation of policies, protocols and procedures of similar severity not listed above at the discretion of the EMS Medical Director.
l. Practicing in the MCA without current credentials required in order to maintain privileges, as identified in the Authorization for Medical Control Privileges Policy.
m. Medication error, which has a negative impact on patient care.
n. A determination by the designated PSRO Committee of failure to complete prescribed Quality Improvement Actions within the prescribed time frame.

** Time measured from the time of occurrence of the initial incident to the time of occurrence of the succeeding event.

ii. Will communicate with the employing agency of the subject licensee or agency involved in the complaint.
iii. The PSRO may request copies of documents, incident reports, video and audio recordings relating to a complaint without formal notification of the complaint to the subject licensee and/or agency.
iv. All requests for information will be documented in the investigation notes or with attached documentation/emails.
v. The agency and/or the individual will have 96 hours to turn over the requested documentation or provide statements the MCA.
vi. The MCA will redact all PHI prior to sending it to the PSRO for review.

2. Complaints found to be invalid will be closed as unsubstantiated; notification to the individual or the agency of the closure will only occur if prior knowledge of the complaint was provided to, or exists with, the involved individual/agency.
3. Formal notification of the subject licensee will occur if MCA Quality Improvement Actions, formal inquiry, or sentinel are indicated. A copy of the initial complaint, or a complaint summary (if the initial complainant requested anonymity), may be provided upon request.

B. Documentation

The documentation of the investigation of a complaint may include, but is not limited to, the following:

1. The name, address, and telephone number of the complainant (if known)
2. A copy of the stated complaint
3. The date and time of the receipt of the complaint
4. A copy of the complaint acknowledgement, if appropriate.
5. A copy of the notice to the subject licensee, if appropriate.
6. A copy of the pertinent protocol(s) and/or policy/policies.

7. Written statements of witnesses including notes from telephone interviews
8. Copies of pertinent reports, transcriptions of audio tapes; video recordings and copies of other pertinent documents or emails.

V. Due Process:

This policy establishes the initial steps of Due Process. A complaint will be investigated for validity and severity. Subject licensees and agencies shall be notified of formal or sentinel reviews.

A. The MCA will provide at least 4 business days notice to affected providers and agencies prior to convening PSRO meetings to which they must attend.
B. The MCA will provide a copy of the Complaint Investigation Protocol to the subject licensee(s) of the complaint.
C. Subject licensee(s) and agencies of a complaint will be provided with copies of all, complaint/investigation related materials at the time of the meeting with the exception of materials that would reveal the identity of an individual that provided information under the condition of anonymity. The subject licensee or agency may request the complaint/investigation related materials in advance of the PSRO meeting.
D. Based on the complaint information and/or evidence the MCA Medical Director may temporarily suspend the privileges of a subject licensee or agency pending a sentinel event meeting.
    1. Any MCA suspension enacted as a measure to ensure the safety of the community or patients shall remain in effect pending sentinel event review and disposition.
    2. In the event of criminal charges being filed against a provider or agency related to acts of violence, diversion of medications, illegal possession of controlled substances, criminal sexual conduct, or other practice which may pose a threat to the community or patients, the MCA may act with suspension of MCA privileges without convening a sentinel event PSRO meeting.
        a. The subject licensee or agency shall be notified in writing of the suspension.
        b. If found guilty in a court of law, MCA privileges will be considered to be revoked.
        c. If found not guilty of charges, the individual or agency must provide copies of court documents, including transcripts, to the MCA.
        d. If a court case is dismissed based on procedural failings or errors, the MCA may decline to extend privileges if the conduct of the individual or agency may pose a threat to the community or patients. This should occur at a sentinel event meeting.
E. A subject licensee or agency may request a postponement of up to thirty (30) calendar days of a PSRO meeting appearance in order to prepare his/her individual or agency response to the complaint. The subject licensee must submit

a copy of all supporting documentation to the MCA at least one week (5 business days) prior to the postponed review meeting.

F. The MCA is not a hiring entity and is not subject to collective bargaining. Union representation during MCA PSRO reviews is not permitted.
G. The MCA's PSRO investigates incidents, complaints, personnel and agencies. While a deed or misdeed may be civil or criminal in nature, the MCA's PSRO is not an adjudicating body for either of these conditions. The PSRO is not subject to the rules and statutes which govern civil or criminal adjudication; as such, attorneys and legal representatives are not permitted in PSRO reviews.
H. Recording, monitoring, or any manner of duplicating a PSRO review is not permitted unless conducted by the PSRO entity and expressly for PSRO purposes.
I. Disclosure of confidential PSRO materials[1] by individuals or agencies both before and after review shall be cause for possible suspension or revocation of MCA privileges, as well as possible statutory violations.
J. The MCA may disclose non-specific information relating to discipline of individuals or agencies. Care must be taken to not compromise any confidential information.[2]
K. Subject licensees or agencies may have agency representation at PSRO reviews provided PSRO standards are maintained.
L. Subject licensees or agencies failing to appear for PSRO reviews waive their right to representation and are subject to the summary findings of the review body. Failure to appear also constitutes a violation as defined in the Incident Classification Section.
M. The following steps shall be taken in the complaint review process for Formal Inquiries where the allegations could lead to an Order of Disciplinary Action be prescribed by the PSRO and ALL Sentinel Events:
    1. The violation of policy or protocol shall be defined.
    2. The impact on patient outcome will be evaluated.
    3. The subject licensee shall be given time to speak on the issue of the complaint including the opportunity to present supporting documentation.
    4. Counseling, remedial, and/or disciplinary action shall be considered and/or ordered as deemed appropriate by a majority vote of the MCA or their designated and pre-established Professional Standards Review Organization/Quality Review Committee.
N. The PSRO of the MCA will review the alleged violation(s) and by majority vote of the members present decide a course of action.
    1. All alleged violations will be determined as the following for each individual subject licensee and/or agency.
        a. Invalid

[1] MCL 331.533
[2] MCL 331.533

b. Valid – Minor
c. Valid – Serious

O. All valid allegations shall be followed by a Quality Improvement Action.
P. All system failures shall be addressed by the MCA.
Q. Subject licensees or agencies shall be notified of the findings of a PSRO review. If disciplinary action results, the individual or agency will be provided with any required remediation steps/actions and a copy of the **Disciplinary Action Appeal Protocol**.
R. In the event that a complaint/investigation involves both the function of an individual and the compliance of their agency or department, the requirement for a 4-business day notice of any special meeting shall apply, unless a postponement is granted to the individual agency or subject licensee.

VI. Application of Quality Improvement Action:

A. A primary function of Quality Improvement Action is to ensure the protection and safety of the community and patients.
B. The application of the Quality Improvement Action is intended to promote improvement in clinical and operational performance.
C. The MCA shall engage in a process to ensure that licensees maintain an appropriate level of clinical and operational performance.
D. MCAs should utilize Just Culture when applying or considering Quality Improvement Actions. There should be a balance between provider and system accountability.
E. The subject licensee's agency will be notified of any Quality Improvement Action prescribed by the PSRO.
F. Quality Improvement Actions may or may not be ascending in severity. In cases where misconduct (by action or omission), regardless of where the misconduct occurred, is determined to be reckless, willful, or criminal, ascending discipline may be bypassed with a more severe disciplinary action imposed.

VII. Orders of Quality Improvement Action:

A. No Action (Warning Letter)
   1. A letter can be sent to the subject licensee or agency or individual advising them that although the incident was determined to be valid; there will be no action taken at this time.
   2. The MCA may provide recommendations to prevent future occurrences.
B. Remediation
   1. The Medical Control Authority may issue an order of remediation to correct substandard clinical performance.
   2. A defined time period for completion of remedial activity shall be stated in the order.
   3. Subject licensees or agency shall be required to perform remedial activity under the supervision of an appointed proctor to correct an identified performance shortcoming.

4. For subject licensee(s): Notice of a remedial order, or the order itself, shall be forwarded to the licensee's employer (or MCA board in the case of an agency provider).
5. A subject licensee or agency shall be allowed only one opportunity for remediation of repetitive substandard performance in a twelve-month period. Subsequent episodes of substandard performance of the same nature occurring within the same twelve-month period shall be addressed under the disciplinary portion of this policy.

C. Probation which does not include a restriction of privileges:
1. A probationary letter shall be issued to a subject licensee or agency stating
   a. the details of the substandard performance
   b. the details of the probation
   c. the remedial action required
   d. the time of probationary period
   e. the consequences for repetitive noncompliance
2. Notice of probationary action shall be forwarded to the licensee's employer (or MCA board in the case of an agency provider).

D. Order of Disciplinary Action
1. An Order of Disciplinary Action (ODA) is a written document developed by the MCA and sent to a subject licensee for the purposes of clearly and plainly identifying the findings of the MCA, any disciplinary action and any required remediation.
2. ODAs include, but are not limited to, written reprimands, written notice of suspension, written notice of revocation, a letter of warning and a letter of reprimand.
3. The ODA must be delivered in a way that confirmed receipt by the licensee may occur.
4. The licensee that receives an ODA must provide a copy to all MCAs in which they are privileged.
5. Licensees receiving an ODA from another MCA must provide a copy of the ODA to this MCA.
6. An Order of Disciplinary Action may be accompanied by assignment of additional remedial activity.
7. Temporary Suspension of Privileges
   a. The Medical Director may temporarily suspend a licensee's privileges in cases where there is a clearly definable risk to the public health and welfare. The Medical Control Authority shall review such action within three business days after the Medical Director's determination.
   b. If a licensee's MCA privileges have been temporarily suspended from a licensee, the licensee shall not provide prehospital care until MCA privileges are reinstated.
8. Written Reprimand
   c. A written reprimand shall be issued to a licensee stating
      1. the details of the substandard performance
      2. the remedial action, if required

3. the time allowed for completion of remedial action
4. the consequences for repetitive noncompliance

d. Notice of disciplinary action shall be forwarded to the licensee's employer (or MCA board in the case of an agency provider).
e. A copy of the **Disciplinary Action Appeal** policy shall be included in the notice to the licensee.

9. Probation – that includes restriction of privileges:
   a. A probationary letter shall be issued to a licensee stating
      1. the details of the substandard performance
      2. the details of the probation
      3. the remedial action required
      4. the restriction of privileges, if applicable
      5. the time of probationary period
      6. the consequences for repetitive noncompliance
   b. Notice of probationary action shall be forwarded to the licensee's employer (or MCA board in the case of an agency provider).
   c. A copy of the **Disciplinary Action Appeal** policy shall be included in the notice to the licensee.
10. Suspension of Privileges - A licensee's medical privileges shall be suspended for a specified period of time.
   a. A written notice of the suspension shall be issued to the licensee stating:
      1. the details of the substandard performance
      2. the violation(s) of protocol and/or policy
      3. the term of suspension
      4. the remedial activity, if required
      5. the time allowed for the completion of the remedial activity
   b. Notice of disciplinary action shall be forwarded to the licensee's employer, if employed (or MCA board in the case of an agency provider).
   c. A copy of the **Disciplinary Action Appeal** policy shall be included in the notice to the licensee.
   d. If a licensee's MCA privileges have been suspended from a licensee, the licensee shall not provide prehospital care until the MCA privileges are reinstated.
   e. The Medical Control Authority must notify the department within one (1) business day of the removal of medical control privileges from a licensee.
11. Revocation of Privileges
   a. The notice of revocation shall state the violation(s) of protocol and/or policy.
   b. Notice of disciplinary action shall be forwarded to the licensee's employer (or MCA board in the case of an agency provider).
   c. A copy of the **Disciplinary Action Appeal** policy shall be included in the notice to the licensee.

d. The Medical Control Authority must notify the department within one (1) business day of the removal of medical control privileges from a licensee.
e. Within one (1) business day of the removal of medical control privileges, the Medical Control Authority must notify all other Medical Control Authorities which it knows, or has reason to believe, have granted the licensee or agency Medical Control privileges.

E. A subject licensee and/or agency must notify the MCA of disciplinary action from the State of Michigan.
F. Additional Agency Quality Improvement Actions
   1. The Medical Control Authority will notify the department chief or agency official of the alleged protocol violation.
   2. If a minor protocol violation is determined by the Medical Control Authority to have occurred, a letter of warning will be sent to the EMS agency.
   3. If an initial serious violation or a second minor protocol violation within a six-month period is determined to have occurred, a letter of reprimand will be sent and the EMS agency may be required to submit, within 15 days, a written statement of actions it will take to prevent future protocol violations.
   4. At the discretion of the Medical Control Authority, notice of these actions may be made public.
   5. The MCA may assess restrictions or limitations upon a licensed life support agency for non-compliance with protocols.
   6. If a third of more frequent minor protocol violation is determined by the Medical Control Authority to have occurred within a period of 18 months, or if the violation is a second serious violation within 18 months, the Medical Control Authority may suspend or revoke its medical control oversight for the EMS agency. The EMS agency shall not provide pre-hospital care until medical control is reinstated. At its discretion, the Medical Control Authority may take any other action within its authority to prevent further protocol violations. Notice of this action shall be made public.
   7. An EMS agency may appeal a decision of the Medical Control Authority. The EMS Agency must follow the **Disciplinary Action Appeal** policy.
G. The complainant shall, to the extent allowed under confidentiality statutes, be notified of the outcome of the complaint review process.
H. Reapplication after Revocation
   1. Following revocation of an involved party's privilege to practice in the MCA, the involved party may reapply to the MCA for privileges after no less than 24 months have elapsed from the date of revocation. Those issued a permanent revocation may not reapply for privileges at any time.
I. Financial Penalties

   The MCA may not apply financial penalties to individuals, per this policy. No such prohibition exists within statute; however, the MCA wishing to establish individual financial penalties must purposely develop an addendum to this policy.

J. PSRO Communications

PSRO protected entities may share PSRO information with other PSRO entities for the following purposes[3]:

1. To advance health care research or health care education.
2. To maintain the standards of the health care professions.
3. To protect the financial integrity of any governmentally funded program.
4. To provide evidence relating to the ethics or discipline of a health care provider, entity, or practitioner.
5. To review the qualifications, competence, and performance of a health care professional with respect to the selection and appointment of the health care professional to the medical staff of a health facility.

Protocol Source/References: [1] MCL 331.532

Disciplinary Action Appeal

Purpose: This protocol is provided to define the steps a licensee must take to appeal an order of disciplinary action issued by the Medical Control Authority.

I. Procedure
   A. A licensee having received an Order for Disciplinary Action (ODA) from the Medical Control Authority (MCA) may initiate a Request to Appeal.
   B. A licensee shall notify the MCA within seven (7) days of receipt of notice of an ODA of his/her/their request to Appeal. Such notice shall be in writing.

II. Appeal Hearing
   A. Upon receipt of a Request to Appeal an ODA, the MCA shall schedule a special meeting for the purpose of hearing an appeal. This meeting shall be scheduled as soon as practicable following receipt of a Request to Appeal.
   B. The receipt of a Request to Appeal does not stay the ODA or the imposition of the discipline on the appellant licensee.
   C. The MCA shall honor a request to postpone an appeal hearing, no later than thirty (30) days past the originally scheduled hearing date, to allow the appellant licensee opportunity to assemble information bearing upon his/her/their appeal.
   D. The MCA shall hold an appeal hearing to review the appellant licensee's new information and exercise one of the following options:
      1. Uphold the original decision and subsequent ODA.
      2. Diminish the ODA to a lesser Disciplinary Action (i.e., suspension of privileges diminished to written reprimand).
      3. Revoke the ODA (revocation of an ODA shall not expunge the appellant's record of the complaint process records for a period to twelve (12) months from date of original incident).
   E. Following exhaustion of the procedure stated herein, an appellant may appeal the decision of the MCA to the State of Michigan Emergency Medical Services Coordination Committee as defined in Part 209 of P.A. 368 of 1978, as amended Section 20919(4). An appeal must be filed with the Department of Health and Human Services, in writing, no more than 30 calendar days following notification of the final determination by the MCA.
      1. If a decision of the MCA is appealed to the Emergency Medical Services Coordination Committee, the MCA shall make available, in writing, the information it considered in makings its decision.

EMS Provider Criminal Charges and Convictions

Purpose:

The purpose of this policy is to provide the parameters for EMS licensure related to criminal charges and convictions.

Definitions:

Charge: any formal accusation made by a governmental authority asserting that somebody has committed a criminal misdemeanor or felony (anything other than a civil infraction).

Conviction: any plea of nolo contender, a guilty plea, or plea agreement, including deferments, as well as conviction(s) after a trial.

Policy:

Failure to disclose a criminal conviction or withholding of any material information regarding such conviction on any application for licensure will be considered a violation of Section 20958(1)(a) of the Public Health Code.

An EMS license or licensed EMS provider at any level may be denied, suspended, or revoked, or other appropriate action taken with respect to a felony or misdemeanor criminal charge or conviction under either Section 20958(1) or Section 20168 of the Public Health Code. Applicants that have a criminal charge, may have their license suspended until resolution of the criminal matter.

Procedure:

1. An EMS provider shall notify all their employers and all Medical Control Authority(s) in which they hold MCA privilege(s) in writing within one business day of being charged and/or convicted of a felony or criminal misdemeanor.
2. The Medical Director shall make a determination whether to temporarily suspend privileges within the respective MCA.
3. The Medical Control Authority PSRO will review and make a recommendation regarding the subject licensee's privileges to practice EMS within the MCA.
4. The Medical Control Authority PSRO will notify the MDHHS and the subject licensee of the results.

Protocol Source/References: Michigan Public Act 368 of 1978 Public Health Code, as amended. Parts 201 and 209. Retrieved April 19, 2021, from the Michigan Legislature website.

Initial Date: September 2004
Revised Date: 06/30/2023 Section: 8-27

Quality Improvement Policy

Purpose: The purpose of this policy is to establish the requirement for a defined Quality Improvement process within the Medical Control Authority (MCA) and with agencies holding medical control privileges. This policy provides a means for evaluation and improvement of protocol and EMS system components and design.

I. Confidentiality Assurance

Information obtained for the purpose of Quality Review will be used to determine if the current protocols in the MCA are being appropriately followed and to improve the protocols and the EMS system. Data is protected under P.A. 270 of 1967, MCL 331.531 to 331.533.

In specific cases where EMS providers may require corrective actions, the emergency medical services personnel names may be given to the agency to address at the agency level.

II. Professional Standards Review Organization

A. The Professional Standards Review Organization (PSRO) of the MCA is a review entity that is provided information or data regarding the physical or psychological condition of a person, the necessity, appropriateness, or quality of health care rendered to a person, or the qualifications, competence, or performance of a health care provider. The PSRO is a committee established by the MCA for the purpose of improving the quality of medical care and oversight of appropriate protocol compliance within the EMS system.

B. Agencies shall develop institutional PSROs for the purpose of internal review and improvement. For the purpose of this protocol, PRSO is meant to refer to the PSRO of the MCA.

C. The MCA's designated PSRO shall perform the duties and functions related to complaints, investigations or quality improvement activities, both prospective and retrospective.

D. The PSRO may be comprised of members of the board(s), MCA employees and contract staff, EMS agency staff, hospital staff, committee members, and other designated individuals when acting on behalf of, or at the direction of the MCA when performing PSRO tasks.

E. All Quality Improvement activities shall be performed by the PSRO, and all documents collected for Quality Improvement activities shall be held by the PSRO subject to Michigan's peer review privilege.[1]

[1] MCL 331.531 *et seq*.

III. Data Collection

A. Electronic Patient Care Reports (EPCR)
The MCA is authorized to obtain access to EPCR originating within their service area; this includes all scene responses, interfacility transfers and critical care transfers. The Medical Control may elect to receive reports on request.

B. MI-EMSIS Data Collection
1. Providers and agencies are required to report per **Electronic Records & EMS Information System Protocol** and **Documentation and Patient Care Records-Procedure Protocol**.
2. Agencies shall work in cooperation with the MCA, under PSRO, to ensure the quality, consistency and accuracy of data submitted through MI-EMSIS.
3. The MCA shall maintain access to the MI-EMSIS data and ensure that agencies are accountable for the submission of data.
4. MI-EMSIS data should be utilized as a tool for the evaluation of performance and function as a driving mechanism for quality improvement.

C. Other Electronic Data Collection
The MCA is authorized to obtain electronic data and voice recordings from any and all EMS agencies and/or departments, and dispatch agencies with interaction with callers requesting a medical response within the MCA service area. This includes mutual aid responses into the MCA service area. Data will be provided to the MCA's PSRO on a monthly basis or when individual records, recordings and reports are requested. The Medical Control may elect to receive electronic reports on a more frequent schedule.

D. Ownership of Records
Any documents or data relating to requests for service, records of provided services, records of refused services, dispatch reports and incident reports including all aggregated reports for benchmarking and analysis which are submitted to the PSRO of the MCA, or generated by the PSRO, are privileged. The MCA's PSRO holds ownership of only protected Quality Improvement documents. The submitting agency maintains ownership of any and all original records generated by their agency and personnel.

E. Incident Report Collection
1. Incident reports and requests for additional information directed to an individual provider or to an EMS agency/department requested by the MCA/PSRO must be submitted to the MCA/PSRO within 96 hours.
2. The MCA may establish an online reporting system.

IV. Data Review

A. Agency PSRO Responsibilities

Each agency, or department licensed to provide prehospital care, within the MCA area must develop and maintain a PSRO subgroup that reviews, either through a peer evaluation group or individuals tasked with peer review functions, and conducts audits requested by Medical Control.

B. Special Studies
All EPCR that include the use of equipment, skills, techniques or procedures that are currently under special study will be reviewed.

C. Unusual Occurrences
Any EPCR that are unusual and possibly one-time situations that may serve as a learning tool for other services in the future may be reviewed.

D. Problem Identification
1. Potential concerns in patient care may be brought to the attention of the PSRO of the MCA.
2. Topic quality improvement reviews will be performed with results reported to the Medical Control Authority.

E. Sentinel Event Reporting
1. The Medical Control Authority may designate specific items that must be reported.
2. Any intervention where it is reasonable to believe that harm to the patient may have occurred must be reported.

VI. Quality Review Criteria

A. Medical Control Authority Protocols
1. The current protocols in place at the time of the event will be used to review the EPCR selected.
2. Any changes in protocols will not be used for evaluation until the changes are approved and distributed.

B. Dispatch Policies
The review of the EPCR may address dispatch, location, response time, or mutual aid/multi-agency problems.

VII. Quality Improvement Actions

The PSRO, the Medical Director or his/her designee will determine the severity of the incident and develop an action plan to address the matter. The action plan may include:

A. Revision of policies/procedures
B. Remediation of individuals involved
C. Education recommendations for the system
D. Referral to Due Process and Disciplinary Procedures Protocol
E. Modification of clinical privileges
F. Continued monitoring

Evidentiary Blood Draw Protocol (MCA Optional Protocol)

This protocol is for specialist/AEMT and paramedic use only

☑ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol.

MCAs will be responsible for maintaining a roster of the agencies choosing to participate and will submit roster to MDHHS.

Purpose

In order to effectively utilize the resources of the Medical Control Authority, licensed Life Support Agencies may allow Paramedics working for them to draw a sample specimen of blood as allowed under the delegation of the Medical Control Authority EMS Medical Director, a licensed physician by the State of Michigan, pursuant to PA 368 (1978) MCL 333.16215 (Public Health Code) and PA 300 (1940) MCL 257.625a (Michigan Vehicle Code) and subsequent amendments reference these Public Acts. This shall be considered a Priority 3 level of service. However, if a patient presents with a medical condition, the General Pre-hospital Care protocol will be initiated.

Definitions

Consent to Search: Permission given by a person authorizing a law enforcement officer to make a seizure or conduct a search.

Implied Consent: A requirement under Michigan Law; all drivers are to have given their consent for a chemical test upon being arrested for Operating While Intoxicated as part of their application and issuance of a driver's license.

Medical Environment: Any area not within a freestanding medical facility(e.g., booking area, jail, or other scene where the paramedics may provide medical care).

Warrant: A precept or writ issued by a competent judge or magistrate authorizing a law enforcement officer to make a seizure or conduct a search.

Procedure

A paramedic may draw a blood specimen if one of the listed criteria is met:

1. When requested by a law enforcement officer, who provides verbal or written verification from the subject who is in custody, that the subject is voluntarily submitting to an Evidentiary Blood Draw as required by Implied Consent under PA 300 (1940) MCL 257.625a (Michigan Vehicle Code).
2. When requested by a law enforcement officer, who is in possession of a consent to search form duly signed by the subject in custody.

3. When requested by a law enforcement officer, who is in possession of a search warrant duly signed by a magistrate or judge.

This procedure is done at the delegation of the Medical Control Authority EMS Medical Director, a licensed physician, and under the supervision and at the direction of medical control, to draw blood for the purposes of determining the presence of alcohol and/or drugs as allowed for in PA 368 (1978) MCL 333.16215 (Public Health Code) in a Medical Environment.

Pre-Radio
PARAMEDIC

1. Obtain a full set of vital signs.
2. Obtain blood draw kit from law enforcement officer and use the provided contents within the kit for collection.
3. Sample shall be obtained in the presence of a law enforcement officer.
4. Do not use alcohol or alcoholic solutions to sterilize skin surface, needle or syringe.
5. In the presence of a law enforcement officer tell the subject that no alcohol was used in sterilizing the skin surface, needle, or syringe; then draw two tubes of venous blood from subject and upon completion of obtaining the specimen, slowly invert blood collection tube(s) several times to distribute the sodium fluoride/potassium oxalate preservative.
6. Complete blood specimen label(s) by entering name of subject, date and time of blood collection, and your name in ink.
7. In the presence of subject, hand tube(s) of blood and label(s) to law enforcement officer for signing, packaging, and transfer to the laboratory.
8. If the patient has no medical or trauma complaints and the vital signs are within normal limits consider this a treat and release from care.
9. If the patient has a medical or trauma complaint and/or vital signs are outside normal limits, transport the patient to the hospital.
   a. If officer refuses transport, contact medical control.

SECTION I: MEMBERSHIP ENDORSEMENT

Purpose:

Excellent out-of-hospital care is directly related to the performance of the life support agencies with inclusive clinical and operational standards. The purpose of this protocol is to establish a standard for all life support agencies (MFR-ALS) licensed within the Marquette-Alger Medical Control Authority (MAMCA).

I General Standards

a) A Life Support Agency shall respond or ensure that a response is provided to each request for emergency assistance originating from within the bounds of its service area. Operate under the direction of a medical control authority or the medical control authorities with jurisdiction over the ambulance operation. Provide life support consistent with its license and approved local medical control authority protocols to each emergency patient without prior inquiry into ability to pay or source of payment.
b) The Life Support Agency shall maintain adequate professional liability and other insurance such as to hold harmless MAMCA, and all officers, directors, and staff as "other insured".
c) When requested, the LSA shall furnish to MAMCA documentation of appropriate state licensure, certifications, as well as records of participation during in-service training programs.
d) LSAs shall not operate at a level that exceeds its licensure or approved current MAMCA protocols.
e) The LSA is responsible for communicating approved protocols and system updates to appropriate emergency medical services personnel.

II Geographic Service Area

a) LSAs authorized to operate with the MAMCA will have a defined geographic service area within the MAMCA.
    i) Minimum service area defined for any LSA will be through a municipality jurisdiction.
    ii) The geographic response area shall be explicitly declared on the Department Life Support Agency License application (form BHS/EMS 180).
    iii) Non-transporting LSAs may have a geographic service area defined by a business property (such as an industrial site or event center).
b) The LSA will maintain a 24-hour, 7-day-per-week availability and assure a response to all requests for emergency assistance occurring in their designated geographic service area.
    i) LSAs providing ancillary non-emergent and inter-facility transportation services shall provide sufficient coverage through additional staff and vehicles to maintain emergency availability while performing these additional services.
    ii) LSAs and vehicles must meet requirements as defined by the Department for the provision to the level of licensure within MAMCA.

III Mutual Aid

a) All LSAs shall maintain mutual agreements with adjoining/contiguous MAMCA approved agencies to provide for additional or replacement resources during times of saturation, mechanical failure, or mass disaster/casualty incidents.
b) Mutual aid agreements shall provide for an equal or higher level of service.
c) Signed mutual aid agreements shall be provided to MAMCA annually, or whenever updated/changed.
d) The MAMCA shall review, evaluate, and approve all mutual aid agreements.

IV Disaster Preparedness

a) Each LSA shall actively participate in local, county, and regional emergency preparedness activities.
b) Equipment, training, and services provided through emergency preparedness grants may be periodically distributed by the region based on LSA involvement in preparedness planning and exercise participation.

V Dispatch and Communications

a) A copy of the Department Medical Communications (MEDCOM) requirements shall be maintained by the LSA and adhered to by that agency.
b) LSA personnel shall have the ability to contact MAMCA Medical Direction at any hour for immediate on-line medical direction.
c) Personnel shall acknowledge via radio communications to Marquette County Central Dispatch Center of LSA response to emergency request for assistance.

VI Vehicle Requirements

a) LSAs shall have a written policy in place to ensure vehicles are operational and provide documentation of not less than monthly inspections.
b) Each vehicle shall maintain the minimum equipment as established by the Department and any additional equipment as outlined in MAMCA protocol.
c) The LSA shall provide the MAMCA with a current list of responding vehicles, to include; vehicle identification number, unit identification, level of licensure, and year/make/model of vehicle.
d) Radio communications shall comply with all MDHHS MEDCOM requirements.
e) The LSA shall carry liability insurance or self-insurance program authorized under 1951 PA35, MCL 124.1 *et seq.* for property loss and personal injury.
f) All LSA personnel shall be trained through an emergency vehicle operations course and maintain documentation of annual competency assessment.

VII Staffing

a) All personnel providing out-of-hospital care within the MAMCA shall be approved through the Medical Director and MAMCA as outlined in the Medical Control Privileges Protocol.
b) A list of providers with licensing level, expiration, and additional certifications shall be provided to the MAMCA upon request. These rosters shall be reviewed and updated at minimum quarterly by LSAs with MAMCA.
c) The LSA shall have sufficient MAMCA-approved staffing for 24-hour/7-day-per-week response based on MDHHS standards.
d) In an area that is covered by an advanced service, **all** calls must be responded to by an appropriately staffed ALS vehicle unless an appropriate alternative response plan is on-file with and approved by the MAMCA. In an area that is covered by a limited advanced service **all** calls must be responded to by an appropriately staffed LALS vehicle unless an appropriate alternative response plan is on-file with and approved by the MAMCA.
e) Each licensed ambulance shall be staffed with the minimum staffing in accordance with Licensure Level Requirement of Attendant During Transport Protocol (8-16). A Paramedic must accompany the patient to the hospital whenever advanced life support care has been initiated, except when approved to clear the scene by on-line Medical Direction.
f) All field personnel shall be supplied, through the agency, the current MAMCA-approved protocols.
g) LSAs must agree to adhere to the treatment, personnel testing, personnel continuing education, medical control, communications, and other protocols established by MAMCA.
h) LSAs must demonstrate a method of ensuring competency of personnel in performing at the level of current licensure and credentialing.

VIII Data Collection and Reporting

a) Each LSA shall provide representation, and participate in, the professional standards review organization for the purpose of improving the quality of care in the MAMCA.
b) LSAs shall develop plans for monthly assessment of quality. The agency plans, as well as data shall be submitted to the MAMCA monthly or as requested by the Medical Director.
c) Reports will be submitted to the MDHHS EMS Information System as prescribed by the Patient Care Record, Electronic Documentation, & EMS Information System Protocol.
d) Periodic requests for patient care records, or any additional supplemental information, shall be made immediately available to the MAMCA.
e) For each call in which responders are dispatched, the LSA shall maintain records of the incident. Canceled and reassigned calls shall be accounted for by the LSA.
f) Calls that have any patient contact require completion of a patient care record within 24-hours of call completion.

IX Clinical Competence

a) Each LSA shall maintain records of provider proficiency in all aspects as required by the MCA of out-of-hospital care pertinent to that licensure level.
b) The LSA is responsible for continued competency training and shall provide the MAMCA evidence of completion upon request.
c) Protocol changes, additions, and deletions are disseminated to each LSA. It is the agency's responsibility to ensure that all medical control communication is then provided to field personnel.

X Audits

i) A. The MAMCA, or its designees, may audit, examine, copy, and make excerpts or transcripts from records for the purpose of improving the system for overall patient care efforts.

XI Inability to Provide Service

a) Any LSA that cannot operate or staff at least one vehicle for an emergency response within its primary coverage area shall immediately:
   i) Notify Marquette County Central Dispatch Center that their service is unavailable.
   ii) Notify LSAs providing secondary response capabilities through mutual aid.
   iii) Contact the MAMCA Medical Director via email within 24-hours.
b) Documentation on the specific issue that lead to inability to provide emergency coverage, and steps in progress, if appropriate, to prevent further lack of coverage shall be provided to the MAMCA via email with 24-hours.
c) Transporting LSAs who by virtue of system overload experience temporary inability to respond to emergency requests for service shall notify the MAMCA via email within 24-hours.

XII Credentialing/Renewal Requirements

a) General Requirements

b) Each director or chief of any EMS agency within the MAMCA jurisdiction must meet with the MAMCA Medical Director or his/her designee at least 3 months prior to the need for the agency's license application or renewal to be approved.

   i) Information that shall be reviewed and considered at each application for application for credentialing and/or renewal shall be as follows:
      (a) Level of Need for Service in Area of Service Application
      (b) Ability of Service to Provide Service at the Level of Application
      (c) Agency No Response Rate with the following considerations:
         (i) Consistent No Response Rates Exceeding 5%
         (ii) Any No Response Rate Exceeding 15%
         (iii) Agency Rate of Failure to Provide Level of Service at Licensure Level with the following considerations:

(iv) Consistent Failure Rates Exceeding 5%

(d) Any Failure that Precipitates a Sentinel Event

(i) A sentinel event is a Patient Safety Event that involves a patient and results in any of the following:

1. Death
2. Permanent harm
3. Severe temporary harm and intervention required to sustain life

c) Response Times

i) LSAs shall maintain ≤ 12 minute Response to Priority I Calls 80% of the Time.

d) The EMS Agency must fulfill **all** the criteria listed within this section.

i) The EMS Agency must correct any deficiencies received in writing from the Medical Director or designee with the time remaining before licensee expires.

ii) Failure to correct any designated deficiencies before the date of licensure expiration shall result in termination of that agency's approval.

iii) Termination of Approval of a Service to Provide ALS/LALS/BLS/MFR:

iv) Failure for a service to meet the criteria outlined above is grounds for the MAMCA to withdraw its approval of a service to provide advanced, limited advanced, basic, or medical first responder pre-hospital emergency medical care within the MAMCA jurisdiction.

(1) In the event the above criteria are not met, or if the best judgment of the Medical Director or his/her designee the care provided by the service is not in keeping with the standards established, or places public health or well-being in jeopardy, the situation will be handled as described in the *Due Process and Disciplinary Procedures Protocol (8-26).*

e) Provider Rosters

i) Each provider within the MAMCA shall complete, and submit to MAMCA a Personnel Information Request Form. This will be updated annually, by June 1st. It is the responsibility of the provider to provide any changes in their personal information whenever this occurs to ensure MAMCA maintains current contact information.

SECTION II: DISPATCH

Purpose:

As mandated under Public Act 368 of 1978, as amended, Section 20919 (1)(b): "A local medical control authority shall establish written protocols for the practice of life support agencies and licensed emergency medical services personnel within its region. The protocols shall be developed and adopted in accordance with procedures established by department and shall include medical protocols to ensure the appropriate dispatching of a life support agency based upon medical need and the capability of the emergency medical services system."

The MAMCA Medical Priority Dispatch Policy was developed through the joint efforts of the Marquette County Central Dispatch Board and the MAMCA. The policy, including procedures, was approved and integrated in the Operating Procedures of the MAMCA.

a) Violation of the operating procedures of the MAMCA occurs when any LSA or provider of that LSA, dispatches themselves (self-dispatches) to a call outside of their jurisdiction based on a scanner or any other source.

SECTION III: EQUIPMENT CHECKS

Purpose:

In order to ensure EMS providers have functional patient care equipment to service the population within the MAMCA jurisdiction, the LSAs shall perform regular patient care equipment checks.

a) All transporting LSAs within the MAMCA jurisdiction shall complete and maintain monthly patient care equipment checks.

EMS PROVIDER INFORMATION REQUEST

The Marquette-Alger Medical Control Authority must be able to communicate with you effectively. Complete this form and submit to MAMCA. Thank you!

First Name	Middle Name	Last Name
Email		**Phone**
Home Mailing Address		
City	**State**	**Zip code**
Level of EMS License		**License Number**
Expiration Date		
Agency(s) of Affiliation (List All)		
1. 2. 3.		

STAFFING PROTOCOL

In recognition of manpower/volunteer shortages and financial challenges, the Marquette Alger Medical Control Authority (MAMCA) has established a Staffing Protocol for life support agencies.

Purpose:

To provide direction for staffing alterations and vehicles during staffing issues.

Procedure

I. Ambulance Staffing
   A. Advanced Life Support (ALS) vehicles operate with the minimum staffing of a paramedic and a medical first responder (MFR) or higher.
   B. Limited Advanced Life Support (LALS) vehicles operate with the minimum staffing of an advanced emergency medical technician (AEMT-S) and a medical first responder (MFR) or higher.
   C. Basic Life Support (BLS) vehicles operate with the minimum staffing of an emergency medical technician (EMT) and a medical first responder (MFR) or higher.

II. Equipment and Medications
   A. Equipment and medications that are accessible at any time, must be within the scope of practice of the personnel currently staffing the vehicle.
   B. It is acceptable to utilize ALS equipment in their BLS functionality (e.g. monitors set to AED mode).

III. Scope of Practice
   A. Personnel continue to be limited to their licensed scope of practice.
   B. This protocol does not preclude healthcare providers who maintain current Michigan licenses outside of EMS (e.g. RN, PA, MD) and that continuously work in emergency services, from practicing outside their scope of practice in an ambulance with MCA approval. This scope is not covered by the level of license of a life support agency (LSA) vehicle.

IV. Reporting
   A. If an agency finds they need to alter their staff in accordance with this protocol, the agency should report the status to the MCA in which the altered staffing occurred.

Protocol Source/References: Dickinson County MCA Staffing Protocol 8.29; Version 8/28/24

Medication Administration

Information:

EMS providers preparing to administer medications in the out of hospital setting should review and/or recite the "6 Rights" prior to administering any medication to a patient. While all 6 elements are important, In the out of hospital setting, special attention should be paid to the right medication, right dose, and right route - as these are frequently the areas of error in the EMS environment. In addition, EMS providers should ensure the patient is informed as to what medications they are receiving and afford an opportunity for the patient to refuse. Lastly, documentation is essential so that medications administered in the out of hospital setting become part of the patient's clinical medical record. By following the "6 Rights" of medication administration, EMS providers will significantly decrease the potential and number of errors associated with medication administration.

Definitions:

I. Medication: Any pharmacological intervention used to treat, prevent, or reduce signs and symptoms of diseases, disorders, and/or traumatic injuries.

II. Medication administration routes include the following: Intramuscular, Intravenous, Intraosseous, Oral, Buccal, Rectal, Inhaled, and Subcutaneous.

Procedure:

I. Prior to the administration of any medication ensure the following are reviewed and/or verbalized by at least two providers – if available (checked, and double checked):
   A. 6 Rights of Medication Administration –
      1. Right Patient
      2. Right Dose
      3. Right Medication (including indication)
      4. Right Route
      5. Right Time
      6. Right Documentation (including response)

II. Calculating medications when given a dosage range and a per kg dose:
   A. Calculate weight in kilos and multiply by the prescribed dosage (e.g. - mg/kg)
   B. The resultant dose should be less than the maximum single dose.
      1. In adults, for ease of administration, doses may be rounded to the nearest whole number within the range for those calculated doses at or above 1 dosage unit, or to the nearest tenth for those below 1 dosage unit (examples: 1.2 mg rounded to 1 mg, and 0.26mg rounded to 0.3mg). That calculated and rounded dose may be given and repeated in timed intervals, as indicated for that medication, to the control of symptoms or maximum stated cumulative dose if symptom control is not previously achieved.
      2. For pediatric patients, utilize MI-MEDIC and a length-based tape for all medication calculations.

C. Pediatric patients will never be given a single or total dose that exceeds the maximum single or total adult dose.

III. Following administration of any medication
   A. Document all pertinent aspects of the medication administration including but not limited to medication name, dose, route, and time in an electronic patient care report.
   B. Obtain signature of prescriber (medical control physician or other qualified designee) per local medical control authority policy.

Intranasal Medication Administration:

Intranasal medication administration using an FDA approved and MCA authorized atomizing device as specified in applicable patient care protocols may be allowed for MFR per MCA selection.

MCA Approval for intranasal medication administration for MFR
(●) Yes
( ) No

MCAs will be responsible for maintaining a roster MFR of the BLS agencies choosing to participate and will submit roster to MDHHS

Procedure:

1. Select desired medication and determine dose per applicable protocol.).
2. Draw up appropriate dose (volume) of medication plus an additional 0.1 mL to account for device dead space.
3. Attach atomizing device to syringe.
4. Use one hand to support back of patient's head as needed.
5. Place tip of atomizing device snuggly against nostril aiming slightly upward and outward. Administration angle should be approximately 45°.
6. Rapidly administer one half of the dose of medication, briskly pushing plunger.
7. Repeat with other nostril delivering the remaining volume of medication.
8. Use the highest concentration available for the medication.
9. Note: Maximal dose per nostril is 1 mL

Nebulized Medication Administration

Nebulized medication administration using an FDA approved and MCA authorized atomizing device as specified in applicable patient care protocols may be allowed for EMT per MCA selection.

MCA Approval for nebulized medication administration by EMT

(●) Yes
( ) No

MCAs will be responsible for maintaining a roster MFR of the BLS agencies choosing to participate and will submit roster to MDHHS

Procedure:

1. Obtain vital signs and auscultate lung sounds.
2. Select desired medication and determine dose per applicable protocol.).
3. Place the appropriate volume of medication in the lower half of the nebulizer unit. Then screw the upper half of the unit in place.
4. Attach the nebulizer to the base of the T piece. Then attach the mouthpiece to the T piece or connect neb chamber to NRB mask.
5. Attach one end of the oxygen tubing to the base of the nebulizer and the other end of the oxygen tubing to the oxygen source.
6. Set the **oxygen** liter flow at 6 L/min.
7. Instruct the patient to breathe normally through the mouthpiece, taking a deep inspiration every 4 or 5 breaths.
8. Continue the treatment until all the medication has been delivered through the nebulizer. You may need to gently tap the reservoir once or twice during the treatment to re-disperse the medication.
9. Obtain and record another complete set of vital signs and lung sounds after completion of the treatment.

Pediatric Considerations

1. Infants and small children may not be able to use adult mouthpiece and may need to use blow-by or pediatric mask

NOTES:
MCL 333.17754 Section 1(C)) An electronic signature or other identifier that specifically identifies and authenticates the prescriber or his or her agent.

Medication Substitution

Purpose:

This protocol allows for MCA to substitute medications during a time of shortage without having to enact emergency protocols within the MCA. This protocol does not replace or override any portion of the **Medication Shortage Procedure**. All procedures within that procedure must still be followed in regards to substitutions in concentration or medication.

Indications:

None of the medication options indicated in the MCA approved protocol are available.

Procedure:

1. Follow **Medication Shortage Procedure.**
2. Alternate concentrations are listed within this protocol for reference; these do not require a protocol change and are outlined in the **Medication Shortage Procedure.**
3. Notification and education of providers within the MCA should be done as soon as the substitution is known.
    a. It is the responsibility of the MCA to distribute information on the shortages and substitutions to agencies for distribution to providers.
    b. If a substitution is imminent, it is acceptable for an MCA to distribute information prior to the medication being substituted.
4. The MCA should notify the Division of EMS and Trauma if a substitution is suspected to last more than 60 days so that a more permanent protocol solution can be enacted.
5. All uses of substitute medications will be reviewed by PSRO for appropriateness.

Current Medication	Substitution
Amiodarone	Procainamide
Calcium Chloride	Calcium Gluconate
Diazepam	Lorazepam
Diphenhydramine	Famotidine Ranitidine Hydroxyzine
Fentanyl	Hydromorphone
Lidocaine	Procainamide
Midazolam	Lorazepam
Morphine	Hydromorphone
Ondansetron	Promethazine Compazine

Medication Shortage

A. Definitions:

1. ***Alternate Concentration*** – same medication, different concentration, while volume may change, the delivered dose remains unchanged, dilution may be required (*Epinephrine 1: 10,000 replaced using Epi 1: 1,000 with a 10mL diluent)*
2. ***Alternate Supplied Volume –*** same medication, same concentration, standard volume is unavailable, the delivered dose and volume remain the same *(Epi 1: 1,000, typically supplied in a 1mL vial replaced with Epi 1: 1,000 in a 10mL multi-dose vial due to shortage of the smaller vials)*
3. ***Alternate Supply/Type –*** same medication, standard supply type is unavailable (preloads vs. vials), dosing remains unchanged *(diphenhydramine 50mg/5mL preload is unavailable, replaced with diphenhydramine 50mg/5mL in a vial)*
4. ***Alternate Form*** – same medication, different route such that identical dosing does not yield the same systemic concentration or effect *(ondansetron 4mg vial unavailable, replaced with ondansetron 4mg ODT, option to repeat x 1 added to allow approximation of equivalent dosing)*
5. ***Alternate Medications*** – medication other than the standard approved medication which accomplishes an acceptably similar effect as the medication it replaces *(fentanyl 100mcg approved to replace morphine 10mg, dosing adjusted to obtain therapeutic equivalency)*
6. ***Missing Medication*** – standard medication which is unavailable *(amyl nitrite not available, acceptable alternative of Cyanokit is excessive in cost and size: alternate means to access treatment established – MEDDRUN)*
7. ***Outsourced medications – Repackaged by a 340B or 503 B medications in the same concentration and volume that have at least a 90 day expiration date.***

B. Criteria:

1. Participating pharmacies be it at the individual MCA or at a wider regional level, shall establish and maintain a listing of the standard medications and supplies contained in drug bags or boxes supplied to life support agencies for the purposes of treating patients.
2. Each participating pharmacy shall maintain a dated listing of alternative medications which are approved as substitutes or replacements for medications which are in shortage.
3. Due to the frequency of medication shortages and the need for alternative dosing or medication substitutions, each MCA shall develop and enact a medication cross-check procedure, to which EMS personnel will be held accountable as a means to avoid medication errors
4. Both the standard list and the alternate list (may be combined into a single document) shall be made readily available to system participants
5. The participating pharmacy shall enact policies/procedures which guide each of the following:
   A. Recognition of medication shortages and a means to report them

B. Pharmacy involvement in the investigation and designation of acceptable alternatives when shortages are identified
C. An organized process by which participant pharmacies will enact the replacement or substitution
D. A documented means of visually identifying when an alternative medication or dosing has been placed into an EMS drug bag or box, or when a medication is missing
    a. ***Alternate medications*** will be indicated by the placement of a sticker, tag or label on the outside of the bag or box; on the compartment where the alternate medication is located (if applicable) such that one inspecting the bag or box could easily recognize that the medication was included and what the missing medication it is intended to replace was. (Stickers GREEN or WHITE with GREEN)
    b. ***Missing medications*** will be signified by the placement of a sticker, tag or label on the outside of the bag or box, on the compartment where the missing medication would be located (if applicable) such that one inspecting the bag or box could easily recognize that the medication was missing and what the potential alternate medication was. (Stickers YELLOW or WHITE with YELLOW)
E. A method for dissemination of information related to changes made to the participating pharmacy drug bags or boxes with a means of accounting for receipt of the notifications at the agency/pharmacy levels

C. Selection of Alternative Medications:

1. Alternative concentrations, alternative supply/type and alternative supplied volume may be approved at the MCA/participating pharmacy level without a change to protocol provided that the standard and approved alternate medications are documented in the required lists, by effective date or date range.
2. Alternate form and alternate medications may be enacted as an emergency protocol according to statute and state approval, in the event of imminent shortage.
3. Non-standard medications, or those with no precedence of EMS use within Michigan must be submitted as new protocol submissions. The state may allow for expedited review in the event of imminent shortage of the medication being replaced.
4. If a missing medication will not be replaced, or an acceptable alternative is not found, a protocol or process should be developed or presented which addresses the potential inability to meet the existing protocol established standard of care.

D. Process:

1. A brightly colored ALTERNATE DOSE sticker/tag MUST be attached to the outside of the drug bag, box or narcotics box that lists the effected medication, the concentration of the substituted medication, the expiration date of the medication and the pharmacy name/date.
2. A brightly colored – MISSING MEDICATION sticker/tag must be placed on bags/boxes when a protocol medication is not available to stock in that bag/box.

3. A dosing/instruction card may be required to be included in the bag/box depending on the change.
4. Pharmacies experiencing shortages must provide notification of the need to utilize alternate dosing to the MCA , and receive MCA approval, prior to any change being implemented.
5. Drug bags, boxes or narcotics boxes with alternate dose medications/missing medications should have the medication replaced and the sticker/tag removed by pharmacy as soon as possible when the proper medication or concentration of medication is available.
6. Any additional equipment, which is needed to deliver the medication, must be included with the alternate dose.
7. EMS Agencies receiving notice of the utilization of alternate dosing, alternate medications or missing medications due to shortage must post the changes and ensure that all providers that may have cause to use the medications are made aware of the changes and are educated on proper use, risk and dosing of any new or replacement medication prior to their first potential exposure to the alternate dose or medication.
8. Any Special Instruction for a particular shortage will be communicated to all effected pharmacies and EMS services.

Personal Metered Dose Inhaler Use (MCA Optional Protocol)

☑ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol.

Purpose: Nebulized respiratory treatments are preferred over MDI's. This protocol is to allow for the use of the patient's own prescribed Metered Dose Inhaler (MDI) containing only albuterol, in place of nebulized albuterol administration by EMS personnel. This is to be used only in patients with **febrile respiratory symptoms**

A. To substitute administration of **albuterol 2.5 mg/3ml NS** nebulized with use of the patient's own prescribed MDI the following criteria MUST be met.
   1. A specific and applicable treatment protocol is being followed
   2. EMS provider administering patient prescribed MDI is MCA authorized to administer **albuterol 2.5 mg/3ml NS** nebulized within the treatment protocol

B. Indications
   1. Patients with febrile respiratory symptoms in need of bronchodilator treatment

C. Requirements
   1. Patient has a prescribed rescue Metered Dosed Inhaler (MDI) containing albuterol only
   2. MDI is prescribed to the patient (no one else)
   3. Medication is not expired
   3. MDI has a functioning spacer (preferred not required)

D. Procedure
   1. Assist patient in receiving four (4) puffs of their own rescue Albuterol Metered Dose Inhaler (MDI), with spacer, in place of each nebulized treatment of **albuterol 2.5 mg/3ml NS** as indicated in applicable treatment protocol.
   2. Use of a spacer is optimal. When no spacer is available, ensure that that patient breathes out completely before each puff in order to inhale as much medication as is possible.
   3. Do not use an MDI prescribed to another person.
   4. All MDI's should be brought to the hospital with the patient, if transported.

E. Directions for use an MDI with spacer (Figure 1)

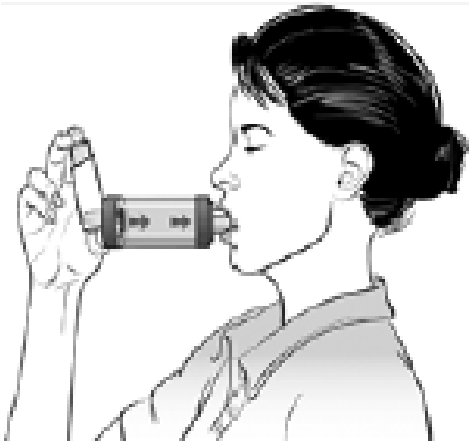


Figure 1

1. Remove the cap from the MDI and spacer. Shake well
2. Insert the MDI into the open end of the spacer (opposite the mouthpiece).
3. Place the mouthpiece of the spacer between the patient's teeth and have them seal their lips tightly around it.
4. Have the patient breathe out completely
5. Press the MDI canister once.
6. Have the patient breathe in slowly and completely through their mouth. If you hear a "horn-like" sound, they are breathing too quickly and need to slow down.
7. Have the patient hold their breath for 10 seconds (count to 10 slowly) to allow the medication to reach the airway of the lung.
8. Repeat the above steps for each puff.
9. Replace the cap on your MDI when finished.

EMS: Medication and IV Supply Requirements

I. Emergency medical service vehicles will be equipped with medication boxes and IV kits or supplies consistent with their licensure level and protocols.

II. The contents of the medication boxes are subject to inspection at any time by participating hospital pharmacy staff or by the medical control authority.

III. Medication boxes will be prepared by MCA participating hospital pharmacies prior to each patient use see **Pharmacy: Medication and IV Supply Requirements Protocol**.
   A. All medications will be obtained from an MCA participating pharmacy.
      i. Oral glucose is the only medication that an agency may own and supply.
      ii. Agencies must have an MCA approved process in place for manufacture recalls.

IV. IV kits may be prepared and sealed by MCA participating pharmacies or by delegated agencies per MCA approved procedure.

V. Licensed EMS personnel will assure that a proper seal is in place on medication boxes

VI. The ambulance agency and licensed EMS personnel are responsible for the security of the medications and supplies.

VII. Medication boxes and IV supplies shall be locked and secured in the EMS vehicle, except when required for patient care. Each agency will have a MCA approved procedure in place to ensure controlled access to the medication boxes and IV supplies.

VIII. Licensed EMS personnel will include the following MCA approved documentation when returning medication boxes (and IV supplies if applicable) to a secure location for pharmacy exchange.
   A. All medications used and/or wasted from the medication box (and IV supplies if applicable)
   B. Physician, PA or NP signature for controlled substances administered.
   C. Witness signature for controlled substance waste
      i. Whenever controlled substances are used from a medication box, any unused or contaminated medication must be wasted in the presence of a witness that is a licensed healthcare professional that is authorized by the receiving facility to sign for wasted controlled substances.
   D. MCAs will determine procedures and requirements for EPCR signatures

IX. Opened syringes, needles, and any broken glass ampules will be properly disposed of and not left in the medication box. It is the responsibility of the licensed EMS personnel to clean any blood or body fluids from the inside of the medication box before it is returned to the pharmacy.

X. If EMS personnel or agency discover a discrepancy in medication box contents, they shall contact the last pharmacy which had possession of the box and mutually resolve the discrepancy.

A. Upon resolution, the agency shall submit a report to the medical control authority documenting the circumstances and the resolution. A copy of the report will also be sent to the pharmacy by the agency.

B. Discrepancies that cannot be resolved between the pharmacy and agency will immediately be forwarded to the medical control authority for investigation.

Pharmacy and MCA: Medication and IV Supply Requirements

Roles

1. Pharmacies operated within the member hospitals, member Free Standing Emergency Departments, and member outpatient surgical centers of the medical control authority and participate in the medication exchange system established by this protocol are considered MCA participating pharmacies and shall be referred to as 'pharmacies' for this protocol.
2. The MCA participating pharmacy is responsible for ensuring that re-stocked EMS medication boxes (and if applicable, IV supplies) are available to EMS units 24/7 who bring a box for replacement. The Administrative Rules of the Michigan Board of Pharmacy (R 338.486)(4)(c) require that "The pharmacist shall routinely inspect these medications and, after use, shall verify the contents and replace the medications as necessary".
3. The Director of Pharmacy at each MCA participating pharmacy is responsible for assuring compliance with this protocol.

Responsibilities

1. Medication box refers to the boxes and additional packs (if MCA approved) that contain medications required to fulfill the care outlined in the MCA approved protocols.
    a. All medications in approved protocols must be supplied in correct dosages, concentrations, and quantities to fulfill the MCA approved protocols.
    b. All medications carried must have a corresponding protocol for use.
    c. Medication boxes must be provided per licensure level, containing only medications that are MCA approved for that licensure level to administer
2. Medication box contents remain the property of the MCA participating pharmacy. The MCA participating pharmacy will manage their respective inventory for restocking medication boxes (and if applicable, IV supplies).
    a. Unless addressed by approved protocol, all medications (including over the counter medications) must be obtained from an MCA recognized participating pharmacy.
    b. Oral Glucose is the only medication an agency may own and supply
3. The medication box itself is owned by the entity that purchased it and entered it into the system (i.e., EMS agency, MCA, hospital, etc.).
4. The medical control authority will maintain a list of the medication box numbers currently "in service", and will assign new medication box numbers, as needed.
5. The pharmacy will Include in each box an MCA approved document(s) that state the inventory of the box, allow for usage and waste documentation, and required signatures (narcotic administration, narcotic waste).
6. IV kits may be prepared and sealed by MCA participating pharmacies or by delegated agencies per MCA approved procedure.
7. The pharmacy will upon issuing or refilling a box assure the following are in place:

a. Label/Relabel the medication box/pack with a pharmacy label which contain, at minimum.
    i. The hospital name
    ii. The name or initials of the pharmacist checking the box
    iii. The date the box was restocked and checked.
    iv. The expiration date of the first medication to expire in the box (this date must be at least three months from the date the box is being restocked and checked).
    v. The tag number of the locks assigned to the box.
b. Attach to the exterior of the box a notification regarding any changes to contents of the medication box that deviates from the standard inventory list of contents.
c. Assure the box is sealed and secured.

8. The contents of the medication box are subject to inspection at any time by the medical control authority and/or pharmacy.
9. A current schematic or inventory list of the medication box (including concentrations and quantities) shall be submitted to the MCA by the pharmacy.

    The MCA is responsible for assuring that MDHHS has a current schematic or inventory list.

10. The pharmacy will be responsible for establishing requirements for EMS units to obtain or replace IV supplies (if applicable).
11. The pharmacy is responsible for providing a 24/7 accessible, secure environment for obtaining restocked medication boxes (and IV supplies if applicable) and returning of used medication boxes unless otherwise established by the MCA.
12. Upon receiving a used medication box from an EMS service, the pharmacy will:
    a. Check to assure that the box is properly sealed and contains documentation that includes:
        i. All medications used and/or wasted from the medication box (and IV supplies if applicable).
        ii. Physician, PA or NP signature for controlled substances administered.
        iii. Witness signature for controlled substance wasted
    b. Replace the used contents of the medication box (including IV supplies if applicable) and verify that all supplies and medications listed on the medical control authority medication box inventory form are present.
13. If a discrepancy is found by the pharmacy, the pharmacy shall contact the agency with last possession of the medication box/pack and mutually resolve the discrepancy.
    a. Upon resolution, the pharmacy shall submit a report to the medical control authority documenting the circumstances and resolution. A copy of the report will also be sent to the agency by the pharmacy.
    b. Discrepancies that cannot be resolved between the pharmacy and agency will immediately be forwarded by the pharmacy to the medical control authority for investigation

Epinephrine Auto-Injector Procedure

Aliases: Epi-Pen ®

Purpose: To outline the use and resupply of epinephrine auto-injector/pediatric epinephrine auto-injector by authorized prehospital providers for life-threatening anaphylaxis and respiratory emergencies as outlined in applicable treatment protocols Providers must be licensed at or above the Emergency Medical Technician level unless otherwise specified by MCA selection. .

MCA Approval of **Epinephrine Auto-injector** for Select MFR Agencies

○ YES ◉ NO

MCAs will be responsible for maintaining a roster of the agencies choosing to participate and will submit roster to MDHHS

1. **Indications**
   - A. Life-threatening allergic/anaphylactic and respiratory emergencies
   - B. Use is outlined in applicable treatment protocol
2. **Contraindications**
   - A. No absolute contraindications to life-threatening allergic/anaphylactic emergencies as described in applicable treatment protocols.
3. **Cautions**
   - A. Use with caution in patients with heart disease, high blood pressure, and stroke.
   -  B. Contact Medical Control if child appears to weigh less than 10 kg (approx. 20 lbs.) prior to administration if possible.
4. **Technique**
   - A. **Epinephrine auto-injector** is an auto-injector that injects medication into the intramuscular tissue when the device is pushed against the skin. Injection is to be done at the anterolateral portion of the thigh.
   - B. Dosing:
     - i. **Epinephrine auto-injector** (0.3 mg) is used for patients weighing over 30 kg (approx. 60 lbs.)
     - ii. **Pediatric epinephrine auto-injector** (0.15 mg) is used for patients weighing between 10-30 kg (approx.20-60 lbs.)
     -  iii. Contact Medical Control if child appears to weigh less than 10 kg (approx. 20 lbs.), prior to **pediatric epinephrine auto-injector** administration, if possible
   - C. Instructions for use are pictured on the side of each auto-injector.
   - D. The auto-injector must be held in place for ten (10) seconds once the needle injects into the thigh.

5. **Documentation**
   A. EMS providers will document any changes in the patient's condition and report those changes to on-line medical control.
   B. Complete the Epinephrine Auto-injector Utilization Form as required by MCA.
6. **Accountability**
   A. **Epinephrine auto-injectors** will be stored in a secured compartment in a temperature-controlled area of the EMS vehicle.
   B. **Epinephrine auto-injectors** must be restocked at the pharmacy or through other Medical Control approved process in conformity with current pharmacy laws and the public health code. Utilization forms must be completed for each use.

Epinephrine auto-injector Utilization Form
(To be used by Hospital)

Drug	Standard	Quantity	Count	Exp. Date
Epinephrine auto-injector	0.3 mg	1	_____	_____
Pediatric Epinephrine auto-injector	0.15 mg	1	_____	_____

Run Date _____

Patient Name _____

Physician _____

EMT or MFR _____

Receiving Hospital _____

General CBRNE Identification of Agents

Purpose: This is written to provide general pre-arrival information for suspected HAZMAT and CBRNE (chemical, biological, radiological, nuclear, and explosive) incidents.

NOTE: This information is an overview of different types of incidents and agents.

Signs of an Incident

1. A chemical or biological incident may not always be obvious.
2. Many of the early signs and symptoms produced by chemical agents may resemble those of a variety of disorders. Biological symptoms are generally delayed.
3. The patient's clinical presentation may offer clues about the type of toxic substance exposure.
    - A. **CHEMICAL INCIDENT**
        - i. Explosions or suspected release of liquids, vapors or gases
        - ii. Mass casualties without obvious trauma
        - iii. Similar presentation and/or symptoms for multiple patients.
    - B. **BIOLOGICAL INCIDENT**
        - i. An unusual increase in the number of individuals seeking care, especially with similar symptoms such as respiratory, neurological, gastrointestinal, or dermatological symptoms.
        - ii. Any clustering of patients in time or location (e.g., persons who attended the same public event).
    - C. **RADIOLOGICAL INCIDENT**
        - i. Notification of the detonation of a nuclear device.
        - ii. Dirty bomb
        - iii. Known issues with nuclear power plant or other radioactive source.
    - D. **NUCLEAR INCIDENT**
        - i. Explosion with mushroom cloud and devastation of a large geographical area
    - E. **EXPLOSIVE INCIDENT**
        - i. Responders should be aware of the possibility of secondary incendiary devices and agents.
        - ii. Obvious trauma.

Medical Response

4. First responding units must approach with caution.
5. Approach upwind, uphill and upstream, as appropriate.
6. Utilize resource materials such as the Emergency Response Guidebook, Emergency Care for Hazardous Materials Exposure, or smart phone applications.
7. Utilize appropriate PPE.
8. Be aware of contaminated terrain and contaminated objects.
9. Hazmat response protocols must be initiated, as well as unified incident command.
10. Maintain a safe distance from the exposure area.

11. Attempt to identify the nature of the exposure by looking for placards, mode of dispersal (vehicle explosion, bomb, aerosolized gas, etc.)
12. Victims and potential victims must be evacuated rapidly from the contaminated area and decontaminated as quickly as possible, if appropriate.
13. Treatment may be initiated within the hot and/or warm zones of an incident by properly trained, protected, and equipped personnel.
14. Be alert for secondary devices.

Select Agents

1. **Chemical Agents**
   A. Chemical agents are compounds that may produce damaging or lethal effects.
   B. The potential of the agent to do damage is measured by how readily it disperses. Wind and rain will increase the dispersion rate of a chemical agent.
      i. **Persistent agents** have low volatility, evaporate slowly and are particularly hazardous in liquid form. They stay around for long periods of time (24 hours or longer) and contaminate not only the air but objects and terrain as well. Mustard and the nerve agent VX are examples of persistent agents.
      ii. **Non-persistent agents** are volatile and evaporate quickly, within several hours. Gases, aerosols, and highly volatile liquids tend to disperse rapidly after release. Phosgene, cyanide and certain nerve agents (with the exception of GD-Soman) are non-persistent agents. Because of their volatility, they pose an immediate respiratory hazard but are not particularly hazardous in liquid form.
   C. Chemical agents are classified by their effects:
      i. **Nerve agents**, the most deadly of all chemical agents, disrupt nerve transmission within organs and are quickly fatal in cases of severe exposure.
      ii. **Blood agents** (cyanides) interfere with the blood's ability to transport oxygen throughout the body; often rapidly fatal.
      iii. **Blister agents,** or vesicants, cause a blistering of the skin and mucous membranes, especially the lungs.
      iv. **Choking agents,** or pulmonary agents, irritate the lungs, causing them to fill with fluid.
      v. **Incapacitating agents,** cause an intense (but temporary) irritation of eyes and respiratory tract.
2. **Biological Agents:** Micro-organisms and toxins, generally, of microbial, plant or animal origin to produce disease and/or death in humans, livestock and crops.
   A. Biological agents
      i. Bacterial Agents (e.g. Anthrax, Cholera, Plague, Tularemia, Q-Fever)
      ii. Viral Agents (e.g. Smallpox, Viral Hemorrhagic Fevers)
      iii. Biological Toxins (e.g. Botulinum Toxins, Staphylococcal Enterotoxin B, Ricin, Trichothecene Mycotoxins (T2))

*Biological agents utilized as a CBRNE may not become evident until hours, days, or weeks after the exposure due to the various incubation periods for each pathogen.

3. **Radiological Agents:** Exposure typically has no immediate effect. The sooner the victim has symptoms (example: nausea and vomiting) the more significant the exposure.
4. **Nuclear Agents:** Primary risk is massive trauma and devastation as the result of a large-scale blast.
5. **Explosives:** Threats with explosive devices may be or large or small scale.

Personal Protective Equipment

1. **NIOSH/OSHA/EPA classification system:**
   A. **Level A:** Fully encapsulating, chemical resistant suit, gloves and boots, and a pressure demand, self-contained breathing apparatus (SCBA) or a pressure-demand supplied air respirator (air hose) and escape SCBA. (Maximum protection against vapor and liquids)
   B. **Level B:** Non-encapsulating, splash-protective, chemical-resistant suit that provides Level A protection against liquids but is not airtight. (Full respiratory protection is required but danger to skin from vapor is less)
   C. **Level C:** Utilizes chemical resistant clothing along with a full-faced/half mask air purifying respirator or PAPR rather than an SCBA or air-line.
   D. **Level D:** Limited to coveralls or other work clothing, boots, and gloves
2. **Universal Precautions:**
   A. Assume that all patients are potentially contagious and use appropriate barriers to prevent the transmission of pathogenic organisms. PPE include gloves, gowns, HEPA respirators, face shields and appropriate handwashing.
   B. If a chemical exposure is suspected, appropriate protective suits and respirators (PAPR) with Organic Vapor/HEPA cartridges should be donned.

Chemical Exposure

Purpose: To provide guidance for the treatment of chemical exposure patients.

Assessment/Management – Chemical Agents
If there is a confirmation of, or symptoms indicative of, a chemical incident, utilize appropriate protective suits and respirators (PAPR) with Organic Vapor/HEPA cartridges should be donned.

I. Nerve Agents & Cyanide Compounds – refer to **Nerve Agent/Organophosphate Pesticide Exposure-Special Operations Protocol** and **Cyanide Exposure-Special Operations Protocol.**

II. Choking Agents (e.g., Phosgene, Chlorine, Chloropicrin)
- A. Exposure Route: Inhalation
- B. Signs and symptoms:
  1. Cough, dyspnea, irritation of mucous membranes, pulmonary edema
- C. Patients should be promptly removed from the area to a clean atmosphere.
- D. Treatment
  1. Assist ventilations, as necessary.
  2. Provide 100% oxygen
  3. If wheezing, administer **albuterol** 2.5 mg/3ml **NS** nebulized per **Nebulized Bronchodilators-Medication Protocol** (Per MCA selection may be EMT skill)

Nebulized **albuterol** administration
☑ EMT

  a. 4 puffs from patient's own prescribed albuterol metered dose inhaler (with spacer if available)
  3. For severe exposure consider early interventional airway and aggressive ventilatory support (including CPAP per **CPAP-Procedure Protocol**)
  4. If eye exposure,
     a. Eye irrigation
        i. Remove contact lenses
        ii. Flush with 1000cc of **NS** each eye
     b. For eye pain, use **tetracaine hydrochloride** 1-2 drops in each eye, if available.

III. Vesicant Agents (Blister agents)
- A. Examples: Sulfur Mustard (HD), Nitrogen Mustard (HN), Lewisite, Phosgene Oxime (CX) Vesicant agents are named for their tendency to cause blisters.
- B. Exposure Route: Dermal/Inhalation
- C. Decontamination is critical:
  1. Medical providers will require the proper PPE as determined by unified command before decontaminating patient.

2. Remove patient's clothing, if necessary.
3. Patients may begin self-decontamination by removing clothing and using soap (if available) and water.
4. Decontaminate by blotting and cleansing with soap (if available) and water.
5. Remember that time is critical for effective mustard decontamination.

D. Management/Treatment
   1. Immediate attention should be directed toward:
      a. Assisted ventilation
      b. Administration of 100 % oxygen
   2. Symptomatic treatment per protocol.

IV. Lacrimator Agents (Tear Gas)
   A. Information: Lacrimator (tearing) agents are widely used by law enforcement, the military, and widely available to the public.
   B. Exposure Route: Inhalation/Ocular
   C. Signs and Symptoms: The most common effects are nasal and ocular discharges, photophobia, and burning sensations in the mucous membranes.
   D. Decontamination:
      1. Patients should be decontaminated with soap and water.
      2. Medical providers require protective masks and clothing for patient management since lacrimator agents are transmitted by physical contact.
      3. Decontaminate by blotting and cleansing with soap (if available) and water.
   E. Treatment
      1. Symptomatic treatment per protocol (no specific antidote).
      2. Eye irrigation
         a. Remove contact lenses
         b. Flush with 1000cc of **NS** each eye
         c. Use **Tetracaine hydrochloride**, if available, 1-2 drops in each eye.

<u>Medication Protocols</u>
Albuterol
Tetracaine hydrochloride

Nerve Agent/Organophosphate Pesticide Exposure Treatment

Purpose: This protocol is intended for EMS personnel at all levels that have been trained in the use of these devices and authorized by the medical control authority to assess and treat patients exposed to nerve agents and organophosphate pesticides utilizing the **Duo Dote/Mark I Antidote Kits** and/or a combination of auto injectors and/or nasal sprays. Administration of non-prepackaged kits is restricted to ALS.

The following medications in this protocol are not required to be carried on EMS vehicles and may be available through special response units.

Medications/Definitions:

A. One (1) Nerve Agent (NA) Antidote Kit – for the purpose of this protocol means either one (1) Duodote OR one (1) Mark I
   1. **Duodote** – a single device with 2 chambers. The front chamber contains 2.1 mg atropine, the back chamber contains 600 mg pralidoxime (2-PAM). When activated the device sequentially administers both drugs through a single needle.
   2. **Mark I Antidote kit**– 2 separate injectors. One containing 2mg atropine, the second containing 600 mg of pralidoxime (2-PAM).
B. **Atropine auto injector**- a single auto-injector of atropine that comes in 3 doses: atropine 0.5 mg, atropine 1 mg, atropine 2 mg.
C. **Midazolam auto-injector** – 20 mg midazolam per device
D. **Midazolam nasal spray** – 5 mg per device
E. **Diazepam auto-injector** – 10 mg per device
F. Non prepackaged kit administration: Administer 600 mg **pralidoxime** and 2 mg of **atropine** for every one (1) NA Antidote Kit.(ALS only)

Chemical Agents

1. Agents of Concern
   A. Military Nerve Agents including: Sarin (GB), Soman (GD), Tabun (GA), VX
   B. Organophosphate Pesticides (OPP) including Glutathione, Malathion, Parathion, etc.
2. Detection: The presence of these agents can be detected through a variety of monitoring devices available to most hazardous materials response teams and other public safety agencies.

Patient Assessment

1. **SLUDGEM** Syndrome
   A. **S** Salivation / Sweating / Seizures
   B. **L** Lacrimation (Tearing)
   C. **U** Urination
   D. **D** Defecation / Diarrhea
   E. **G** Gastric Emptying (Vomiting) / GI Upset (Cramps)

F. **E** Emesis
G. **M** Muscle Twitching or Spasm

2. Threshold Symptoms: These are symptoms that may allow rescuers to recognize that they may have been exposed to one of these agents and include:
   A. Dim vision
   B. Increased tearing / drooling
   C. Runny nose
   D. Nausea/vomiting
   E. Abdominal cramps
   F. Shortness of breath

NOTE: Many of the above may also be associated with heat related illness.

1. Mild Symptoms and Signs:
   A. Threshold Symptoms *plus*:
   B. Constricted Pupils*
   C. Muscle Twitching
   D. Increased Tearing, Drooling, Runny Nose
   E. Diaphoresis
2. Moderate Symptoms and Signs
   A. Any or all above *plus:*
   B. Constricted Pupils
   C. Urinary Incontinence
   D. Respiratory Distress with Wheezing
   E. Severe Vomiting
3. Severe Signs
   A. Any or All of Above *plus*
   B. Constricted Pupils*
   C. Unconsciousness
   D. Seizures
   E. Severe Respiratory Distress

***NOTE**: Pupil constriction is a relatively unique finding occurs early and persists after antidote treatment. The presence of constricted pupils with SLUDGEM findings indicates nerve agent / OPP toxicity. Constricted pupils may not be present with localized dermal exposure.

Personal Protection

1. Be Alert for secondary device in potential terrorist incident
2. Personal Protective Equipment (PPE)
   A. Don appropriate PPE as directed by Incident Commander.
   B. Minimum PPE for Non-Hot Zone (i.e., DECON Zone)
      a. Powered Air Purifying Respirator or Air Purifying Respiratory with proper filter
      b. Chemical resistant suit with boots
      c. Double chemical resistant gloves (butyl or nitrile)
      d. Duct tape glove suit interface and other vulnerable areas
3. Assure EMS personnel are operating outside of Hot Zone
4. Avoid contact with vomit if ingestion suspected – off gassing possible

5. Assure patients are adequately decontaminated *prior* to transport
    A. Removal of outer clothing provides significant decontamination
    B. Clothing should be removed before transport
    C. DO NOT transport clothing with patient
6. Alert hospital(s) as early as possible

Patient Management (After Evacuation and Decontamination)

1. Evaluate and maintain the airway, provide oxygenation and support ventilation as needed.
2. NOTE: Anticipate need for extensive suctioning
3. Administer appropriate number of NA Antidote kits (**Duo Dote OR Mark I)** kits per Chart A. below.
    A. NOTE: For NA kit administration only:
        i. Adult is > 8 years of age
        ii. Pediatrics is ≤ 8 years of age
    
    B. NOTE: Medical Control contact is required prior to administration for:
        i. Patients that meet self-administration criteria
        ii. Patients that meet mild symptoms and signs criteria in chart below:

	Clinical Findings	Signs/Symptoms	Required Conditions	NA Kits To Be Delivered
SELF-RESCUE	**Threshold Symptoms**	• Dim vision • Increased tearing • Runny nose • Nausea/vomiting • Abdominal cramps • Shortness of breath	Threshold Symptoms *-and-* Positive evidence of nerve agent or OPP on site Medical Control Order	1 NA Kit (self-rescue)
ADULT PATIENT > 8 years of age	**Mild Symptoms and Signs**	• Increased tearing • Increased salivation • Dim Vision • Runny nose • Sweating • Nausea/vomiting • Abdominal cramps • Diarrhea	Medical Control Order	1 NA Kit
	Moderate Symptoms and Signs	• Constricted pupils • Difficulty breathing • Severe vomiting	Constricted Pupils	2 NA Kits
	Severe Signs	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Constricted Pupils	3 NA Kits (If 3 NA Kits are used, administer 1st dose of available benzodiazepine)

	Clinical Findings	Signs/Symptoms	Required Conditions	NA Kits To Be Delivered
PEDIATRIC <u>< 8 years of age</u>	**Pediatric Patient with Non-Severe Signs/Symptoms**	*Mild or moderate symptoms as above*	Threshold Symptoms *-and-* Positive evidence of nerve agent or OPP on site Medical Control Order	1 NA Kit
	Pediatric Patient with Severe Signs/Symptoms	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Severe breathing difficulty Weakness	1 NA Kit

4. Establish vascular access per **Vascular Access and IV Fluid Therapy-Procedure Protocol** when feasible, do NOT delay medication administration
5. If NA Antidote kit is not available:
   - A. Administer **atropine auto injector** 2 mg IM for every 1 NA Kit- that is required.
   - B. Administer atropine 2 mg IV/IM for every 1 NA Kit that is required
   - C. Administer 600 mg pralidoxime IV/IM for every 1 NA Kit that is required (when available)
6. Treat seizures
   - A. Adult (> 14 years of age)
     - a. Administer **midazolam** 10 mg IM or 5 mg IN
       1. If available, midazolam auto-injector or midazolam nasal spray may be utilized, ensure total dose (regardless of dosage per device) equals 10 mg IM or 5 mg IN.

     OR
     - b. Administer **Valium (diazepam**) auto-injector.
   - B. Pediatrics (<u><</u> 14 years of age)
     - a. Administer **midazolam** 0.1 mg/kg IM (maximum individual dose 10 mg) or 5 mg IV/IO/or IN

     OR
       1. If available, **diazepam auto-injector** or **diazepam nasal spray** may be utilized, ensure total dose (regardless of dosage per device) does not exceed 10 mg IM or 5 mg IN.

7. Monitor EKG
8. For continued secretions, contact Medical Control and administer additional **atropine** per orders.
   A. Adults (> 14 years of age) **atropine** 2 mg IV/IM
   B. Pediatrics (< 14 years of age) **atropine** 0.05 mg/kg IV/IM

Nerve Agent/Organophosphate Antidotes/Countermeasures

Weight	Age	Duodote[1] Mod-Severe Sxs	Atropen[2] (1 mg) Mod-Severe Sxs	Atropine Dose (0.1 mg/kg) IM/IV/IO	Atropine Vial[2] (1 mg/mL)	Cardiac Atropine[2,3] (1 mg/10 mL)	Midazolam[4] (10 mg/2 mL) IM/IV/IO
3-5 kg (6-11 lbs)	**0-2 months**	**1**	**1**	0.4 mg	**0.4 mL**	**4 mL**	**0.1 mL**
6-7 kg (13-16 lbs)	**3-6 months**	**1**	**1**	0.7 mg	**0.7 mL**	**7 mL**	**0.2 mL**
8-9 kg (17-20 lbs)	**7-10 months**	**1**	**1**	0.9 mg	**0.9 mL**	**9 mL**	**0.2 mL**
10-11 (21-25 lbs)	**11-18 months**	**1**	**1**	1 mg	**1 mL**	**10 mL**	**0.2 mL**
12-14 kg (26-31 lbs)	**19-35 months**	**1**	**2**	1.3 mg	**1.3 mL**	**13 mL**	**0.25 mL**
15-18 kg (32-40 lbs)	**3-4 years**	**1**	**2**	1.6 mg	**1.6 mL**	**16 mL**	**0.3 mL**
19-23 kg (41-51)	**5-6 years**	**1**	**2**	2 mg	**2 mL**	**20 mL**	**0.4 mL**
24-29 kg (52-64)	**7-9 years**	**2**	**3**	2.6 mg	**2.6 mL**	**26 mL**	**0.5 mL**
30-36 kg (65-79 lbs)	**10-14 years**	**2**	**3**	3.3 mg	**3.3 mL**	**33 mL**	**0.6 mL**
Adult	**>14 years**	**2 to 3**	**4 to 6**	4 to 6 mg	**4 to 6 mL**	**40-60 mL**	**2 mL**

[1]Preferred initial autoinjector, [2]May Repeat atropine every 5 minutes until airway secretions decrease (6 mg maximum), [3]Not available in MEDDRUN, [4]Patients with severe symptoms should receive midazolam even if not obviously seizing

Medication Protocols
Atropine
Midazolam
Nerve Agent Antidote Kit
Pralidoxime

CHEMPACK/MEDDRUN

Purpose: The CHEMPACK Project provided the State of Michigan, in collaboration with the Center for Disease Control (CDC) and the U.S. Department of Homeland Security, with a sustainable, supplemental source of pre-positioned nerve agent/organophosphate antidotes and associated pharmaceuticals. A large-scale event would rapidly overwhelm both the pre-hospital and hospital healthcare systems.

The CHEMPACK project is one component of the Michigan Emergency Preparedness Pharmaceutical Plan (MEPPP), a comprehensive statewide plan for coordinating timely application of pharmaceutical resources in the event of an act of terrorism or large-scale technological emergency/disaster.

The Michigan Emergency Drug Delivery and Resource Utilization Network (MEDDRUN) established standardized caches of medications and supplies strategically located throughout the State of Michigan. In the event of a terrorist incident or other catastrophic event resulting in mass casualties, MEDDRUN is intended to rapidly deliver medications and medical supplies, when local supplies are not adequate or become exhausted. The goal is to deploy MedPack within 15 minutes of the request.

Only authorized agencies and officials can request MEDDRUN. These agencies include any Michigan Hospital, local public health agency, or emergency management program. Authorized officials include designated representatives from the Bureau of Emergency Preparedness, EMS, and Systems of Care (BEPESOC), the Michigan State Police (MSP) and the Regional Bioterrorism Preparedness projects.

Activation

I. Recognition of need can come from EMS personnel, or it may be a hospital, public health, EOC, or Emergency management that identifies the need for activation.
   A. EMS Identifies a need for medication support.
      1. Contact Central Dispatch or a hospital/MCA
      2. Central Dispatch or hospital/MCA contacts MEDDRUN and/or CHEMPACK Communications Agency
   B. Hospital, Public Health, EOC or Emergency Management
      1. Identifies need
      2. Hospital, Public Health, EOC or Emergency Management contacts MEDDRUN and/or CHEMPACK Communications Agency
   C. To activate MEDDRUN and/or CHEMPACK call:
      1. Primary Communication Agency: 877-633-7786
      2. Backup Communication Agency: 616-391-5330

II. CHEMPACK/MEDDRUN Communications Agency:
   A. Conducts analysis & issues deployment orders to selected CHEMPACK/MEDDRUN storage sight, (CSS) Point of Contact (POC).

III. Storage site notifies the transport unit and moves cache to designated loading area.

A. If confirmed, the Agency loads CHEMPACK/MEDDRUN supplies onto transport unit.
B. If deployed, Dispatch notifies the MCA regarding dispatching transport vehicle.

Responsibilities

I. BEPESOC follow-up will include:
   A. Contacting the requesting agency to authenticate the request.
   B. Contacting Communications Agency to provide confirmation or initiate recall. If confirmed, advise if Alert Orders should be initiated.
   C. Contacts Michigan State Police (MSP) East Lansing Operations Center (ELOP)
   D. Coordinates potential Inter-Hospital Formulary Distribution.
   E. Coordinates a MI-HAN Alert.

II. Communications:
   A. Provides Certificate Order/Recall Order.
   B. Notifies storage site Point of Contact of either a Certification Order or Recall Order.
   C. If BEPESOC issues an alert, Communications Agency issues an Alert Order to appropriate CHEMPACK storage site(s) for possible deployment.

III. Storage Site:
   A. Once confirmed, the Agency loads the supplies into the transportation vehicle and transports to the specific location.

IV. Designated Transportation Agency:
   A. Ensure adequate security of the cache materials while being transported to the delivery point.
   B. Maintain communications with the storage site's Point of Contact while en route to the delivery point, providing periodic updates regarding present location/circumstances that may impact time of delivery.
   C. Follow the routes specified by the CSS POC and advise upon arrival to the delivery point.

DELIVERY OF CACHE

I. When the cache arrives at the delivery point, the Incident Command (IC) will take receipt of the cache as the person in charge by completing the Transfer of Custody form that will accompany the cache. The IC will ensure accurate accounting of the antidote supplies in coordination with the senior medical/EMT at the scene.
   A. If additional antidotes are required, the IC will Inform Central Dispatch/911.
   B. If it appears that the amount of antidote needed will be less than anticipated, the transport vehicle will remain in the area to take custody of the unused antidotes to return them to the CSS POC.
   C. Advise the CSS POC when the mission is completed.

POST DEPLOYMENT

I. Within 72 hours of a deployment, the Agencies, BEPESOC and Communications will prepare a Preliminary After Action Report (AAR) using the format prescribed by BEPESOC. (See AAR attachment) BEPESOC will review each AAR with the intent of improving future responses.

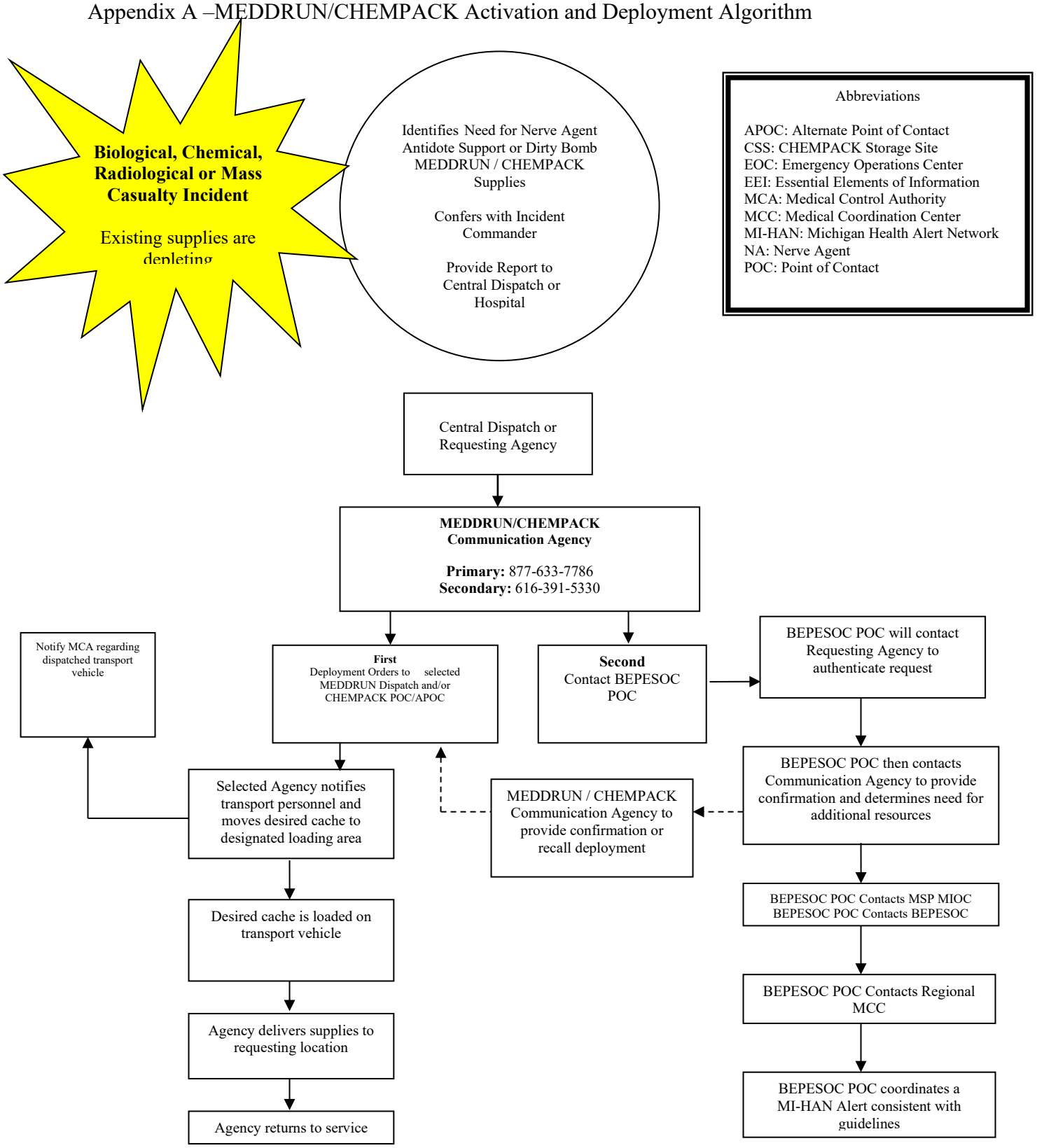
Re-STOCKING MEDPACKS

I. It is important that a packs be restocked and placed back in service as quickly as possible. The Agency may be returned to service on a limited basis with a partially depleted MedPack/Chempack. Depending on the availability of federal funds, the Regional Emergency Preparedness Coordinator, in collaboration with BEPESOC, will be responsible for ordering the supplies to re-stock the MedPack(s)/Chempack(s) used.

II. BEPESOC and Communications will be notified upon the MedPack/Chempack being returned to FULL SERVICE.

**MEDDRUN may also be pre-deployed for special events, designated by the State and Regional Leadership.*

Appendix A –MEDDRUN/CHEMPACK Activation and Deployment Algorithm



Essential Elements of Information (EEI) Report

Essential Elements of Information Report		
1.	**Name, Position, and Contact Information for the Individual Requesting Deployment of CHEMPACK Cache**	**Name:** _____ **Position/Title:** _____ **Telephone/Other Contact:** _____
2.	**Name of Physician/Officer in Charge of Medical Management at the Scene (if different than above)**	**Name:** _____ **Position/Title:** _____ **Employer:** _____ **Telephone/Other Contact:** _____
3.	**Location of Incident**	**Jurisdiction Name:** _____ **Closest Intersection:** _____ OR **Name of Site:** _____
4.	**Estimated Number of Casualties**	**None** **5-10** **100-300** **1** **10-20** **300-500** **2-3** **20-40** **500-1000** **4-5** **40-100** **1000+**
5.	**Symptoms of Casualties**	**Pinpoint Pupils** **Twitching** **Dimness of Vision** **Seizures** **Slurred Speech** **Chest Tightness** **Difficulty Breathing** **Unconsciousness**
6.	**Local Supplies of Antidotes and Pharmaceuticals are Exhausted, multiple lives remain at risk, and CHEMPACK supplies are needed to save lives**	☐ **Yes** ☐ **No**

Cyanide Exposure

Purpose: This Protocol is intended for EMS personnel at all levels to assess and treat patients exposed to cyanide. Additionally, the protocol allows trained and authorized paramedics to administer antidotes when available.

NOTE: A single medical control order in a mass casualty incident may be applied to all symptomatic patients.

Definitions: For the purposes of this protocol Cyanokit (brand name) refers to **Hydroxocobalamin**

Medications in this protocol are not required to be carried on EMS vehicles and may be available through special response units.

Chemical Agent

1. Agents of Concern: Cyanide
    a. Hydrogen Cyanide
    b. Potassium/Sodium Cyanide
    c. Cyanogen Chloride
2. Detection: The presence of these agents can be detected through specialized environmental monitoring equipment available to hazardous materials response teams.
3. Modes of Exposure
    a. Inhalation (including smoke inhalation)
    b. Ingestion
    c. Skin absorption unlikely
4. Alert receiving hospital ASAP to prepare additional antidotes

Assessment

1. Hypotension
2. Shortness of breath
    a. Possibly accompanied by chest pain
    b. Generally, not associated with cyanosis
    c. Pulse oximetry levels usually normal
    d. Usually associated with increased respiratory rate and depth
    e. Potential for rapid respiratory arrest
3. Confusion, decreased level of consciousness, coma
4. Seizures
5. Headache, dizziness, vertigo (sense of things spinning)
6. Pupils may be normal; dilation is a late sign

Indications for Antidote use in patient with suspected cyanide poisoning:

1. Cardiac or Respiratory Arrest
2. Hypotension SBP<90 mm Hg
3. GCS <= 9

Personal Protection

1. Be Alert for secondary device in potential terrorist incident

2. Personal Protective Equipment (PPE) as directed by Incident Commander.
3. Assure EMS personnel are operating outside of Hot and Warm Zones, unless appropriately trained and in proper PPE.
4. Avoid contact with vomit if ingestion suspected – off gassing possible
5. Decontamination of victims usually not indicated unless additional unknown chemical(s) suspected

Patient Management (in Cold zone)

1. Administer oxygen 10-15 LPM via non-rebreather mask and support ventilation as needed**.** Per **Oxygen Administration-Procedure Protocol and/or Airway Management-Procedure Protocol**
   a. Note: Patients in respiratory arrest (i.e., not breathing but still having a pulse) have been found to respond to antidote therapy and should receive positive pressure ventilation when operationally feasible.
   b. This is in contrast to most triage systems that would categorize non-breathing patients as non-survivable.
2. Establish vascular access. Refer to **Vascular Access & IV Fluid Therapy-Procedure Protocol**
3. Administer antidote:
   a. **Cyanokit**® (5g. adult IV/IO; 70 mg/kg pediatric IV/IO) per **Hydroxocobalamin (Cyanokit®)-Medication Protocol** (preferred, per MCA Selection)

Cyanokit® Included?
(•) **Yes** ( ) **No**

   b. Each vial of **Cyanokit**® for injection is to be reconstituted with diluent (not provided with **Cyanokit**®) using the supplied sterile transfer spike.
      i. The recommended diluent is **0.9% Sodium Chloride** injection (0.9%NaCl).
      ii. The line on each vial label represents the volume of diluent. Following the addition of diluent to the lyophilized powder, each vial should be repeatedly inverted or rocked, not shaken, for at least 60 seconds for the 5g bottles, 30 seconds for the 2.5g bottles prior to infusion.
      iii. **Cyanokit**® solutions should be visually inspected for particulate matter and color prior to administration.
      iv. If the reconstituted solution is not dark red or if particulate matter is seen after the solution has been appropriately mixed, the solution should not be administered to the patient and should be discarded.
      v. There are a number of drugs and blood products that are incompatible with **Cyanokit**®, thus **Cyanokit**® requires a separate intravenous line for administration.
      vi. Depending upon the severity of the poisoning and the clinical response, a second dose of 5 g may be administered by IV/IO infusion for a total dose of 10g in adults. The rate of infusion for the second dose may range from 15 minutes (for patients in extremis) to two hours, as clinically indicated. Contact medical control for second dose instructions for pediatric patients.

Cyanokit® Administration for Suspected Cyanide Poisoning (including serious smoke inhalation)

Weight	Age	Cyanokit® Dose[1] (~70 mg/kg +/-) IV/IO	Cyanokit® Volume to Administer[2] IV/IO
3-5 kg (6-11 lbs)	**0-2 months**	250 mg	**10 mL[3]**
6-7 kg (13-16 lbs)	**3-6 months**	500 mg	**20 mL[3]**
8-9 kg (17-20 lbs)	**7-10 months**	625 mg	**25 mL[3]**
10-11 (21-25 lbs)	**11-18 months**	750 mg	**30 mL[3]**
12-14 kg (26-31 lbs)	**19-35 months**	900 mg	**36 mL[3]**
15-18 kg (32-40 lbs)	**3-4 years**	1100 mg	**44 mL[3]**
19-23 kg (41-51)	**5-6 years**	1500 mg	**60 mL[3]**
24-29 kg (52-64)	**7-9 years**	1750 mg	**70 mL[3]**
30-36 kg (65-79 lbs)	**10-14 years**	2500 mg	**100 mL[4] (1/2 bottle)**
Adult 37 40 kg (80 88 lbs)	**>14 years**	3000 mg	**120 mL[4]**
Adult 41 49kg (89 108 lbs)	**>14 years**	3500 mg	**140 mL[4]**
Adult > or 50 kg (> or 109 lbs)	**>14 years**	5000 mg	**200 mL[4] (full bottle)**

[1]The safety and efficacy in pediatrics has not been established, [2]Administer slowly over 15 minutes.
[3]Push slowly over 15 minutes, [4]Infuse over 15 minutes

4. Cardiac monitoring
5. Special Considerations for Smoke Inhalation
    a. Smoke inhalation victims may have cyanide poisoning along with burns, trauma, and exposure to other toxic substances making a diagnosis of cyanide poisoning particularly difficult.
    b. Prior to administration of **Cyanokit®**, smoke inhalation victims should be assessed for the following:
        i. Exposure to fire or smoke in an enclosed area
        ii. Presence of soot around the mouth, nose or oropharynx
        iii. Altered mental status
    c. The **Cyanokit®** should be considered for all serious smoke inhalation victims (including cardiac arrest).

<u>Medication Protocols</u>
Hydroxocobalamin (Cyanokit®)

Mass Casualty Incidents

The purpose of this protocol is to provide a uniform initial response to a Mass Casualty Incident (MCI).

I. **Definition of MCI**: For the purpose of this document, an MCI will be defined as any incident, which because of its physical size, the number and criticality of its victims, or its complexity, is likely to overwhelm those local resources, which would typically be available.

II. **Overall MCI Management – DISASTER Paradigm™**
The DISASTER Paradigm™ is part of the National Disaster Life Support (NDLS) Program and provides a framework for management of MCIs. The components may be pursued concurrently.
A. ***D****etection*: Do we have an MCI? If yes, immediately declare to dispatch.
B. ***I****ncident Command*: Establish or interface with the Incident Command System (ICS)
C. ***S****afety and Security*: Immediate action steps to immediately protect responders, casualties, public.
D. ***A****ssess Hazards*: Actively assess (initially and ongoing) for hazards that can harm responders, casualties, public.
E. ***S****upport*: Request resources needed to effectively manage incident
F. ***T****riage and Treatment*: Initiate SALT Triage and provide treatment to casualties
G. ***E****vacuation:* Transport of casualties to appropriate hospitals (avoiding overloading individual hospitals) or alternate treatment centers
H. ***R****ecovery:* Return responders and community to pre-incident status and identify lessons learned.

III. **MCI Detection**
A. Actively assess the scene to determine if MCI is (or maybe) present
B. Alert dispatch and assure hospitals and other stakeholders made aware
C. For major incidents (including incidents involving multiple counties/MCA resources) RMCC should be alerted

IV. **Incident Command System**
A. All incidents shall be managed in accordance with the National Incident Management System and the National Response Framework.
B. If Incident Command (IC) has not been established, the most qualified EMS personnel shall assume the role of IC until command is transferred.
C. The IC is responsible for all functions of the Incident Command System (ICS) until other personnel are assigned those functions**.**
D. Establish EMS Branch Director/EMS Group Supervisor
    1. Established by IC
    2. Responsible for all EMS activities
    3. Reports to IC or Operations Chief
E. Establish functional subordinate EMS ICS positions, as appropriate. Note, positions may be combined (e.g., Treatment/Transport) when appropriate.
    1. Triage Unit Leader Role
        a. Report to EMS Branch Director/Group Supervisor

b. Coordinates rapid triage process
c. Determines number/severity of casualties

2. Treatment Unit Leader Role
   a. Within EMS Branch/Group Operations, establish Casualty Collection Point (CCP)
   b. Assigns personnel to treatment area(s)
   c. Supervise care in treatment areas and/or establish subordinate treatment unit leaders for selected casualty types (e.g., Red, Yellow, Green, etc.).
3. Transportation Unit Leader Role
   a. Prioritize transportation of patients from scene assuring high priority patients transported first and departing ambulances maximally utilized.
   b. With information from coordinating resource, assigns destination hospital or alternate care center
   c. Maintains log and tracking of patients transported

V. **Safety and Security**
   A. Responders should don appropriate personal protective equipment (PPE)
   B. Identify any immediate threats to responders, patients, or the public

VI. **Assess for Hazards**
   A. Actively assess scene for hazards
   B. Ongoing assessment for new hazards

VII. **Support – Request Additional Resources for Incident**
   A. Ambulances
      1. Request additional ambulances
      2. Ideally, one ambulance for every two Red/Yellow patients
   B. Non-Ambulance Medical Transport
      1. Non-licensed vehicles may be used for emergency transport when licensed ambulances are not readily available.

If an ambulance operation is unable to respond to an emergency patient within a reasonable time, this part does not prohibit the spontaneous use of a vehicle under exceptional circumstances to provide, without charge or fee and as a humane service, transportation for the emergency patient. Emergency medical personnel who transport or who make the decision to transport an emergency patient under this section shall file a written report describing the incident with the medical control authority. MCL 333.20939

      2. Non-Licensed vehicles include (but are not limited to):
         a. Wheelchair vans
         b. Busses
         c. Other public safety vehicles
   C. Request specialized resources, as appropriate
      1. Local/regional mass casualty resources
      2. Decontamination units
      3. Air medical units
      4. Activate MEDDRUN/CHEMPAC per protocol

D. For major incidents, RMCC may be appropriate for coordination of support

VIII. **Triage and Treatment**

A. Initiate SALT Triage - Preferred
   1. Sort – Perform global assorting
   2. Assess – Perform individual assessment
   3. Life Saving Interventions
      a. Control major hemorrhage
      b. Open airway (if child, 2 rescue breaths)
      c. Chest decompression, as needed (Paramedic only)
      d. Auto-injector antidote (e.g., Duodote®)
   4. Treatment and Transport

B. Triage other than SALT must be compliant with the Model Uniform Core Criteria for Mass Casualty Incident Triage (MUCC)[1]

C. Categorize Patients
   1. **Immediate (Red):** Unable to follow commands or make purposeful movements, OR they do not have a peripheral pulse, OR they are in obvious respiratory distress, OR they have a life-threatening external hemorrhage; provided their injuries are likely to be survivable given available resources. Examples include:
      a. Physiologic and anatomic Trauma Triage Criteria
      b. Major burns (>20% BSA)
      c. Moderate to severe respiratory distress
   2. Delayed (Yellow): Able to follow commands or make purposeful movements, AND they have peripheral pulse, AND they are not in respiratory distress, AND they do not have a life-threatening external hemorrhage, AND they have injuries that are not considered minor. Examples include:
      a. Mechanism of injury Trauma Triage Criteria
      b. Isolated fractures/dislocations
      c. Large and/or multiple lacerations with controlled bleeding
      d. Deep burns <20% BSA
   3. **Minimal (Green):** Able to follow commands or make purposeful movements, AND they have peripheral pulse, AND they are not in respiratory distress, AND they do not have a life-threatening external hemorrhage, AND their injuries are considered minor. Examples include:
      a. Minor wounds (abrasions, isolated laceration)
      b. Contusions
      c. Minor head trauma (GCS 15)
   4. Expectant (Gray): unable to follow commands or make purposeful movements OR they do not have a peripheral pulse, OR they are in obvious respiratory distress, OR they have a life-threatening external

[1] Model Uniform Core Criteria for Mass Casualty Triage. Disaster Med Public Health Preparedness.2011;5:125-128, doi: 10.1001/dmp.2011.41.

hemorrhage, AND they are unlikely to survive given the available resources. These patients should receive resuscitation or comfort care when sufficient resources are available. Examples include:

a. Major head trauma (open skull fracture with exposed brain, blown pupil, etc)
b. Major burns (>75% BSA)

5. Dead (Black): No spontaneous breathing after establishing a basic airway (and 2 ventilations in a child). Patients triaged as Dead should be reassessed after initial triage to confirm no signs of life.

D. Establish Casualty Collection Point(s)
1. One or more sites to provide triage and treatment
2. May be subdivided into treatment areas based on triage category
3. Emphasis should be on providing lifesaving treatment and rapid transport
4. Minimal patients can be sequestered in a designated area
5. Perform secondary triage within each treatment area as able

E. Treatment
1. Treatment should be provided in accordance with Michigan EMS State Protocols
2. ALS should be limited to essential medical interventions, including pain relief

IX. Evacuation

A. Transport Unit Leader should assure all departing ambulances and non-licensed transport vehicles depart scene with highest acuity patients
1. Assure distribution of patients to appropriate hospitals (e.g., trauma centers)
2. Maintain a tracking log of patients, acuities, and destinations

B. Non-hospital alternate care centers may be established in major incidents for lower acuity patients

C. Licensed EMS personnel should accompany injured patients when transported in non-licensed vehicles whenever possible

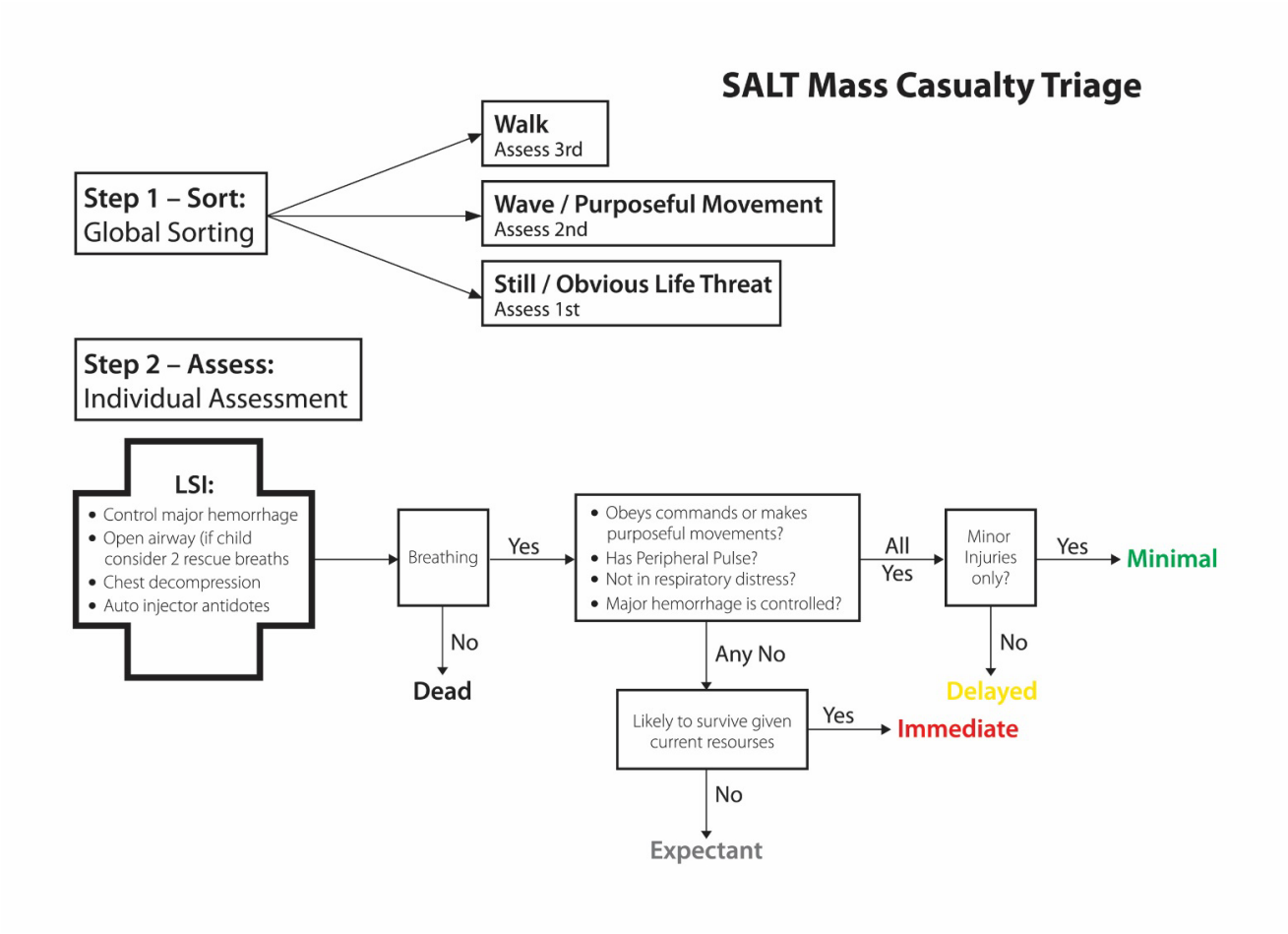
X. Recovery

A. Responder rehabilitation (e.g., hydration, nutrition)

B. Responder recovery (e.g., physical and emotional)

C. Agency recovery (e.g., resupply, workforce recovery) and completion of After Action Review

D. Community recovery



XI. REGIONAL MEDICAL COORDINATION CENTER (RMCC)

The RMCC serves as a regional multi-agency coordination center entity as defined by the National Incident Management System (NIMS). The RMCC serves as a single regional point of contact for the coordination of healthcare resources. The RMCC is intended to optimize resource coordination among hospitals, EMS agencies, medical control authorities and other resources. The RMCC serves as a link to the Community Health Emergency Coordination Center (CHECC).

The RMCC acts as an extension and agent of the Medical Control Authority.

A. RMCC Responsibilities include, but are not limited to:
   1. Maintain communications with all involved entities
      a. EMS Branch Directors
      b. EMS Division/Group Supervisors
      c. EMS Unit Leaders
      d. Hospitals
      e. Local EOCs (when activated)
      f. CHECC (when activated)
      g. Alternate care sites (when activated)
      h. Other RMCCs (as appropriate)
   2. Provide initial and update alerts via available communications resources.
   3. Provide frequent updates to on-scene EMS Branch Directors/Group/ Supervisors (or designee) regarding hospital casualty care capacity.
   4. May relay casualty transport information to receiving facilities.
   5. May relay urgent and routine communications to appropriate entities.
   6. May assist in coordination and distribution of resources.
   7. Other appropriate tasks as necessary for an effective regional medical response.

B. RMCC Immunity from Liability

It is the intent of this protocol that the Regional Medical Coordination Center and the personnel staffing the RMCC and performing the functions are afforded immunity from liability whether or not a Mass Casualty Incident has occurred, as provided through MCL 333.20965 of Part 209 of PA 368 of 1978, as amended. This section specifically provides immunity from liability protection to Medical Control Authorities in the development and implementation of department-approved protocols (see language below):

Sec. 20965 (3) Unless an act or omission is the result of gross negligence or willful misconduct, the acts or omissions of any of the persons named below, while participating in the development of protocols under this part, implementation of protocols under this part, or holding a participant in the emergency medical services system accountable for department-approved protocols under this part, does not impose liability in the performance of those functions:

(a) The medical director and individuals serving on the governing board, advisory body, or committees of the medical control authority or employees of the medical control authority.
(b) A participating hospital or freestanding surgical outpatient facility in the medical control authority or an officer, member of the medical staff, or other employee of the hospital or freestanding surgical outpatient facility.
(c) A participating agency in the medical control authority or an officer, member of the medical staff, or other employee of the participating agency.
(d) A nonprofit corporation that performs the functions of a medical control authority.

333.20965 Immunity from liability

XII. STATE COMMUNITY HEALTH EMERGENCY COORDINATION CENTER (CHECC)
- A. Operated by MDHHS Bureau of EMS, Trauma and Preparedness
- B. EMS Personnel should be aware of the existence of CHECC but are not expected to directly interface with CHECC.

Appendix 1:

Definitions:

Incident Command System: The ICS organizational structure develops in a top-down fashion that is based on the size and complexity of the incident, as well as the specific hazard environment created by the incident.

Unified Command: In incidents involving multiple jurisdictions, a single jurisdiction with multi-agency involvement, or multiple jurisdictions with multi-agency involvement, unified command can be implemented. Unified command allows agencies to work together effectively without affecting individual agency authority, responsibility, or accountability

Incident Commander (IC): The IC is the individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site. EMS will typically fall under the IC through a subordinate Branch, Division or Group.

Section Chief: A Section Chief may be assigned to Operations, Logistics, Planning, or Administration/Finance depending on the size of the incident. Not all incidents will require all 4 sections to be assigned.

Branch Director: A Branch Director may be assigned under the Operations Section Chief. Branch Directors are responsible for managing a specific discipline including Fire, EMS, Law Enforcement, Public Works, Public Health, etc.

Division Supervisor: A Division Supervisor is assigned to an area that is separated by a barrier. Examples of a Division would be a multi-level structure, include separated by a river, etc. Numbers are primarily used to identify divisions.

Group Supervisor: A Group Supervisor functions within the Operation Section and is assigned to a specific group. Letters of the alphabet are primarily used to identify groups.

Unit Leaders: Units can be assigned to the Command and General Staff or within a Group or Division.

Medical Unit Officer: The Medical Unit Officer is the individual responsible for the management of incident responder medical treatment and rehab.

Safety Officer: The IC shall appoint a Safety Officer who will ensure safety of responders and victims during the incident operations. With the concept of Unified Incident Command there is valid reasoning to have Assistant Safety Officers to include all disciplines involved in the operation. The Safety Officer appointed by the IC shall have the authority designed within the Incident Command System with the input and advice of all Assistant Safety Officers.

Deputies: Deputies are used within the Command and General Staff or Sections of the ICS. A Deputy may be a higher-ranking responder that assists the IC or Section Chief however does not assume Command.

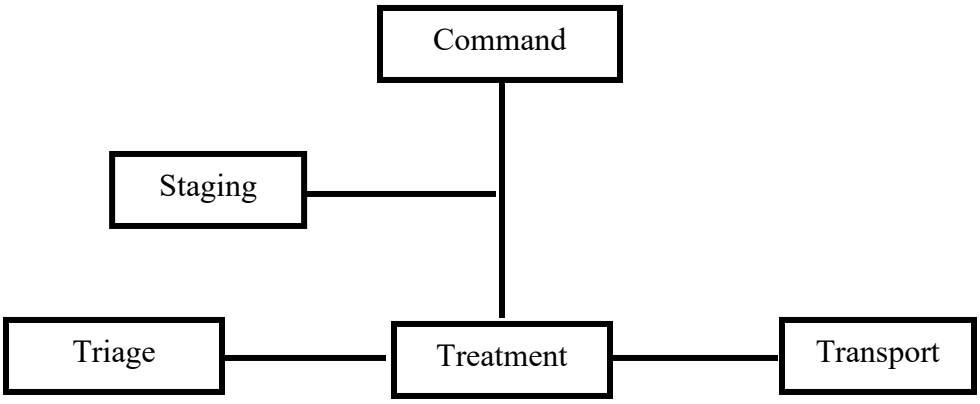
Coordinating Resource: the entity within the local EMS system responsible for the notification and coordination of the mass casualty response. Examples include: medcom, resource hospital, MCA, medical control, dispatch

Regional Medical Coordination Center: The RMCC serves as a regional multi-agency coordination entity as defined by the National Incident Management System (NIMS). The RMCC serves as a single regional point of contact for the coordination of healthcare resources. The RMCC is intended to optimize resource coordination among hospitals, EMS agencies, medical control authorities and other resources. The RMCC serves as a link to the Community Health Emergency Coordination Center (CHECC).

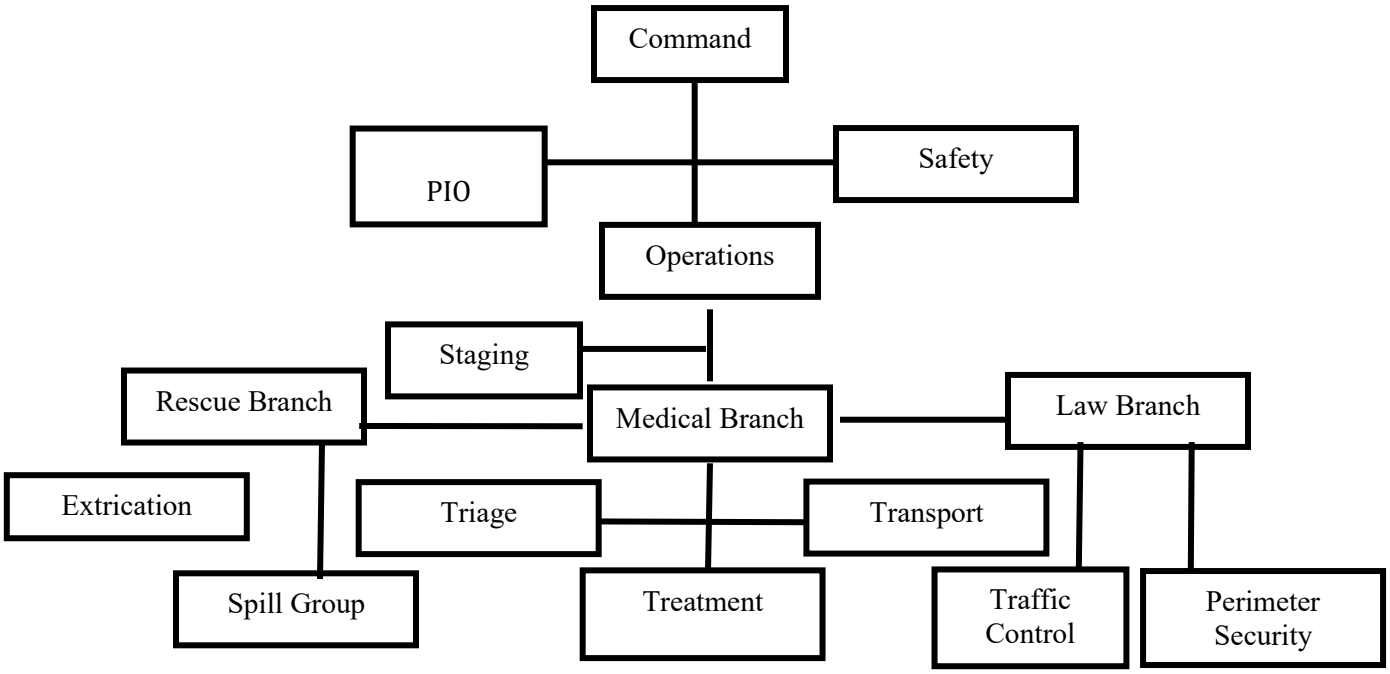
Community Health Emergency Coordination Center: The CHECC serves as a statewide multi-agency coordination entity as defined by NIMS. CHECC is intended to coordinate state-level healthcare and public health resources, to serve as a central point of contact for regional RMCC's, and to serve as a resource to the State EOC. CHECC is expected to be activated following a major disaster or other public health emergency and should be operational within hours of activation.

Appendix 2:

Example ICS Organizational Chart for Simple Incident



Example ICS Chart for Complex Incident



Pre-hospital (EMS) MCA Mutual Aid During Disaster

Purpose: Establish a mechanism allowing EMS agencies/Medical Control Authorities (MCA) to give prehospital care across MCA boundaries during "disaster" conditions.

1. This agreement between the MCAs demonstrates the intention to assist and support each other during a disaster situation. It provides an approved/authorized process allowing EMS agencies to function within a MCA under their originating MCAs protocols, during a disaster.

2. During "disaster" conditions, whether natural or otherwise, MCAs may need assistance from other MCAs. For the purpose of this agreement, a "disaster" is considered to be an emergency event where a "declared" emergency and/or disaster condition as defined by local, state, or federal statutory laws, exists in which the responding MCA and EMS resources may be unable to handle the patient care needs without additional resources from outside its own Medical Control area.

3. Requests for support may be made to any MCA or any EMS agency. It is agreed that mutual aid response is dependent on the availability of equipment and personnel.

4. It is in the best interests of MCAs to include each other in disaster planning efforts. It is expected that upon request, participating MCAs will extend any relevant information on emergency planning to other MCAs as deemed reasonably appropriate by the MCA distributing the information.

5. Participating MCAs agree to adopt, as a minimum, the State Protocols for responding to a disaster event, and those agencies/EMS personnel will follow these when responding outside their own MCA, unless prior arrangements with that MCA.

Hazard Contaminated Patient

I. Identification of the Contaminated Patient
   a. Use all your senses. Suspect hazardous material situation if you:
      i. **See** containers, labels or placards, or a location suggesting a hazardous substance
      ii. **Hear** explosions, or reports of possible contamination, pre-arrival or on scene
      iii. **Smell** unusual odors – be suspicious

II. If contamination of a patient is suspected, the local fire or public safety department must be informed of the hazardous material situation.

III. The responding EMS agencies must prevent further contamination to themselves or others. Determine if any contaminated patients have already left the scene and promptly notify the hospital(s).

IV. The responding EMS agency must not spread any contamination outside the response area until the responding fire or public safety department incident commander, or appropriate designee, has confirmed that decontamination is complete. Contaminated patients will not be transported out of the decontamination area until field decontamination is complete.

V. EMS responders will not enter a known contaminated area without proper personal protective equipment, training, and direction by incident command.

VI. Invasive patient care procedures (IV/IO, OPA, NPA, ET, and Emergency Airway Devices) should not begin until decontamination of the patient is confirmed or until personal protective equipment is in place.

VII. Prior to transport of a decontaminated patient, on-line medical control will be contacted to assure the patient is transported to a facility equipped to handle the specific needs of the patient.

VIII. Once the scene Incident Commander, or the appropriate designee, has confirmed that the patient is decontaminated, the responding EMS agency may transport the patient to the designated facility.

Suspected Pandemic

Purpose: To have a standard approach to patients during a period of a declared pandemic or state of Public Health Emergency. This approach should increase awareness and protection of first responders and prehospital care while maximizing supplies that may become limited.

Criteria:

1. This protocol will apply to patients encountered by all levels of EMS, during an infectious disease epidemic/pandemic. All agencies should frequently check the CDC.gov website for the latest recommendations with Personal Protective Equipment (PPE) and treatment. These recommendations may change frequently during an evolving and ongoing epidemic/pandemic as regulatory standards are influenced by CDC recommendations.
2. The center for Disease Control and Prevention (CDC) has declared that an epidemic and/or the Michigan Department of Public Health has declared a statewide or local public health emergency.
3. “Acute Febrile Respiratory Illness” (AFRI) is defined as fever and at least one of the following (cough, nasal congestion/runny nose, or sore throat).

EMS System / Medical Control Authority (MCA) Recommendations:

1. Encourage all EMS personnel to receive seasonal and disease specific vaccinations.
2. Each life support agency shall maintain a supply of fit tested N-95 respirators and eye protection (e.g., goggles, eye shield), disposable non-sterile gloves, and gowns.
3. Each life support agency shall provide approved pathogen neutralizing hand sanitizer to staff.
4. Each life support agency should instruct their personnel to stay home and not report for duty if they have signs or symptoms of acute febrile respiratory illness. A staff member that develops these symptoms during a shift must inform the agency supervisor for appropriate follow up procedures.
5. Dispatch centers should be encouraged to screen callers to determine if the patient may have an AFRI. Information should be provided to EMS personnel prior to arriving on the scene if suspected AFRI.
6. If it is determined by EMS that the patient may have an AFRI, early notification to the receiving facility should be done so that appropriate infection control may be taken prior to patient arrival.

Procedure and Patient Categorizations/Situations

1. **Limiting Personnel Exposure:**
    A. If the patient has symptoms of an “Acute Febrile Respiratory Illness” (AFRI) based upon the dispatch information the responding agency should consider limiting the initial number of personnel that approach or enter a residence.

2. **Patients with a medical condition that requires immediate care (e.g., cardiac arrest) and have a recent history of AFRI will be assessed and treated after:**
   A. EMS Personnel don appropriate PPE prior to proceeding with assessment and treatment.

3. **Patient Assessment:**
   A. Begin patient assessment while maintaining a 6-foot distance from the patient exercising appropriate routine respiratory droplet precautions (hand hygiene, cough etiquette, and distance) while assessing patient .
   B. Assess patient for “Acute Febrile Respiratory Illness” which is fever and at least one of the following (cough, nasal congestion/ runny nose, or sore throat).
   C. If **patient does not have an Acute Febrile Respiratory Illness (AFRI)** proceed to appropriate treatment protocol.

4. If **patient has an AFRI,** EMS personnel with direct patient care shall:
   A. Don appropriate PPE.
   B. Place a surgical mask on the patient if tolerated.
   C. Treat patient according to appropriate protocol.
   D. Notify Medical Control of assessment findings.
   E. Encourage good patient compartment vehicle airflow/ventilation to reduce the concentration of aerosol accumulation when possible.

5. **Post Exposure**
   A. Health care personnel, who have had a recognized unprotected close contact exposure to a person with AFRI can be considered for treatment according to current post-exposure guidelines.
   B. Clean EMS Transport Vehicles after Transporting a Suspected AFRI.

Transportation and Destination Guidelines

☑ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol. This protocol will only be used by SPRN trained individuals.

Purpose:

This protocol is to assist inter-facility transport of patients believed to be infected with a "*special pathogen*" to a hospital that may be outside of the local Medical Control Authority.

Definition:

"*Special pathogen*" refers to highly infectious diseases, including hemorrhagic viral diseases (HVDs) such as Ebola and similar infections.

Transport Destination Decision

1. The patient will be transported to the closest appropriate hospital capable of providing the services needed. *The closest appropriate hospital may be outside of an agency's primary service area.*
2. Inter-facility transport of patients is permitted by pre-identified transport teams to hospitals that may originate and end outside of the transporting agency's Medical Control Authority when no local pre-identified specialty transport team is available.

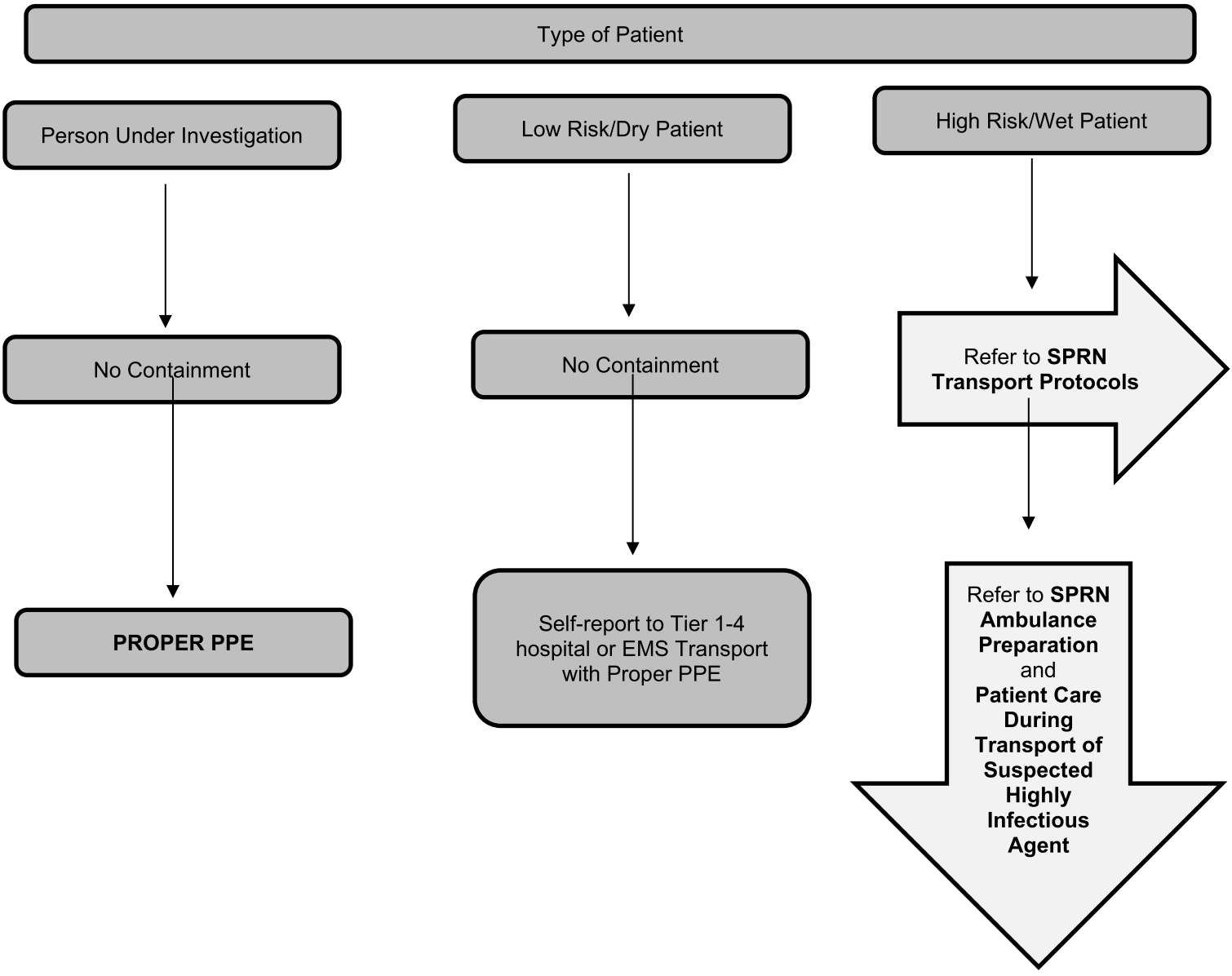
MDHHS Michigan Department of Health & Human Services | Bureau of Emergency Preparedness, EMS and Systems of Care

Michigan
SPECIAL OPERATIONS
SPECIAL PATHOGEN RESPONSE NETWORK (SPRN)
PATIENT CONTAINMENT ALGORITHM
(MCA Optional Protocol)

Initial Date: 04/28/17
Revised Date: 12/27/2022

Section 10-11

☑ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol. This protocol will only be used by SPRN trained individuals.



MCA Name: Marquette Alger MCA
MCA Board Approval Date: 3/15/24
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MDHHS Approval: 12/27/22

MDHHS Reviewed 2023

Michigan
SPECIAL OPERATIONS
SPECIAL PATHOGEN RESPONSE NETWORK (SPRN)
TRANSPORT SUPPLIES
(MCA Optional Protocol)

Initial Date: 04/28/17
Revised Date: 12/27/2022 Section 10-12

☑ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol. This protocol will only be used by SPRN trained individuals.

Transport Supplies

Suggested Supplies to be Immediately Available:

- ☐ Manual Suction
- ☐ BP cuff (manual, disposable)
- ☐ Pulse Ox (disposable)
- ☐ Emesis containers (sealable)
- ☐ Absorbent paper towels
- ☐ Sharps Container (small)
- ☐ Nitrile gloves box (Small, Medium, Large, Extra-large)
- ☐ Small trash bags
- ☐ Disinfectant wipes for surfaces
- ☐ Disinfectant wipes for skin
- ☐ Portable 02 tank (15 LPM capable)
- ☐ Nasal Cannula/NRB
- ☐ Cooler/ice packs
- ☐ Blankets (Space)
- ☐ Pillow
- ☐ Trauma Shears
- ☐ 2 Buckets (for bodily fluids, hold trash bags, use for cleaning)
- ☐ Time Keeping Device
- ☐ Sedation and/or pain control guidelines as applicable
- ☐ Medications, needleless delivery system

Suggested Supplies to be in accompanying vehicle or with driver:

- ☐ IV Kit/Fluid/Saline Lock
- ☐ 4X4 and/or Abdominal Pads
- ☐ Tape
- ☐ Rolled Gauze
- ☐ Body bag
- ☐ Cleaning / decontamination equipment
- ☐ Solidifier for liquids
- ☐ Donning/doffing protocols and checklists

Cleaning and Decontamination supplies (in accompanying vehicle or with driver):

- ☐ Towels & Cleaning Rags (disposable)
- ☐ Solidifier
- ☐ Bucket for cleaning
- ☐ EPA registered cleaning product with instructions for use
- ☐ Biohazard bags (~20)
- ☐ Box for Biocell / Visquine disposal
- ☐ Zip ties for trash
- ☐ Bleach wipes for outside of Biohazard bags
- ☐ Procedure for cleaning/disinfection
- ☐ Procedure for waste handling

Suggested PPE per team members:
(PPE should cover all skin, mucous membranes and protect against inhalation of aerosolized particles)

☐ Fluid-resistant or impermeable coveralls (appropriate sized suits)	2
☐ Fluid-resistant or impermeable boot covers	2
☐ Powered air-purifying respirator (PAPR)	1
☐ PAPR batteries	2
☐ PAPR filters	1 set
☐ PAPR hoods	1
☐ PAPR hose and clamp	1
OR	
☐ Full-face respirators with appropriate cartridges for protection	2
☐ Surgical Cap/Hair Cover (2)	2
☐ N-95 Respirator	1
☐ Biohazard bags (Large)	30
☐ Biohazard Receptacles (1 small for sharps)	
☐ Nitrile gloves box (1 each of Small, Medium, Large, Extra-large)	1EA
☐ Hand sanitizer (1 bottle)	10
☐ Absorbent rags (package)	
☐ Caution tape (yellow 200' roll)	
☐ Duct tape (roll)	
☐ Buckets (2)	2
☐ Healthcare bleach (wipes) or other EPA-registered hospital disinfectant wipes	
☐ Trauma Shears (for Biocell/Visquine removal)	2
☐ Doffing Pad (Large Fluid Absorbent Fabric) (2)	2

Protocol Source/References:
January 28, 2016 Guidance for developing a plan for interfacility transport of persons under investigation or confirmed patients with Ebola virus disease in the United States
Nebraska Biocontainment Unit and Healthcare and Emergency Responder Organization Education through Simulation (HEROES)

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Transport Procedure

Purpose: The purpose of this procedure is to provide guidance for transport of a patient with a known or suspected highly infectious disease including pathogens referred to as "Category A" agents.

1. Patient belongings
   A. All patient belongings shall be kept in transport vehicle and only be removed at the final destination.
   B. Belongings shall be placed in a biohazard bag if possible and sealed in a manner that will prevent any further contamination to its surroundings.
   C. Belongings will be labeled with the patient name and identification.

2. Documentation
   A. Pt documentation may be performed in a normal manner as outlined by the transporting agencies guidelines. A note pad may be used to document vital signs and times during transport.
   B. All documentation should be performed after the transport is complete as to avoid contamination of equipment and materials. Any materials used for documentation in the patient environment (such as Toughbook, tablets, clipboards etc.) shall be cleaned, disinfected, and decommissioned for the same duration as the transport vehicle and equipment involved in transport.

3. Travel plans
   A. The MDHHS will be the central coordinating agency for the patient transport. Local and state authorities will assist in planning the path of travel so as to assist in the event of an emergency.
   B. A predetermined route will be planned in conjunction with the sending facility, transport agency, receiving facility or airport, and any facilities in between sending facility and receiving facility that are willing to participate and accommodate transport crews for crew changes or emergency procedures.
      a. Path of travel should be planned out in a way that will keep transport crews on as many major roads as possible to ease the ability of possible responding EMS agencies to locate them in the event of an emergency or accident.
      b. Consider communication to potential Medical Control Authority along the path of travel in the event that assistance is required.

c. Transport team shall attempt to solve any in transport emergencies without involving any outside responding agencies whenever possible.
d. During transport, hospitals located along an extended route (over 2 hours) may act as Patient Transfer Points (PTP). PTP will be identified and notified prior to patient transport. Although the patient will not leave the transport vehicle, PTP may be used to allow EMS personnel to change staff.

4. Destination arrival

A. The patient will be accepted by healthcare workers at the hospital or airport directly from the EMS transport rig. EMS team should not leave the designated "hot zone" or "dirty area" until PPE is doffed per protocol. If there is not an appropriate area for complete decontamination at the receiving facility (such as an airport), decontamination should occur at the closest appropriate doffing area. This will prevent the transmission of the pathogen via accidental contamination to the environment.
B. After proper doffing of PPE, the safety officer, receiving facility or other team members will evaluate and care for crew members involved in transport.
   a. Post vital signs should be recorded.
   b. Evaluation for any exposure to the pathogen.
   c. Food, fluids and lodging may be provided until the receiving facility feels the personnel are fit and able to make the return trip home.
C. To minimize further contamination of "clean personnel", only those involved in actual patient transport may operate the transport vehicle during the return trip. It is anticipated that the person will drive the return trip.
D. Follow cleaning and disinfection of the Ambulance procedure prior to leaving receiving hospital. After airport transfer, the ambulance will go to the designated PTP to doff PPE and follow cleaning and disinfection procedures prior to resuming the return trip to the agency.
E. The receiving facility or PTP shall accept and properly dispose of any PPE and other material(s) used in the transport vehicle.
F. Upon arrival back to the home agency, the vehicle and equipment may be sequestered for a predetermined amount of time to allow for full decontamination.
G. This time will be dependent on the pathogen and current guidelines.
H. No vehicles or equipment shall be placed back into general service prior to completion of the vehicle quarantine.
I. If the vehicle is needed prior to completion of quarantine for transport of like case, guidance will be sought from the MDHHS and CDC.

Protocol Source/References:

Guidance for Developing A Plan for Interfacility Transport of Persons Under investigation or Confirmed Patients with Ebola Virus Disease in the United States: http://www.cdc.gov/vhf/ebola

Bratt, J., Robinson, A., and Alcorta, R. (n.d.). Strategies and Considerations for the Deployment of EMS Personal Protective Equipment in Response to an Ebola Outbreak. (Accessed 8/1/2016.) Maryland Institute for Emergency Medical Service Systems.

Lowe et al: *Considerations for Safe EMS Transport of Patients Infected with Ebola Virus. Prehospital Emergency Care* October

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Patient Care During Transport of Suspected Highly Infectious Agent

Purpose: The purpose of this procedure is to provide guidance for transport of a patient with a known or suspected highly infectious disease including pathogens referred to as "Category A" agents from a health care facility to another, more specialized health care facility.

The EMS Agency Will

A. Prior to transport, the transporting agency will communicate with the sending (departing) and receiving (arriving) hospital facility to coordinate existing and anticipated patient care needs.
    a. Determine the medical authority for the patient while in transit. Refer to the state protocol.
    b. Determine the number and mix of staff needed to provide care during transport.
    c. Assure that equipment, devices, and crew can fit into the load-carrying dimensions of all planned transport vehicles.
    d. Determine if the patient has proper identification for transport.
    e. Determine method for patient tracking.
    f. Determine method to document patient care while preventing contamination.

B. Assess and develop plans for:
    a. Physical needs of the patient: baseline vital signs via non-invasive method. Use blue tooth technology, disposable O2 saturation monitor.
    b. Assess ability to provide for physical comfort of patient:
        i. Heat
        ii. Air flow
    c. Plans for failure of equipment.
    d. Identified pre-existing conditions that will require medication or other means of support (such as diabetes, oxygen therapy, etc.). Identify method to support these conditions if necessary.
    e. Avoid use of sharps (needles, lancets) unless necessary. Dispose in sharps container.
    f. Identify current life support status and identify procedures that will or will not be performed during transport.
    g. Identify medications necessary for patient comfort during transport: sedation, pain, nausea.

h. Identify method to handle fluid loss (vomiting, diarrhea, urine) during transport.
    i. Patient wipes absorbent pads, solidifier, trash bags, duct tape.
    ii. Wipes for cleaning and disinfection of spills. Minimize the use of bleach wipes during transit to prevent overpowering fumes.

C. Provide for crew safety during transport:
    a. Assess how communication will occur among all crew.
    b. If PPE is breached, crew should wipe affected area with bleach and communicate breach immediately to supervisor.
    c. Plans should include area for emergency doffing of PPE for crew safety.
    d. Identify nearest Patient Transfer Point (PTP) to provide relief of staff.

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Ambulance Cleaning and Disinfection

Purpose:
Proper cleaning and disinfection of an ambulance and equipment are necessary to reduce the bioburden of disease and prevent secondary transmission of a known or unknown highly contagious disease. The process describes the measures needed to clean and disinfect an ambulance prior to its return to service following the transport of a patient with a known or suspected Category A disease.

Note: *All disinfection should use a U.S. Environmental Protection Agency (EPA)-registered hospital disinfectant with a label claim for a non-enveloped virus (norovirus, rotavirus, adenovirus, poliovirus) to disinfect environmental surfaces at appropriate concentration and contact time.*

1. <u>This process is to be done after the Biocell or visquine (see procedure) has been removed.</u>
2. <u>Site Set Up</u>
   A. Select an appropriate site for ambulance decontamination that protects the vehicle and the decontamination team from weather elements, preferably a well-ventilated large, enclosed structure.
   B. Establish a secure perimeter for safety of the public and decontamination personnel.
   C. Include considerations for waste management, security plan, public perception, and media visibility when selecting decontamination site.
   D. Depending on the location, the ability for climate control is beneficial.
   E. Define and mark hot, warm, and cold zones of contamination[1] around the ambulance that require PPE to enter.

[1] The hot zone is considered an area that is known or suspected to be contaminated and has a high risk of exposure. It should only be entered with full PPE. In ambulance decontamination, this would be the vehicle and an area about a meter beyond the ambulance.
The warm zone can be considered a transitional area between the hot and cold zones that has no known contamination but has a moderate risk of exposure. It should only be entered when wearing full PPE. This is also the area where one begins the initial portion of the doffing process (following a full suit wipe down within the hot zone) when leaving the hot zone. For ambulance decontamination, the warm zone can also be the place where waste barrels are pre-positioned so that the waste bags can be placed directly into the containers without entering the hot zone.

3. Prior to cleaning
   A. The patient care provider (while wearing "dirty PPE") will remove all equipment, supplies, linen, waste PRIOR to leaving the vehicle and before Biocell/Visquine liners are removed from inside the ambulance. Equipment will be placed in the warm zone.
   B. All waste, including PPE, drapes, and wipes, should be considered Category "A" infectious substance, and should be packaged appropriately for disposal.
   C. The driver or other personnel will be responsible for cleaning and disinfection of the transport unit. One to two people will clean and disinfect; a third in PPE will observe and be available to assist as necessary
   D. The cleaning teams will don CLEAN PPE per protocol.
   E. Any areas that are visibly contaminated with the patient's body fluids should be decontaminated first with an approved EPA-registered disinfectant for the appropriate contact time before soaking up the fluid with absorbent materials.
   F. Place biohazard bag in container close to exit for used cleaning cloths.

4. Cleaning and decontamination
   A. Cleaning will be done beginning at an entrance to the ambulance and moving towards the dirty area. This way, the clean personnel will remain clean as they enter the vehicle and stay in a "clean" area until they exit at the opposite end of the ambulance.
   B. Mix EPA registered cleaning disinfectant per manufacturers' guidelines. All products will have instructions for cleaning and disinfection. Note the manufacturers' "dwell time" or the amount of time a surface must stay wet AFTER cleaning to achieve disinfection.
   C. Using disposable cloths begin cleaning all surfaces as the vehicle is entered.
   D. Remove visible soiling of all surfaces.
   E. Allow surface to stay wet during dwell time. Reapply cleaner if necessary.
   F. Change cloths frequently during cleaning process. Place cloths in biohazard bag.
   G. Manually wipe down the ambulance's exterior patient loading doors and handles, and any areas that may have been contaminated, with disinfectant. The exterior of the ambulance does not require a full disinfectant wipe down.
   H. After ambulance is cleaned, clean re-usable medical equipment.
      a. Using the above process, clean then disinfect the outside of any prepositioned but unused medical equipment (still inside the protective bags they were placed in).

The cold zone is considered an area that has no contamination and no potential risk for exposure. The individuals in this area are not required to wear PPE, although the cold zone will often also serve as the PPE donning area.

b. If the equipment was removed from a protective bag in transit, assess the equipment to determine if it can be properly cleaned and disinfected, or disposed of.

I. Once cleaning and disinfection has been completed, collect and package all waste as Category "A" waste. Dispose of all waste according to organization protocols as well as local and federal regulations for Category "A" infectious substances.

J. Remove PPE per checklist. A third person who has been in the cold zone should supervise doffing, which should be performed according to organization doffing protocols.

5. Further options for decontamination

A. Additional cleaning methods can also be used. While not required, this may provide additional assurance to personnel and public prior returning the vehicle to service.

B. Ultraviolet germicidal irradiation, chlorine dioxide vapor, or hydrogen peroxide vapor can be used for an additional decontamination step. However, these should not replace the manual cleaning and disinfection, as their efficacy against organisms in body fluids has not been fully established and these methods may require specialized equipment and PPE.

C. The ambulance can then be returned to service.

Materials and equipment needed to decontaminate an ambulance (items listed are per person decontaminating)

	Fluid-resistant or impermeable coveralls (appropriate sized suits)	2
	Fluid-resistant or impermeable boot covers	2
	Powered air-purifying respirator (PAPR)	1
	PAPR batteries	2
	PAPR filters	1 set
	PAPR hoods	1
	PAPR hose and clamp	1

OR

	Full-face respirators with appropriate cartridges for protection	2

	Surgical Cap/Hair Cover	2
	N-95 Respirator	1
	Biohazard bags (Large)	30
	Biohazard Receptacles (1 small for sharps)	
	Nitrile gloves box (Small, Medium, Large, Extra-large)	1 EA
	Hand sanitizer (1 bottle)	10

	Absorbent rags (package)	
	Caution tape (yellow 200' roll)	
	Duct tape (roll)	
	Buckets	2
	Healthcare bleach (wipes) or other EPA-registered hospital disinfectant wipes	
	Trauma Shears (for Biocell/Visquine removal)	2
	Doffing Pad (Large Fluid Absorbent Fabric)	2

Protocol Source/References:

1. Isakov, A., Jamison, A., Miles, W., & Ribner, B. Safe management of patients with serious communicable diseases: recent experience with Ebola virus. Annals of internal medicine. 161(11): 829-830.
2. Isakov A, Miles W, Gibbs S, Lowe J, Jamison A, Swansiger R. Transport and management of patients with confirmed or suspected Ebola virus disease. Ann of Emerg Med. 2015; 66(3):297-305.
3. Jelden, K.C., Gibbs, S.G., Smith, P.W., Schweldhelm, M., Iwen, P.C., +Beam, E., Hayes, A.K., Marion, N., Kratochvil, C.J., Boulter, K.C., Hewlett, A., Lowe, J.J. Nebraska Biocontainment Unit Patient Discharge and Environmental Decontamination following Ebola Care. American Journal of Infection Control. 2015; 43(3):203-205.
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9. Swansiger, R.G., Walters, W.A., Isakov, A.P., Gibbs, S.G., Lowe, J.J. 2014. BioContainment Ground Transport Standard Operating Procedures. Office of Medical Services Operational Medicine. United States Department of State.

Michigan
SPECIAL OPERATIONS
SPECIAL PATHOGEN RESPONSE NETWORK (SPRN)
MEDICAL ISOLATION TRANSPORT DEVICE
(MCA OPTIONAL PROTOCOL)

Initial Date: 10/25/2017
Revised Date: 12/27/2022 Section 10-16

☑ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol. This protocol will only be used by SPRN trained individuals.

Medical Isolation Transport Device

Definition: A Medical Isolation Transport Device is a vinyl enclosed patient containment device. It creates a negative air environment when closed. It is used for the transport of highly infectious disease patients either internally at a facility or from one facility to another.

1. Patient will be transported in impervious suit if ambulatory, in impervious suit and sheets (as tolerated) if stretcher bound or in isolation pod, as indicated. All transferred patient belongings are considered contaminated and are typically bagged, labeled, and transferred with patient.
2. Any patient care documents should be free of contamination. When in doubt, consider them contaminated and package as appropriate for transport with patient. It may be desirable to store and transmit patient care records electronically if feasible.

Indications for use:
1. A known or suspected case of highly infectious disease that may have been acquired via travel, health care provider, or lab.
2. Drug resistant organism
3. Some Medical Isolation Transport Devices may be used as a positive air environment to transport a patient with known immune deficiency or burns.

Things to know regarding use of Medical Isolation Transport Device:
1. Assess if MEDICAL ISOLATION TRANSPORT DEVICE outside straps are approved for transportation. General rule: vinyl straps are not tested and approved, but some material straps (such as those used in seat belts) may have been tested and approved.
2. The head of the Medical Isolation Transport Device should be placed at the head of the gurney or cart, so the patient is always moving feet first.
3. The white noise created by the blower motor will reduce patient and staff level of hearing.
4. Be careful that wind may catch and move the Medical Isolation Transport Device, especially when unsecured.
5. As the outside temperature increases, the temperature inside the Medical Isolation Transport Device will also increase.
6. After using the Medical Isolation Transport Device during a drill, it may be cleaned and disinfected for future use. Some disinfectants may leave a residue that can be wiped off with a clean towel.

7. In some cases where the disease is treatable, the Medical Isolation Transport Device can be cleaned, disinfected, and readied for re-use as per direction of MDHHS, Subject Matter Experts (SME), and in consultation with manufacture.

Readying for use and patient placement:

1. Consider equipment that will be used for the patient and how it will be placed into the Medical Isolation Transport Device.
   a. Blankets and pillows will not fit through the access ports.
   b. IV's, defibrillator, and pulse oximetry will remain outside the Medical Isolation Transport Device with the wires and tubes snorkeled through the ports.
   c. Keep the snorkel port closed tightly with Velcro to minimize the potential for contamination outside the Medical Isolation Transport Device.
   d. Keep the access ports closed.
   e. Wear exam gloves when using the glove ports.
   f. If the gloves inside the Medical Isolation Transport Device become damaged, gently twist the glove at the port, and secure with tape to maintain air pressure and prevent contamination outside the Medical Isolation Transport Device.
2. Roll the Medical Isolation Transport Device on the gurney. Use Belts to attach to the gurney. Assure that the belts do not interfere with any moving parts of the gurney.
   a. Restraints within the Medical Isolation Transport Device may only be used per order of a physician.
3. Connect the blower motor, inlet, and outlet filters as per manufacturer's recommendations. Turn on blower.
   a. Assure the motor remains unobstructed.
   b. Assure that the battery is charged and know how long the charge will last.
4. Place patient in the Medical Isolation Transport Device. Patient may be wearing gown, gloves, and mask to minimize contamination of the outside of the Medical Isolation Transport Device.
5. Place ribs/spine of the Medical Isolation Transport Device per manufacturer's instructions. Close zipper. Patient should remove mask while in Medical Isolation Transport Device.
6. Wearing clean PPE, clean and disinfect the outside of the Medical Isolation Transport Device before transport. Follow dwell times for disinfectant.
7. Transport patient.

Patient Handoff:

1. EMS removes Medical Isolation Transport Device from rig into designated "dirty" area outside the rig.
2. Hospital personnel in PPE will clean and disinfect the outside of the Medical Isolation Transport Device. Gurney will be placed so as to straddle dirty and clean area. Patient bed will be placed in clean area. Staff who have cleaned the Medical Isolation Transport Device will remain on dirty side of gurney and will assist 2nd team of PPE donned staff on clean side to move Medical Isolation Transport Device onto patient bed.

3. "Soiled" Hospital personnel (who cleaned the Medical Isolation Transport Device) will assist EMS to doff in designated "dirty area". After doffing, these hospital personnel will doff PPE per protocols.
4. EMS will use 2nd team to clean and disinfect rig before leaving. Waste will be contained at the receiving hospital. Gurney will be cleaned and disinfected.
5. 2nd team of Hospital personnel in clean PPE will move patient to care area.
6. Medical Isolation Transport Device may be disposed of per manufacturer's instructions or consultation with SME.

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Team Selection Procedure

Purpose
The purpose of this procedure is to provide guidance in selecting qualified and support training of EMS personnel willing to transport a patient with known or suspected highly infectious disease including pathogens referred to as “Category A” agents.

1. The selected team members will be chosen according to
   A. Previous physical and mental health history
   B. Ability to be in service and away from home for an extended period of time
   C. Knowledge of the potentially hazardous situation to which they may be placed
   D. Additional assets of team members may include:
      a. Able to work in a restrictive environment
      b. Critical thinking skills
      c. Participation in education sessions, exercises and drills
      d. Able to follow strict guidelines to ensure the safety of the entire unit

2. It is recommended that each team member may have on file with their agency
   A. Two or more emergency contacts
   B. Hospital or Health care system of preference
   C. Blood type
   D. Religious preference
   E. Advanced directives (if applicable)

3. Team member health status
   A. Each team member shall be compliant with and have documentation they have passed the medical screening requirements of the agencies Respiratory Protection Program. This includes acknowledging a new history of respiratory diseases (i.e. asthma, chronic lung disease, or upper respiratory infection) that would interfere with wearing a fully enclosed respiratory device, such as a PAPR or would involve removal of the PAPR hood for medication administration.
   B. Consideration should be given to any team member having a condition that affects them while being in an enclosed environment.
   C. Each team member shall be free of any medical conditions that require medication administration in any less than 6 hour increments.

4. Prior to transport:
   A. Team members providing care in patient compartment shall have vital signs assessed prior to transport.
      a. Vital signs must fall with preset parameters (suggestions e.g.: systolic blood pressure less than 150; diastolic blood pressure less than 90; resting heart rate less than 100).
   B. The name of each team member who has direct contact with the patient or the patient environment will be recorded.
5. Post-transport:
   A. Team members will receive a medical evaluation to include
      a. Blood pressure
      b. Heart rate
   B. May include
      a. Blood glucose
      b. Assessment for dehydration
   C. Information will be kept in the employee health file

6. Team member roles and responsibilities: The number and make up of healthcare providers needed during the transport may be based on the patient's condition and length of the transport. Below are suggestions that define roles and responsibilities of team members.
   A. One or more **direct care providers** will remain with the patient in the back of the transport vehicle to provide care and comfort. This area is considered "contaminated" or "soiled". Team members should attempt to limit their time in full PPE to two (2) hours.
   B. The **driver of the transport vehicle** will remain in the front cab. This area is considered "clean". Although the driver may wear PPE, the driver is considered "clean".
   C. The **chase team** may consist of enough personnel (up to 6 to 7 employees) to accommodate crew changes, to take place at designated site and at designated intervals. The purpose of the chase team is to ensure personnel do not become fatigued or in danger of dehydration or malnourishment. The chase team may be members of another transport agency.
   D. The chase team may consist of a **medical officer** who will not be involved in the actual transport and care of a patient; his or her sole responsibility will be to attend to any personnel that fall ill or succumb to any injury during transport.
   E. The chase vehicle shall carry enough Personal Protective Equipment (PPE) to cover each team member on the transport team. Extra PPE shall also be carried in chase vehicle in the event of rips or tears in PPE gowns or malfunctions in PAPR operation.
   F. It is recommended that an operations supervisor or special operation supervisor be included in the transport chase team and act as **safety officer**.

G. A second ambulance may follow transport vehicle and supervisor vehicle in the event of a mechanical failure during transport.

7. Post trip monitoring
   A. Any crew member that had any duration of time spent in the transport vehicle with the patient may be placed on a paid leave for a duration determined by his or her employer.
   B. Any crew member that had any duration of time spent in the transport vehicle with the patient will be appropriately monitored according to their employer procedure.

8. Public information
   A. Any communication with the public, media or other EMS, fire or police agencies shall be handled by a designated person, as outlined in transport agency or sending facilities policies.
   B. At no time shall any transport team member be subject to inquiries from outside agencies, media, or family members.
   C. Team members shall follow the State of Michigan Communicable disease rules when divulging any details of patient transport.

Protocol Source/References:

Guidance for Developing A Plan for Interfacility Transport of Persons Under investigation or Confirmed Patients with Ebola Virus Disease in the United States: http://www.cdc.gov/vhf/ebola
Bratt, J., Robinson, A., and Alcorta, R. (n.d.). Strategies and Considerations for the Deployment of EMS Personal Protective Equipment in Response to an Ebola Outbreak. (Accessed 8/1/2016.) Maryland Institute for Emergency Medical Service Systems.
Lowe et al: *Considerations for Safe EMS Transport of Patients Infected with Ebola Virus. Prehospital Emergency Care* October/December 2014

☑ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol.

Death During Transport

Purpose
To provide guidance for special pathogen crews when a patient suffers cardiac arrest during transport to a special pathogen treatment facility.

I. This protocol is only for use by trained crews during the transport of a patient being handled for treatment of a special pathogen.
II. If a patient experiences cardiac arrest during transport,
    a. No interventions will be performed
    b. Immediately discontinue transport
    c. Contact Community Health Emergency Coordination Center for destination determination
        i. Crematorium
        ii. ME needed?
        iii. Receiving or sending hospital
        iv. What about when it's a county in between sending & receiving
III. MDHHS SPRN subject matter expert will provide technical assistance in the event of a patient death using Bio Seal and body bags to complete safe and respectful handling of the decedent.
IV. The Community Health Coordination Center (CHECC) has identified a list of crematoriums to receive the body.

Marquette County Active Violence Protocol

Purpose:
To acknowledge the use of specialty trained and equipped EMS personnel in our Medical Control Authority working alongside with law enforcement (LE) during an active violence incident. The Marquette County Sheriff's Office is identified to staff the initial entry, warm zone medical response through its life support agency. Other EMS and fire departments may seek training as secondary evacuation teams.

EMS personnel who have trained with law enforcement are allowed to enter into the warm zones. When responding to these types of incidents, the trained and equipped EMS personnel will respond along with a State licensed EMS unit from their Agency, licensed at an appropriate level. Because the Sheriff's Office life support agency is non-transport, a transporting advanced life support agency will also be dispatched.

This protocol does not provide liability coverage as prescribed under the EMS law for tactical teams that originate and/or operate out of a *non-life support agency,* i.e. police departments, sheriff departments; SWAT teams.

EMS and Fire Risk Paradigm:

- Accept no significant risk when no lives or property can reasonably be saved at an emergency incident.
- Accept some limited level of risk, within normal operational procedures, when it is likely that lives or property can reasonably be saved.
- Accept a significant amount of risk within operational guidelines when it is likely that a life can be saved.

Requirements:
Initial Life Support Agencies

1. Michigan EMS licensure.
2. Medical Control privileging for initial entry teams.
3. Tactical Emergency Care.
4. Law procedures and education.

Secondary Evacuation Team:

1. Michigan EMS licensure or Fire I certification for secondary evacuation teams.
2. Completion of RESCUE TEAM training and continuing education approved by your agency.

Initial and Secondary Rescue Team Personnel Training should also include the following topics:

- Program overview with differentiation from initial entry teams and secondary evacuation teams
- Mass Casualty Incident (MCI) procedures
- Rescue Team protocol

Awareness Training for non-Rescue Team personnel:

- Provide training for non-rescue team EMS and Fire so they understand the concept and procedures of the warm zone versus where they are in the cold zone.

Drills and Exercises

- Interoperable, collaborative, and multi-jurisdictional exercises and drills including all entities should be organized and provided as often as possible.
- In addition to LE and EMS, participating entities in local drills should include schools, hospitals, businesses, and other community stakeholders at every opportunity.
- Improve interdisciplinary communications and relationships with LE and involve LE personnel in Incident Command or Unified Command (IC/UC) as appropriate in your local area.
- Provide training specifically for LE and suggested additional language for LE standard operating procedures (SOPs) discussing Rescue Team integration with emphasis also on the LE personnel assigned to Rescue Teams.
- Assure LE advance teams' trainings stress importance of ignoring victims until there is absolute certainty that all perpetrators have been contained.
- Provide training dispatchers.

RESCUE TEAM EQUIPMENT CONSIDERATIONS:
Tactical equipment, such as bullet-resistant vests with or without rifle plates and ballistic helmets, should be considered to meet local needs with guidance from personnel with experience in tactical equipment and stakeholders. A system for team identification will be in place for safety purposes. Medical equipment must focus on life-saving interventions and triage. Types of equipment considered should include victim movement equipment, rapid triage category patient markers, tourniquets, vented chest seals, dressing materials. Large, heavy, or unwieldy equipment (e.g., oxygen tanks, cardiac monitors) should not be carried by the Rescue Team.

PROCEDURE:

Response:

1. Arriving Rescue Team personnel and caches should report to Command, through a staging area if established.
2. First arriving Rescue Team should meet with Command.
3. Make Command aware of the presence of the Team and its capabilities.
4. Form Warm Zone Entry Rescue Teams as EMS and LE personnel with equipment become available. Ideally, the Rescue Team composition should include an Advanced Emergency Medical Technician (AEMT) or Paramedic. Subsequently form Evacuation Teams.
5. Establish a communications plan.
    a. Considerations should include:
        i. Radio equipment
        ii. Radio channels or talk groups
    b. Identify positions to which Rescue Teams and Evacuation Teams members report
6. Emergency procedures
    a. Recognize that people may reach a point of sensory saturation when they simply stop hearing the messages. It is important to repeat messages, ask for read-back, and consider deploying runners for critical information.
    b. Determine the evacuation signal within the authority having jurisdiction (AHJ) and convey this information to all Team personnel.
7. Discuss the location for staging area for Team location and personnel.
8. Maintain accountability for all Team personnel on scene.
9. Non-Entry Team EMS personnel should not enter warm or hot zones.

Pre-Entry:

1. Rescue Teams deploy after LE initiates entry with a contact team or teams. Risk is decreased, even though the scene is not completely secure.
2. Authorization for entry must be obtained from LE (preferably through the shared command post).
3. Entry into active shooter scenes will not occur until Rescue Team personnel have appropriate protective equipment and LE escort.
4. Subsequent Rescue Teams, with the goal of evacuation and (possibly) initial treatment, will be established as additional personnel arrive.
5. Each Rescue Team should be comprised of two Rescue Team-trained EMS personnel equipped with PPE and medical gear, and law enforcement officers (LEOs).
6. LEOs provide security while EMS personnel attend to casualties. The goal is to get medical resources to patients within minutes of being wounded while continuing to mitigate Rescue Team risk.
7. There may be physicians who are trained and part of a Rescue Team. Roles for those physicians may include entry. Within a Rescue Team, EMS personnel are not to defer to the physician. The same protocols apply to all.

LE Officers Assigned to an RESCUE TEAM:

- The roles of a LEO assigned as a member of a Rescue Team are security and coordination of team movement only.
- LEOs assigned to Rescue Teams will not assist in lifting, carrying, or treatment of any patient until it is confirmed by command that all perpetrators have been contained.
- Safety of the Rescue Team is the primary concern for those officers, including searching for other secondary threats (e.g., IEDs, tripwires).
- One LEO will have 180-degree front security and one will have 180-degree rear security, minimally.
- The front LEO will communicate with police in command. All movement in the building should be directed by Police Command. This allows for accountability of each Rescue Team, and precludes accidental entry into hot zones.
- At no time will the Rescue Team LEOs freelance or move outside of their directed destination/area of operation.
- At no time will LEOs assigned to a Rescue Team leave the EMS personnel further than close direct line of sight.
- LEOs must be able to provide effective defensive fire cover for the Rescue Team at all times.
- The Rescue Team will move as a team with the LEOs controlling the speed of movement.

Initial Entry:

1. A Rescue Team may approach the scene in a vehicle such as an ambulance or tactical vehicle, on foot, or by other means as directed by command.
2. Ingress and egress corridors will be designated by command. Teams will move in and out of the building only through entrances and corridors primarily cleared by LE contact teams.

3. The first one or two Rescue Teams that enter the building or site move deep inside to stabilize as many casualties as possible before any victim is evacuated.
4. As victims are reached, the Rescue Team LEOs provide security while the EMS personnel treat the casualties. RESCUE TEAMs stabilize only immediately life-threatening wounds on each casualty they encounter, but leave casualties where they are found and move on.
5. Emphasis is on treatable immediate life threats. Casualties are treated in place, and the RESCUE TEAM moves on.
6. Walking wounded and uninjured individuals are directed to exit away from the direction of shooting, if it is reasonably safe to do so. The LEO will communicate this with command.
7. Additional Rescue Teams are formed as personnel and equipment caches arrive on the scene and enter the building as directed by command.
8. A supply depot will be set up near a secured entry point to allow for quick re-supply and turnaround for Rescue Teams. This area may also serve as the Extraction Casualty Collection Point (CCP).
9. Rescue Team personnel must be aware of surroundings, potential threats such as IEDs, and open routes of rapid egress.

SCAB-E MEDICAL TREATMENT PROTOCOL {credit to Arlington County Fire)

- Situational awareness, Circulation, Airway, Breathing, and Evaluate/Evacuate (SCAB-E)
- Rescue Teams when functioning in the warm zone only provide stabilizing treatment, primarily following tactical care guidelines and life-saving interventions.
- Airway control is not first priority. Exsanguinating extremity wounds are more common in active shooter situations, and a person can bleed to death from a large arterial wound. Life-threatening bleeding is addressed first, followed by airway control. Open chest wounds and tension pneumothorax are addressed third, following the Circulation-Airway-Breathing sequence (CAB).
- Tourniquets are emphasized and prioritized as a quick and effective method to control extremity hemorrhage. Rescue Teams are providing initial temporizing care, then moving on to care for other victims.
- For non-exsanguinating hemorrhage, mechanical pressure dressings with wound packing are used.
- All patients within a reasonable geographic area, not more than earshot of a quiet voice and direct line of sight from the Rescue Teams, will be rapidly triaged and marked with a triage marking system that can be rapidly applied (colored ribbon). Triage tags are not appropriate for use in a warm zone because the time to complete them tends to delay care. It is especially important to identify deceased victims to prevent teams from wasting time re-triaging them.

Secondary Evacuation Team for Patient Evacuation:

- Secondary Evacuation Teams are composed of trained EMS and/or Fire personnel who are tasked with the primary mission of evacuating stabilized casualties.

- Standard triage, treatment, and transport areas must be established far enough away from the scene to afford protection to casualties and medical personnel.
- LEOs assigned to Secondary Evacuation may consider establishing an internal Warm Zone (Tactical) Casualty Collection Point in a secured area approved by LE Command.
- Secondary Evacuation may also consider establishing an Extraction Casualty Collection Point to serve as a temporary way station at the location of the external supply depot.
- Victims will be evacuated as quickly as feasible and safe to the Treatment or Transport Areas operated by non-Rescue Team EMS personnel and located in the cold zone.

Emergency Evacuation of Rescue Team:

- If the zone in which the Rescue Team is operating changes from warm to hot due to a direct and immediate threat, immediate evacuation of the Rescue Team will occur according to direction from the LE members of the Rescue Team or command. This may include partial or complete evacuation from the building.
- If any member of the Rescue Team is injured during operations, immediate evacuation will occur.

Secure Scene:

- Once it is determined by command that the scene is secure (i.e., all perpetrators are under control and there is no risk of secondary threats), Rescue Team procedures will cease. The scene will revert to standard MCI procedures using all available EMS personnel for treating and transporting patients regardless of location.
- Remember that Rescue Team personnel have likely learned more about issues with Active Shooters than most personnel on the scene, and their advice and assistance will be invaluable even after the threat has been eliminated.

Initial Date: 01/11/23

Revised Date: 4/18/24 Section E-01

Staffing During Critical Staffing Shortages

Purpose: To provide direction for staffing alterations and vehicle usage during critical staffing shortages.

I. Ambulance Staffing
   A. Advanced life support (ALS) vehicles operate with the minimum staffing of a paramedic and a medical first responder (MFR), or higher.
   B. Limited ALS (LALS) vehicles operate with the minimum staffing of an advanced emergency medical technician specialist (AEMT-S) and an MFR, or higher.
   C. Basic Life Support (BLS) vehicles operate with the minimum staffing of an emergency medical technician and an MFR, or higher.

II. Vehicle Status
   A. Life support agencies (LSA), when staffing is not available for vehicles as they are currently licensed may staff them at a lower level to respond to requests for service.
   B. A vehicle that is licensed as an ALS vehicle may respond without a paramedic, if equipment that is outside the currently staffed personnel's scope of practice is secured in a way that it is not accessible.
   C. A vehicle that is licensed as an LALS vehicle may respond without an AEMT-S, if equipment that is outside the currently staffed personnel's scope of practice is secured in a way that it is not accessible.
   D. A vehicle that is licensed as a BLS vehicle may respond without an EMT, if equipment that is outside the currently staffed personnel's scope of practice is secured in a way that it is not accessible. A BLS ambulance must have an EMT in order to transport.

III. Equipment and Medications
   A. Equipment and medications that are accessible at any time, must be within the scope of practice of the personnel currently staffing the vehicle.
   B. It is acceptable to utilize ALS equipment in their BLS functionality (e.g. monitors set to AED mode)

IV. Scope of practice
   A. Personnel continue to be limited to their licensed scope of practice.
   B. This protocol does not preclude Healthcare providers who maintain current Michigan health professional licenses outside of EMS (e.g. RN, MD, PA) and that continuously work in emergency services, from practicing at their scope of practice in an ambulance with MCA approval. This scope is not covered by the level of license of an LSA vehicle.

V. Reporting
   If an agency finds that they need to alter their staff in accordance with this protocol, they should report the status to the MCA in which the altered staffing occurred.

MEDICATIONS (General)

A medication reference protocol (9-R series) is only applicable when used in conjunction with an MCA approved treatment protocol.

Medication Reference Protocols do not address licensure level, pre/post radio requirements, or other medications/procedures/assessments that may be required between initial dose and subsequent doses.

Medication Reference Protocols apply to the Michigan standardized EMS protocol suite Sections 1-10; therefore indications/contraindications are aligned with protocol restrictions (such as allowable age for administration) and may be more confining than the actual indications/contraindications of the medication.

Age:

1. Adult: patient > 14 years of age (will appear as "Adult" in the 9R series without age explanation)
2. Pediatric: patient ≤ 14 years of age (will appear as "Pediatric" in the 9R series without age explanation)
3. A medication with an age restrictions/considerations will be expressed as such in the 9R series.

Indications:

1. Indication(s) listed are in conjunction with protocols, there may be other uses for which EMS is not authorized to use a medication.

Contraindications:

1. Hypersensitivity to a medication is a contraindication to that medication. This applies to ALL medications and will not be restated on individual medication protocols.

Order of Operation

1. Adult (patients > 14 years of age):
    a. Indications for medication use
        i. Protocol (Sections 1-8,10)
        ii. Medication Protocols (Section 9-9R)
    b. Dosing
        i. Protocols (Sections 1-8,10)
        ii. Medication Protocols (Section 9-9R)
2. Pediatric (patients ≤ 14 years of age)
    a. Indications for medication use
        i. Protocol (Sections 1-8,10)
        ii. Medication Protocols (Section 9-9R)

b. Dosing
   i. MI MEDIC cards
   ii. Treatment and/or Procedure Protocol (Sections 1-8, 10)
   iii. Medication Protocols (Section 9-9R)

Acetaminophen

Pharmacological Category: Analgesic, Nonopioid

Routes: PO

Indications:
1. Fever
2. Mild pain

Contraindications:
1. Known severe acute liver disease

Precautions:
1. Has received acetaminophen (I.e., Tylenol) or any medication containing acetaminophen (e.g., cold medication) in last four (4) hours.
2. Patient must be alert enough to take PO medication.

Expected effects:
1. Fever reduction
2. Pain relief

Side effects:
1. Nausea/vomiting

Notes:
1. Children < 60 days old require a documented rectal temperature (including time temperature obtained) prior to acetaminophen administration.

Dosing: PEDIATRIC FEVER
Indication: Fever
Pediatrics administer:
1. According to MI MEDIC cards
2. If MI MEDIC cards are not available administer using dosing chart below.

Dosing: PAIN MANAGEMENT
Indication: Mild Pain
Adults administer:
1. Acetaminophen 650 mg PO

Pediatrics administer:
1. According to MI MEDIC cards
2. If MI MEDIC cards are not available use dosing chart below.

Children's Acetaminophen Elixir Dosing Table		
Child's Weight	Child's Age	**Acetaminophen** 160 mg/5mL
3-5 kg (6-12 lbs.)	0-2 mos.	1.25 mL (40 mg)
6-7 kg (13-16 lbs.)	3-6 mos.	3 mL (96 mg)
8-9 kg (17-20 lbs.)	7-10 mos.	4 mL (128 mg)
10-11 kg (21-25 lbs.)	11-18 mos.	5 mL (160 mg)
12-14 kg (26-31 lbs.)	19 mos.-35 mos.	6 mL (192 mg)
15-18 kg (32-40 lbs.)	3-4 yrs.	7 mL (224 mg)
19-23 kg (41-51 lbs.)	5-6 yrs.	9 mL (288 mg)
24-29 kg (52-64 lbs.)	7-9 yrs.	12 mL (384 mg)
30-36 kg (65-79 lbs.)	10-14 yrs.	15 mL (480 mg)

Used in the Following Protocols
Pediatric Fever (Section 4 Obstetrics and Pediatrics)
Pain Management (Section 7 Procedures)

Adenosine

Pharmacological Category: Antiarrhythmic Agent, Miscellaneous; Diagnostic Agent

Routes: IV rapid push

Indications:
1. Stable but symptomatic supraventricular tachycardia that is a regular and narrow rhythm (i.e., SVT, A-Flutter) that does not convert with approved vagal maneuver.

Contraindications:
1. Patients with diagnosed sinus node dysfunction (e.g., sick sinus syndrome, WPW syndrome) unless pacemaker is present and functioning
2. Patients with diagnosed or observed high-grade AV block (i.e., 2nd or 3rd degree heart block) unless pacemaker is present and functioning
3. Patients with diagnosed asthma

Precautions:
1. Be prepared for fluid resuscitation if required
2. Monitor for polymorphic V-Tach
3. Be prepared for full resuscitation efforts.

Expected effects:
1. Slowed conduction through the AV node
2. Conversion to NSR

Side effects:
1. Hypotension – may produce profound vasodilation
2. Flushing
3. Dyspnea
4. Light-headedness
5. Nausea
6. Feeling of impending doom
7. Seizures

Notes:
1. Use most proximal injection site
2. Follow immediately with NS flush
3. Record using cardiac monitor during and after administration

Dosing: TACHYCARDIA (Adult)
Indication: Symptomatic SVT
Adults administer:

1. Adenosine 6 mg rapid IV push followed immediately with 20 mL NS flush
2. If conversion does not occur, and the rhythm persists, administer adenosine 12 mg rapid IV push followed immediately with 20 mL NS flush

Dosing: PEDIATRIC TACHYCARDIA
Indication: Symptomatic SVT
Pediatrics administer:

1. According to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
   a. Adenosine 0.1 mg/kg (max dose 6 mg) rapid IV push immediately followed by 10 mL flush
   b. If conversion does not occur, and the rhythm persists administer 0.2 mg/kg ___ ___(max of 12 mg) rapid IV push immediately followed by 10 mL NS flush

Used in the Following Protocols
Tachycardia (Section 5 Adult Cardiac)
Pediatric Tachycardia (Section 6 Pediatric Cardiac)

Albuterol

Pharmacological Category: Beta-2 Agonist, Bronchodilator

Routes: Nebulized

Indications:
1. Bronchospasm (wheezing)
2. Known or suspected hyperkalemia resulting from a crush injury.

Expected effects:
1. Bronchodilation
2. Decreased respiratory work/effort

Dosing: RESPIRATORY DISTRESS (Adult)
PEDIATRIC RESPIRATORY DISTRESS
ANAPHYLAXIS/ALLERGIC REACTION
PULMONARY EDEMA/CARDIOGENIC SHOCK

Indication: Respiratory distress with wheezing
Adults administer:
1. Albuterol 2.5 mg/3mL NS nebulized

Pediatrics administer:Albuterol dosage is not weight/age based
1. Albuterol 2.5 mg/3mL NS nebulized *(Albuterol dosage is not weight/age based)*

Dosing: GENERAL CRUSH INJURY
Indication: Suspected hyperkalemia due to crush injury
Adults administer:
1. Albuterol 2.5 mg/3mL NS nebulized to a maximum dose of 20 mg

Pediatrics administer:
1. According to MI MEDIC cards
2. If MI MEDIC cards are not available administer Albuterol 2.5 mg/3mL NS nebulized to a maximum dose of 20 mg

Note: A single responding unit is not expected to carry 20 mg of albuterol for treatment of up to 20 mg in Crush Injury protocol. Dosage is a maximum if other resources (i.e., Haz Mat drug box, second drug box) are available.

Used in the Following Protocols
Anaphylaxis/Allergic Reaction (Section 1 General Treatment)
General Crush Injury (Section 2 Trauma and Environmental)
Respiratory Distress (Section 3 Adult Treatment)
Pediatric Respiratory Distress, Failure or Arrest (Section 4 Obstetrics and Pediatrics)
Pulmonary Edema/Cardiogenic Shock (Section 5 Adult Cardiac)

Amiodarone

Pharmacological Category: Antiarrhythmic Agent

Routes: IV/IO

Indications:
1. Cardiac Arrest (V-Fib or pulseless V-Tach)
2. Tachycardiac that is stable but symptomatic (i.e., does not require immediate cardioversion)
    a. Rhythm is irregular and narrow (i.e., A-Fib/A-Flutter)
    b. Rhythm is regular with a wide QRS (i.e., V-Tach, SVT/A-Flutter with aberrancy)

Contraindications:
1. Cardiogenic Shock
2. Severe sinus node dysfunction
3. Bradycardia with syncope except with functioning artificial pacemaker

Expected effects:
1. Prolongs refractory period
2. Inhibits alpha and beta adrenergic stimulation

Side effects:
1. Prolonged QT
2. Vasodilation
3. Hypotension

Dosing: CARDIAC ARREST (Adult)
Indication: V-Fib/V-Tach
Adults administer:
1. Amiodarone 300 mg IV/IO (May repeat once 150 mg IV/IO)

Dosing: TACHYCARDIA (Adult)
Indication: Irregular Narrow rhythm (i.e., A-Fib/A-Flutter) or Regular Wide QRS rhythm (i.e., V-Tach, SVT/A-Flutter with aberrancy):
Adults administer:
1. Amiodarone 150 mg IV over 10 minutes

Indication: Suspected V-Tach
Adults administer:
1. Amiodarone 150 mg IV over 10 minutes as needed to a maximum of 450 mg

Dosing: PEDS CARDIAC ARREST
Indication: V-Fib/V-Tach
Pediatrics administer:

1. According to MI MEDIC Cards
2. If MI MEDIC cards are not available administer:
    a. Amiodarone 5 mg/kg (max single dose 300 mg) IV/IO. May repeat twice. Do not exceed 450 mg total

Dosing: PEDS TACHYCARDIA
Indication: Unstable Regular, Wide Complex Tachycardia
Pediatrics administer:

1. According to MI MEDIC Cards
2. If MI MEDIC cards are not available administer:
    a. Amiodarone 5 mg/kg (max single dose 300 mg) IV/IO. May repeat twice. Do not exceed 450 mg total IV/IO

Used in the Following Protocols
General Cardiac Arrest (Section 5 Adult Cardiac)
Tachycardia (Section 5 Adult Cardiac)
Pediatric Cardiac Arrest – General (Section 6 Pediatric Cardiac)
Pediatric Tachycardia (Section 6 Pediatric Cardiac)

Aspirin

Pharmacological Category: Analgesic, Nonopioid; Antiplatelet Agent; Nonsteroidal Anti-inflammatory Drug (NSAID), Oral; Salicylate

Routes: PO

Indications:
1. Suspected cardiac chest pain
2. Suspected myocardial infarction

Contraindications:
1. Hypersensitivity to nonsteroidal anti-inflammatories

Dosing: CHEST PAIN/ACUTE CORONARY SYNDROME
Indication: Cardiac chest pain/acute coronary syndrome
Adults administer:
1. Aspirin up to 325 mg PO (chew and swallow). If no aspirin taken or suspected insufficient dose taken since the onset of chest pain, administer additional aspirin to achieve a total dose of up to 325 mg.

Used in the Following Protocols
Chest Pain/Acute Coronary Syndrome (Section 5 Adult Cardiac)

Atropine

Pharmacological Category: Anticholinergic Agent; Antidote; Antispasmodic Agent, Gastrointestinal

Routes: IV/IO

Indications:
1. Severe symptomatic bradycardia
2. Exposure to organophosphates or other nerve agents when Nerve Agent (NA) Antidote Kit is not available.

Expected effects:
1. Increased heart rate
2. Dilated pupils

Note: For Nerve Agent/Organophosphate Pesticide Exposure, when NA Antidote kit is not available, pralidoxime should also be administered in conjunction with atropine when available.

Dosing: CRASHING ADULT/IMPENDING ARREST
Indication: Bradycardia
Adults administer:
1. Atropine 1 mg IV/IO

Dosing: ADULT BRADYCARDIA
Indication: Bradycardia
Adults administer:
1. Atropine 1 mg IV/IO rapid push repeating every 3-5 minutes to a total dose of 3 mg

Dosing: PEDIATRIC BRADYCARDIA
Indication: Bradycardia
Pediatrics administer:
1. According to MI MEDIC Cards
2. If MI MEDIC Cards are not available administer:
    a. Atropine 0.02 mg/kg IV/IO (minimum dose 0.1 mg, maximum single dose 0.5 mg). May repeat once in 5 minutes, if effective.

Dosing: NERVE AGENT/ORGANOPHOSPHATE PESTICIDE EXPOSURE
Indication: Nerve Agent/Organophosphate Pesticide Exposure when NA Antidote Kit is not available. See chart below for number of NA kits required based on age and symptoms.
Adults administer:
1. Atropine 2 mg IM/IV for every 1 NA kit that is required.

Pediatrics administer:

1. According to MI MEDIC cards
2. If MI MEDIC cards are not available refer to CHART A below for atropine dosage.
3. Refer to CHART B below and administer 2 mg atropine IV/IM for every one NA Antidote kit required.

CHART A

Nerve Agent/Organophosphate Antidotes/Countermeasures

Weight	Age	Duodote[1] Mod-Severe Sxs	Atropen[2] (1 mg) Mod-Severe Sxs	Atropine Dose (0.1 mg/kg) IM/IV/IO	Atropine Vial[2] (1 mg/mL)	Cardiac Atropine[2,3] (1 mg/10 mL)	Midazolam[4] (10 mg/2 mL) IM/IV/IO
3-5 kg (6-11 lbs)	**0-2 months**	**1**	**1**	**0.4 mg**	**0.4 mL**	**4 mL**	**0.1 mL**
6-7 kg (13-16 lbs)	**3-6 months**	**1**	**1**	**0.7 mg**	**0.7 mL**	**7 mL**	**0.2 mL**
8-9 kg (17-20 lbs)	**7-10 months**	**1**	**1**	**0.9 mg**	**0.9 mL**	**9 mL**	**0.2 mL**
10-11 (21-25 lbs)	**11-18 months**	**1**	**1**	**1 mg**	**1 mL**	**10 mL**	**0.2 mL**
12-14 kg (26-31 lbs)	**19-35 months**	**1**	**2**	**1.3 mg**	**1.3 mL**	**13 mL**	**0.25 mL**
15-18 kg (32-40 lbs)	**3-4 years**	**1**	**2**	**1.6 mg**	**1.6 mL**	**16 mL**	**0.3 mL**
19-23 kg (41-51)	**5-6 years**	**1**	**2**	**2 mg**	**2 mL**	**20 mL**	**0.4 mL**
24-29 kg (52-64)	**7-9 years**	**2**	**3**	**2.6 mg**	**2.6 mL**	**26 mL**	**0.5 mL**
30-36 kg (65-79 lbs)	**10-14 years**	**2**	**3**	**3.3 mg**	**3.3 mL**	**33 mL**	**0.6 mL**
Adult	**>14 years**	**2 to 3**	**4 to 6**	**4 to 6 mg**	**4 to 6 mL**	**40-60 mL**	**2 mL**

[1]Preferred initial autoinjector, [2]May Repeat atropine every 5 minutes until airway secretions decrease (6 mg maximum), [3]Not available in MEDDRUN, [4]Patients with severe symptoms should receive midazolam even if not obviously seizing

CHART B

MCA Name Marquette Alger MCA
MCA Board Approval 3/15/24
MCA Implementation Date 4/30/24
MDHHS Approval: 7/19/23

	Clinical Findings	Signs/Symptoms	Required Conditions	NA Kits To Be Delivered
SELF-RESCUE	**Threshold Symptoms**	• Dim vision • Increased tearing • Runny nose • Nausea/vomiting • Abdominal cramps • Shortness of breath	Threshold Symptoms *-and-* Positive evidence of nerve agent or OPP on site Medical Control Order	1 NA Kit (self-rescue)
ADULT PATIENT > 8 years of age	**Mild Symptoms and Signs**	• Increased tearing • Increased salivation • Dim Vision • Runny nose • Sweating • Nausea/vomiting • Abdominal cramps • Diarrhea	Medical Control Order	1 NA Kit
	Moderate Symptoms and Signs	• Constricted pupils • Difficulty breathing • Severe vomiting	Constricted Pupils	2 NA Kits
	Severe Signs	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Constricted Pupils	3 NA Kits (If 3 NA Kits are used, administer 1st dose of available benzodiazepine)

	Clinical Findings	Signs/Symptoms	Required Conditions	NA Kits To Be Delivered
PEDIATRIC < 8 years of age	**Pediatric Patient with Non-Severe Signs/Symptoms**	• *Mild or moderate symptoms as above*	Threshold Symptoms *-and-* Positive evidence of nerve agent or OPP on site Medical Control Order	1 NA Kit
	Pediatric Patient with Severe Signs/Symptoms	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Severe breathing difficulty Weakness	1 NA Kit

Used in the Following Protocols
Crashing Adult/Impending Arrest (Section 3 Adult Treatment)
Bradycardia (Section 5 Adult Cardiac)
Pediatric Bradycardia (Section 6 Pediatric Cardiac)
Nerve Agent/Organophosphate Pesticide Exposure (Section 10 Special Operations)

Calcium Chloride

Pharmacological Category: Calcium Salt; Electrolyte Supplement, Parenteral

Routes: IV/IO

Indications:
1. Cardiac arrest in the renal failure patient
2. Calcium channel blocker toxicity
3. Crush Injury with suspected hyperkalemia

Precautions:
1. Use with caution in patients on digoxin; hypercalcemia may precipitate cardiac arrhythmias.
2. Calcium chloride is not compatible with sodium bicarbonate, flush IV line between medications.

Expected effects:
1. Increased force of myocardial contraction
2. Rise in arterial pressure

Note: If given in a line that infiltrated, calcium chloride administration may cause skin sloughing.

Dosing: GENERAL CRUSH INJURY

Indication: Suspected hyperkalemia (peaked T waves, widened QRS, hypotension)

Adults administer:
1. Calcium chloride 1 gm slow IVP over 5 minutes

Pediatrics administer:
1. According to MI MEDIC cards
2. If MI MEDIC Cards are not available administer:
    a. Calcium chloride 20 mg/kg slow IVP over 5 minutes. Max dose 1 gm

Dosing: POISONING/OVERDOSE/ENVIRONMENTAL EXPOSURE

Indication: Symptomatic calcium channel blocker overdose

Adults administer:
1. Calcium chloride 1 gm IV

Pediatrics administer:
1. According to MI MEDIC Cards
2. If MI MEDIC Cards are not available administer:
    a. Calcium chloride 20 mg/kg IV. Max dose 1 gm.

Dosing: GENERAL CARDIAC ARREST (Adult)

Indication: known or highly suspected hyperkalemia (e.g., dialysis patient, EKG changes)

Adults administer:
1. Calcium chloride (10%) 1 gm/10 mL IV/IO

Dosing: PEDIATRIC CARDIAC ARREST

Indication: hyperkalemia (renal failure)

Pediatrics administer:
1. According to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. Calcium chloride (10%) 20 mg/kg (0.2 mL/kg). Max single dose 1 gm

Used in the Following Protocols
General Crush Injury (Section 2 Trauma and Environmental)
Poisoning/Overdose/Environmental Exposure (Section 2 Trauma and Environmental)
General Cardiac Arrest (Section 5 Adult Cardiac)
Pediatric Cardiac Arrest – General (Section 6 Pediatric Cardiac)

Cefazolin

Pharmacological Category: Antibiotic, Cephalosporin (First Generation)

Routes: IV/IO

Indications:
1. **Open fractures**
2. Partial/complete amputations
3. Major soft tissue injures (e.g., mangled extremity)

Contraindications:
1. Infusion <7 years of age (volume for infusion is larger than allowable fluid bolus).

Notes:
Slow IV push dilution of cefazolin
1. Dilute 2 gm cefazolin with 20 mL NS
   a. Inject two 10 mL flushes into one 2 gm vial of cefazolin
      OR
   b. Inject one 10 mL flush into each 1 gm vial of cefazolin.
2. Resulting concentration is 100 mg/mL

Infusion dilution of cefazolin
1. Add cefazolin dosage (slow IV push dilution) to 100 mL bag of NS
   a. Adults: add 20 mL (2 gm diluted) to 100 mL bag of NS
   b. Pediatrics > 7 years of age: volume of diluted cefazolin added to 100 mL of NS will be calculated weight-based dosage.

Dosing: SOFT TISSUE AND ORTHOPEDIC INJURIES
Indication: Partial/complete amputation, major soft tissue injures (e.g., mangled extremity) and open fractures.
Adults administer:
1. Cefazolin 2 gm (slow IV push dilution), slow IVP over 3-5 minutes
   OR
2. Cefazolin Infusion: 2 gm (slow IV push dilution) added to a 100 mL bag of NS. Infuse over 15-30 minutes.

Pediatrics
1. Pediatrics slow IVP cefazolin administer:
   a. Cefazolin (slow IV push dilution) according to MI MEDIC cards.
      i. . If MI MEDIC cards are not available administer Cefazolin (slow IV push dilution) 30 mg/kg slow IVP over 3-5 minutes. Maximum dose 2 gm.
      OR
   2. Pediatrics ≥ 7 years of age infusion of cefazolin administer:

a. Cefazolin infusion according to MI MEDIC cards
   a. If MI MEDIC cards are not available administer cefazolin (slow IV push dilution) 30 mg/kg added to 100 mL bag of NS. Max dose 2 gms. Infuse over 15-30 minutes.

Used in the Following Protocols
Soft Tissue and Orthopedic Injuries (Section 2 Trauma and Environmental)

Dextrose

Pharmacological Category: Glucose-Elevating Agent

Routes: IV/IO

Indications:
1. Hypoglycemia
2. Altered mental status

Precautions:
1. Ensure patent line, extravasation may cause significant tissue damage.
2. Dextrose should be pushed slowly (e.g., over 1-2 minutes).

Expected effects:
1. Increased blood glucose level
2. Improvement in altered mental status.

Notes:
1. Instructions for diluting dextrose
    a. To obtain dextrose 10%, discard 40 mL out of one amp of D50, then draw up 40 mL of NS into the D50 ampule.
    b. To obtain dextrose 12.5%, discard 37.5 mL out of one amp of D50, then draw 37.5 mL of NS into the D50 ampule
    c. To obtain dextrose 25%, discard 25 mL out of one amp of D50, then draw 25 mL of NS into the D50 ampule
2. May utilize 10% for all ages 5 mL/kg (0.5 gm/kg) up to 250 mL

Dosing: ADULT ALTERED MENTAL STATUS
Indication: Patient is demonstrating signs of hypoglycemia, blood glucose is < 60 mg/dL.
Adults administer:
1. Dextrose 25 gm IV, titrate to fully awake and oriented.

Dosing: ADULT SEIZURES
Indication: Seizure patient with blood glucose < 60 mg/dL
Adults administer:
1. Dextrose 25 gm IV

Dosing: PEDIATRIC ALTERED MENTAL STATUS
Indication: Patient is demonstrating signs of hypoglycemia and blood glucose as follows:
1. 2 months old or younger and blood glucose is <40 mg/dL
2. 3 months old or older and blood glucose is <60 mg/dL

Pediatrics administer:
1. Dextrose according to MI MEDIC cards

2. If MI MEDIC cards are not available use chart below:

Dosing: PEDIATRIC SEIZURES
Indication: Pediatric seizure patient and blood glucose as follows:
1. 2 months old or younger and glucose is <40 mg/dL
2. 3 months old or older and glucose is <60 mg/dL

Pediatrics administer:
1. Dextrose according to MI MEDIC cards
2. If MI MEDIC cards are not available utilize the chart below.

Dosing: PEDIATRIC CARDIAC ARREST
Indication: Pediatric patients in cardiac arrest with a blood glucose is less than 60 mg/dL
Pediatrics administer:
1. Dextrose according to MI MEDIC cards
2. If MI MEDIC cards are not available utilize the chart below.
3. If chart is not available administer dextrose 0.5 g/kg

Color	Age	Weight	Dose	Concentration	Volume		Concentration	Volume
Grey	0-2 months	3-5 kg (6-11 lbs.)	2.5g	Dextrose 12.5%	20 mL	**OR**	Dextrose 10%	25 mL
Pink	3-6 months	6-7 kg (13-16 lbs.)	3.25g	Dextrose 25%	13 mL	**OR**	Dextrose 10%	33 mL
Red	7-10 months	8-9 kg (17-20 lbs.)	4.25g	Dextrose 25%	17 mL	**OR**	Dextrose 10%	43 mL
Purple	11-18 months	10-11 kg (21-25 lbs.)	5g	Dextrose 25%	20 mL	**OR**	Dextrose 10%	50 mL
Yellow	19-35 months	12-14 kg (26-31 lbs.)	6.25g	Dextrose 25%	25 mL	**OR**	Dextrose 10%	63 mL
White	3-4 years	15-18 kg (32-40 lbs.)	8g	Dextrose 25%	32 mL	**OR**	Dextrose 10%	80 mL
Blue	5-6 years	19-23 kg (41-50 lbs.)	10g	Dextrose 25%	40 mL	**OR**	Dextrose 10%	100 mL
Orange	7-9 years	24-29 kg (52-64 lbs.)	12.5g	Dextrose 50%	25 mL	**OR**	Dextrose 10%	125 mL
Green	10-14 Years	30-36 kg (65-79 lbs.)	15g	Dextrose 50%	40 mL	**OR**	Dextrose 10%	150 mL

Used in the Following Protocols
Altered Mental Status (Section 3 Adult Treatment)
Seizures (Section 3 Adult Treatment)
Pediatric Altered Mental Status (Section 4 Obstetrics and Pediatrics)
Pediatric Seizures (Section 4 Obstetrics and Pediatrics)

Pediatric Cardiac Arrest – General (Section 6 Pediatric Cardiac)

Diazepam

Pharmacological Category: Antiseizure Agent, Benzodiazepine

Routes: IV/IO

Indications:
1. Procedural sedation

Precautions:
1. Respiratory depression
2. Hypotension

Expected effects:
1. Skeletal muscle relaxation

Notes:
1. Not used for pediatric procedural sedation

Dosing: PROCEDURAL SEDATION
Indication: Procedural sedation
Adults administer:
1. Diazepam 5-10 mg (0.1 mg/kg) IV/IO titrated slowly. May repeat every 5 minutes to a maximum of 0.3 mg/kg.

Used in the Following Protocols
Patient Procedure Sedation (Section 7 Procedures)

Diphenhydramine

Pharmacological Category: Histamine H1 Antagonist

Routes: IV/IO/IM

Indications:
1. Anaphylaxis
2. Mild or moderate allergic reaction
3. Urticaria/hives
4. Nausea and vomiting

Expected effects:
1. Antihistamine, decreased urticarial, decreased itching
2. Drowsiness

Dosing: NAUSEA AND VOMITING
Indications: Nausea and vomiting
Adults administer:
1. Diphenhydramine 12.5-25 mg IV/IM. Maximum dose 25 mg.

Pediatric (>2 years of age AND > 12 kg) administer:
1. According to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
   a. Diphenhydramine 1.0 mg/kg IV. Max dose 25 mg.

Dosing: ANAPHYLAXIS ALLERGIC REACTION
Indication: Anaphylaxis/allergic reaction
Adults administer:
1. Diphenhydramine 50 mg IM/IV/IO

Pediatrics administer:
1. According to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
   a. Diphenhydramine 1 mg/kg IM/IV/IO. Maximum dose 50 mg.

Dosing: POISONING/OVERDOSE/ENVIRONMENTAL EXPOSURE
Indication: extrapyramidal dystonic reactions
Adults administer:
1. Diphenhydramine 50 mg IV.

Pediatrics administer:
1. Diphenhydramine 1 mg/kg IV. Max dose 50 mg.

Used in the Following Protocols

Nausea & Vomiting (Section 1 General Treatment)
Anaphylaxis/Allergic Reaction (Section 1 General Treatment)
Poisoning/Overdose/Environmental Exposure (Section 2 Trauma and Environmental)

Epinephrine

Pharmacological Category: Sympathomimetic agent

Routes: IV/IO/IM, Nebulized

Indications:
1. Anaphylaxis
2. Bradycardia
3. Respiratory distress
4. Hypotension
5. Cardiac arrest

Expected effects:
1. Decreased wheezing
2. Increased BP
3. Increased HR

Notes:
1. This protocol does NOT apply to Epi Auto Injector (see Epi Auto Injector Protocol)
2. Note that epinephrine is not utilized in the pediatric bradycardia protocol

Preparing PUSH DOSE Epinephrine:
1. Prepare (epinephrine 10 mcg/mL)
    a. Combine 1 mL of 1 mg/10 mL epinephrine in 9mL NS

Dosing: SHOCK
Indication: Hypotension unresponsive to fluid bolus administration
Adults administer:
1. PUSH DOSE epinephrine 10-20 mcg (1-2 mL of 10 mcg/mL) IV/IO. Repeat every 3-5 minutes. Titrate to SBP > 90 mm/Hg.

Pediatrics administer:
1. PUSH DOSE epinephrine utilizing MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. PUSH DOSE epinephrine 1 mcg/kg (0.1 mL of epinephrine 10 mcg/mL) IV/IO. Maximum single dose 10 mcg (1 mL). Repeat every 3-5 minutes.

Dosing: ANAPHYLAXIS/ALLERGIC REACTION
Indication: Anaphylaxis/Severe Allergic Reaction
Adults administer:
1. Epinephrine (1mg/mL) 0.3 mg (0.3 mL) IM. May repeat one time after 3-5 minutes if patient remains hypotensive. Maxiumum of 2 doses total of epinephrine (including

epi pen).

Pediatrics administer EPI IM:

1. EPI IM according to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. For child weighing ≤ 30 kg or approx. 60 lbs.
        i. Epinephrine (1mg/mL) 0.15 mg (0.15 mL) IM. May repeat one time after 3-5 minutes if patient remains hypotensive. Maxiumum of two IM doses (including epi pen).
    b. For child weighing > 30 kg or approx. 60 lbs.
        i. Epinephrine (1mg/mL) 0.3 mg (0.3 mL) IM. May repeat one time after 3-5 minutes if patient remains hypotensive. Maxiumum of two IM doses total (including epi pen).

Indication: Hypotension not responsive to fluid bolus administration and/or impending arrest

Adults administer:

1. PUSH DOSE epinephrine 10-20 mcg (1-2 mL of 10 mcg/mL) IV/IO. Repeat every 3-5 minutes. Titrate to SBP > 90 mm/Hg.

Pediatrics administer:

1. PUSH DOSE epinephrine utilizing MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. PUSH DOSE epinephrine 1 mcg/kg (0.1 mL of epinephrine 10 mcg/mL) IV/IO. Maximum single dose 10 mcg (1 mL). Repeat every 3-5 minutes.

Dosing: ADULT RESPIRATORY DISTRESS

Indication: Impending respiratory failure and unable to tolerate nebulizer therapy

Adults administer EPI IM:

1. Epinephrine (1mg/mL) 0.3 mg (0.3 mL) IM

Dosing: CRASHING ADULT/IMPENDING ARREST

Indication: Patient in whom cardiac or respiratory arrest appears imminent and hypotension is unresponsive to fluid bolus administration

Adults administer:

1. PUSH DOSE epinephrine 10-20 mcg (1-2 mL of 10 mcg/mL) IV/IO. Repeat every 3-5 minutes. Titrate to SBP > 90 mm/Hg.

Dosing: PEDIATRIC RESPIRATORY DISTRESS, FAILURE OR ARREST
Indication: Pediatric patient presents with stridor at rest without suspected airway obstruction.
Pediatrics administer EPI IM:

1. EPI IM according to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. Child weighing ≤ 30 kg or approx. 60 lbs.:
        i. Epinephrine (1 mg/mL) 0.15 mg (0.15 mL) IM
    b. Child weighing > 30 kg or approx. 60 lbs.
        i. Epinephrine (1 mg/mL) 0.3 mg (0.3 mL) IM

Indication: Severe respiratory distress
Pediatrics administer NEBULIZED EPI

1. Epinephrine (1 mg/1 mL) 5 mg nebulized

Dosing: ADULT CARDIAC ARREST
Indication: Cardiac arrest
Adults administer:

1. Epinephrine (1 mg/10 mL) 1 mg IV/IO every 3 to 5 minutes

Dosing: PEDIATRIC CARDIAC ARREST
Indication: Cardiac arrest
Pediatrics administer:

1. Epinephrine according to MI MEDIC cards.
2. If MI MEDIC cards are not available administer.
    a. Epinephrine (1 mg/10 ml), 0.01 mg/kg (0.1 ml/kg). Max dose 1 mg (10 mL). Repeat every 3-5 minutes

Dosing: ADULT BRADYCARDIA
Indication: Patients with persistent symptomatic bradycardia
Adults administer:

1. PUSH DOSE epinephrine 10-20 mcg (1-2 mL of 10 mcg/mL) IV/IO. Repeat every 3-5 minutes. Titrate to SBP > 90 mm/Hg.

Dosing: ADULT CHF/CARDIOGENIC SHOCK
Indication: If SBP is below 100 mmHG treat for cardiogenic shock
Adults administer:

1. PUSH DOSE epinephrine 10-20 mcg (1-2 mL of 10 mcg/mL) IV/IO. Repeat every 3-5 minutes. Titrate to SBP > 90 mm/Hg.

Dosing: ADULT ROSC
Indication: Hypotension unresponsive to fluid bolus administration
Adults administer:

1. PUSH DOSE epinephrine 10-20 mcg (1-2 mL of 10 mcg/mL) IV/IO. Repeat every 3-5 minutes. Titrate to SBP > 90 mm/Hg.

Dosing: PEDIATRIC BRADYCARDIA
Indication: If pulse remains < 60, despite oxygenation & ventilation
Pediatrics administer:

1. Epinephrine according to MI MEDIC cards.
2. If MI MEDIC cards are not available administer:
   a. Epinephrine (1 mg/10 mL) 0.01 mg/kg (0.1 mL/kg) IV/IO up to 1 mg (10 mL). Repeat every 3-5 minutes.

Dosing: PEDIATRIC ROSC
Indication: Hypotension unresponsive to fluid bolus administration
Pediatrics administer:

1. PUSH DOSE epinephrine according to MI MEDIC cards, titrating to age appropriate SBP per MI MEDIC cards.
2. If MI MEDIC cards are not available administer:
   a. PUSH DOSE epinephrine 1 mcg/kg (0.1 mL of epinephrine 10 mcg/mL) IV/IO. Maximum single dose 10 mcg (1 mL). Repeat every 3-5 minutes. Titrate to SBP > 70 mmHG + (2 x age in years) up to 100 mmHg.

Used in the Following Protocols
Shock (Section 1 General Treatment)
Anaphylaxis/Allergic Reaction (Section 1 General Treatment)
Respiratory Distress (Section 3 Adult Treatment)
Crashing Adult/Impending Arrest (Section 3 Adult Treatment)
Pediatric Respiratory Distress, Failure or Arrest (Section 4 Obstetrics and Pediatrics)
General Cardiac Arrest (Section 5 Adult Cardiac)
Pediatric Cardiac Arrest – General (Section 6 Pediatric Cardiac)
Bradycardia (Section 5 Adult Cardiac)
Pulmonary Edema/Cardiogenic Shock (Section 5 Adult Cardiac)
Pediatric Bradycardia (Section 6 Pediatric Cardiac)
Return of Spontaneous Circulation (ROSC)-Adult (Section 3 Adult Treatment)
Peds ROSC (Section 4 Obstetrics and Pediatrics)

Fentanyl

Pharmacological Category: Analgesic, Opioid; General Anesthetic

Routes: IV/IO/IM/IN

Indications:
1. Pain management
2. Patient sedation

Contraindications:
1. Altered Mental Status
2. Hypotension
3. Respiratory Depression

Expected effects:
1. Decreased pain
2. Decreased agitation

Side effects:
1. Drowsiness
2. Hypotension
3. Respiratory Depression
4. Vomiting

Dosing: CHEST PAIN/ACUTE CORONARY SYNDROME
Indication: Chest pain in which nitroglycerin is contraindicated due to erectile dysfunction medication or suspected cardiac chest pain is refractory to nitroglycerin.
Adults (65 years of age or under) administer:

1. Fentanyl 1 mcg/kg IV/IO/IN, max single dose 100 mcg. May repeat one time. Total dose may not exceed 200 mcg.

Adults (> 65 years of age or older) administer:

1. Fentanyl 0.5 mcg/kg IV/IO/IN. Max single dose 50 mcg. May repeat three times. Total dose may not exceed 200 mcg.

Dosing: PAIN MANAGEMENT
Indication: Patient is unable to tolerate ketamine or ketamine is not available and the patient has significant pain (described as 7 or greater on the Wong Pain Scale).
Adults 65 years of age or under administer:

1. Fentanyl 1 mcg/kg IV/IO/IN. Max single dose 100 mcg. May repeat one time. Total dose may not exceed 200 mcg.

Adults > 65 years of age administer:

1. Fentanyl 0.5 mcg/kg IV/IO/IN. Max single dose 50 mcg. May repeat three times. Total dose may not exceed 200 mcg.

Pediatrics administer:

1. Fentanyl according to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. Fentanyl 1 mcg/kg IV/IO/IN

Dosing: PATIENT PROCEDURAL SEDATION

Adults administer:

1. Fentanyl 50-100 mcg (1 mcg/kg) IV/IO titrated slowly (IN, if available). May repeat every 4 minutes to a maximum of 3 mcg/kg.

Pediatrics administer:

1. Fentanyl according to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. Fentanyl 1 mcg/kg IV/IO titrated slowly (IN, if available). May repeat every 5 minutes to a maximum of 3 mcg/kg.

Used in the Following Protocols

Chest Pain/Acute Coronary Syndrome (Section 5 Adult Cardiac)
Pain Management (Section 7 Procedures)
Patient Procedure Sedation (Section 7 Procedures)

Glucagon

Pharmacological Category: Antidote; Hypoglycemia

Routes: IM/IN

Indications:
1. Unable to obtain IV access and dextrose is indicated

Contraindications:
1. Adrenal gland tumor

Expected effects:
1. Increased blood glucose

Side effects:
1. Nausea
2. Vomiting

Dosing: ADULT ALTERED MENTAL STATUS
Indication: Patient is demonstrating signs of hypoglycemia, blood glucose is < 60 mg/dL and unable to start IV.
Adults administer:
1. Glucagon 1 mg IM/IN

Dosing: ADULT SEIZURE
Indication: Seizure patient with blood glucose < 60 mg/dL and unable to start IV.
Adults administer:
1. Glucagon 1 mg IM/IN

Dosing: PEDS ALTERED MENTAL STATUS
Indication: Pediatric patient demonstrating signs of hypoglycemia, unable to start IV and blood glucose as follows:
1. 2 months old or younger and glucose is <40 mg/dL
2. 3 months old or older and glucose is <60 mg/dL

Pediatrics administer:
1. Glucagon according to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
   a. Pediatrics age 5 or greater:
      i. Glucagon 1 mg IM/IN
   b. Pediatrics less than age 5:
      i. Glucagon 0.5 mg IM/IN

Dosing: PEDS SEIZURE

Indication: Pediatric seizure patient, unable to start IV, and blood glucose as follows:

1. 2 months old or younger and glucose is <40 mg/dL
2. 3 months old or older and glucose is <60 mg/dL

Pediatrics administer:

1. Glucagon according to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. Pediatrics age 5 or greater:
        i. Glucagon 1 mg IM/IN
    b. Pediatrics less than age 5:
        i. Glucagon 0.5 mg IM/IN

Used in the Following Protocols

Altered Mental Status (Section 3 Adult Treatment)
Seizures (Section 3 Adult Treatment)
Pediatric Altered Mental Status (Section 4 Obstetrics and Pediatrics)
Pediatric Seizures (Section 4 Obstetrics and Pediatrics)

Hydroxocobalamin

Pharmacological Category: Antidote; Vitamin, Water Soluble

Routes: IV/IO

Indications:
1. Known or suspected cyanide poisoning.
2. Smoke inhalation with altered mental status and/or moderate to severe respiratory distress.

Precautions:
1. Numerous drugs and blood products are not compatible with hydroxocobalamin.
2. Push over 15 minutes
3. Hydroxocobalamin is incompatible with dopamine and fentanyl. Must flush line between medications.

Expected effects:
1. Increased blood glucose

Side effects:
1. Nausea
2. Vomiting
3. Abdominal pain
4. Red colored urine, skin, mucus membranes
5. Rash

Notes:
1. Hydroxocobalamin comes as a powder to be reconstituted prior to administration and is available as Cyanokit®
2. Reconstitute Cyanokit® (5 gm or 2.5 gm vial) for injection using sterile transfer spike with diluent (0.9%NaCl).
    a. The line on each vial label represents the volume of diluent
    b. Repeatedly inverted or rock vial (do not shake) prior to infusion
        i. 5 gm bottle invert/rock for at least 60 seconds
        ii. 2.5 gm bottle invert/rock for at least 30 seconds
    c. Visually inspect solution - should be dark red with no particulates
        i. Discard if visible particulates and/or not dark red

Dosing: CYANIDE EXPOSURE

Indication: Patients exposed to cyanide that demonstrate symptoms as outlined in the above protocol.

Adults administer:

1. Hydroxocobalamin 5 gm IV/IO slow IV push over 15 minutes. May repeat 5 gm dose infusion. Infuse over 15 minutes for sever cases, slower infusion, up to 2 hours, for less severe cases. Total max dose 10 gm.

Pediatrics administer:

1. Hydroxocobalamin according to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. Hydroxocobalamin according to chart below
    b. If chart below is not available administer Hydroxocobalamin 70 mg/kg IV/IO slow IV push over 15 minutes.

Cyanokit® Administration for Suspected Cyanide Poisoning (including serious smoke inhalation)

Weight	Age	Cyanokit® Dose[1] (~70 mg/kg +/-) IV/IO	Cyanokit® Volume to Administer[2] IV/IO
3-5 kg (6-11 lbs)	**0-2 months**	250 mg	**10 mL[3]**
6-7 kg (13-16 lbs)	**3-6 months**	500 mg	**20 mL[3]**
8-9 kg (17-20 lbs)	**7-10 months**	625 mg	**25 mL[3]**
10-11 (21-25 lbs)	**11-18 months**	750 mg	**30 mL[3]**
12-14 kg (26-31 lbs)	**19-35 months**	900 mg	**36 mL[3]**
15-18 kg (32-40 lbs)	**3-4 years**	1100 mg	**44 mL[3]**
19-23 kg (41-51)	**5-6 years**	1500 mg	**60 mL[3]**
24-29 kg (52-64)	**7-9 years**	1750 mg	**70 mL[3]**
30-36 kg (65-79 lbs)	**10-14 years**	2500 mg	**100 mL[4] (1/2 bottle)**
Adult 37 40 kg (80-88 lbs)	**>14 years**	3000 mg	**120 mL[4]**
Adult 41 49kg (89-108 lbs)	**>14 years**	3500 mg	**140 mL[4]**
Adult > or 50 kg (> or 109 lbs)	**>14 years**	5000 mg	**200 mL[4] (full bottle)**

[1]The safety and efficacy in pediatrics has not been established, [2]Administer slowly over 15 minutes.
[3]Push slowly over 15 minutes, [4]Infuse over 15 minutes

Used in the Following Protocols

Cyanide Exposure (Section 10 Special Operations)

MCA Name Marquette Alger MCA
MCA Board Approval 3/15/24
MCA Implementation Date 4/30/24
MDHHS Approval: 7/19/23

Ibuprofen

Pharmacological Category: Analgesic, Nonopioid; Nonsteroidal Anti-inflammatory Drug (NSAID)

Routes: PO

Indications:
1. Mild pain
2. Fever

Contraindications:
1. Active bleeding
2. <6 months of age
3. Pregnancy

Precautions:
1. Has received ibuprofen (I.e., Motrin/Advil) or any medication containing ibuprofen (e.g., cold medication) in the last 6 hours and is alert.
2. Patient must be alert enough to take PO medication.

Expected effects:
1. Fever reduction
2. Pain relief

Side effects:
1. Nausea/vomiting
2. Abdominal pain
3. Heartburn

Dosing: PEDIATRIC FEVER
Indication: Fever
Pediatrics over 6 months old administer:
1. Ibuprofen according to MI MEDIC cards
    a. If MI MEDIC cards are not available administer ibuprofen according to dosing chart below.

Dosing: PAIN MANAGEMENT
Indication: For mild to moderate pain (described as 1-6 on the Wong Pain Scale)
Adults administer:
1. Ibuprofen 400 mg PO.

Pediatrics (patients greater than 6 months of age) administer:
1. Ibuprofen according to MI MEDIC cards

2. If MI MEDIC cards are not available administer ibuprofen according to chart below

Children's Ibuprofen Elixir Dosing Table		
Child's Weight	Child's Age	**Ibuprofen** 100 mg/5mL
3-5 kg (6-12 lbs.)	0-2 mos.	DO NOT GIVE
6-7 kg (13-16 lbs.)	3-6 mos.	DO NOT GIVE
8-9 kg (17-20 lbs.)	7-10 mos.	4 mL (80 mg)
10-11 kg (21-25 lbs.)	11-18 mos.	5 mL (100 mg)
12-14 kg (26-31 lbs.)	19 mos.-35 mos.	6 mL (120 mg)
15-18 kg (32-40 lbs.)	3-4 yrs.	7.5 mL (150 mg)
19-23 kg (41-51 lbs.)	5-6 yrs.	9.5 mL (190 mg)
24-29 kg (52-64 lbs.)	7-9 yrs.	13 mL (260 mg)
30-36 kg (65-79 lbs.)	10-14 yrs.	15 mL (300 mg)

Used in the Following Protocols
Pediatric Fever (Section 4 Obstetrics and Pediatrics)
Pain Management (Section 7 Procedures)

Ipratropium Bromide

Pharmacological Category: Anticholinergic Agent

Routes: Nebulized

Indications:
1. Wheezing
2. Airway Constriction

Contraindications:
1. Hypersensitivity to atropine or its derivatives

Expected effects:
1. Decreased wheezing
2. Decreased respiratory distress

Notes: May be administered in conjunction with albuterol 2.5 mg/3 mL NS as a 'Duoneb'.

Side effects:
1. Palpitations
2. Dry Mouth
3. Anxiety

Dosing: ANAPHYLAXIS ALLERGIC REACTION
Indication: Continued wheezing and/or airway constriction after administration of nebulized albuterol.
Adults and pediatrics administer:
1. Ipratropium 500 mcg/2.5 mL NS nebulized

Dosing: ADULT RESPIRATORY DISTRESS
Indication: Continued wheezing and/or airway constriction after administration of nebulized albuterol.
Adults administer:
1. Ipratropium 500 mcg/2.5 mL NS nebulized

Used in the Following Protocols
Anaphylaxis/Allergic Reaction (Section 1 General Treatment)
Respiratory Distress (Section 3 Adult Treatment)

Ketamine

Pharmacological Category: Antidepressant; General Anesthetic

Routes: IV/IO/IM/IN

Indications:
1. Pain Management
2. Sedation

Precautions:
1. Ketamine IV should be diluted to prevent ketamine dissociation.

Expected effects:
1. Sedation
2. Decreased agitation
3. Decreased pain

Side effects:
1. Nausea/vomiting
2. Nystagmus
3. Dysphoria

Notes:
1. IM Ketamine has a 3–5-minute onset
2. Diluting ketamine
    a. Mix the patient specific dose into 100 mL NS and administer slow infusion over 5-10 minutes.
3. Ketamine is an MCA optional medication and may not be available.

Dosing: HYPERACTIVE DELIRIUM SYNDROME WITH SEVERE AGITATIONS

Indication: Patients demonstrating signs and symptoms of hyperactive delirium syndrome with severe agitation that are in imminent physical threat to themselves and/or personnel.

Adults administer:

1. Ketamine 4 mg/kg IM. Maximum single dose 500 mg

Dosing: PAIN MANGEMENT

Indication: For patients with severe pain (described as 7 or greater on the Wong Pain Scale)

Adults administer:

1. Ketamine 0.2 mg/kg IV/IO (diluted) slow infusion. Maximum single dose 25 mg.
2. Ketamine 0.5 mg/kg IN (undiluted). Maximum single dose 50 mg.
3. May repeat after 10 minutes.

Pediatrics

1. Ketamine according to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. Pediatrics (> 6 years of age and ≤ 14 years of age):
        i. Ketamine 0.2 mg/kg IV/IO (diluted) slow infusion, maximum single dose 7.2 mg
        ii. Ketamine 0.5 mg/kg IN (undiluted) maximum single dose 18 mg
        iii.. May repeat after 10 minutes.
    b. Pediatrics (> 6 months of age and ≤ 6 years of age)
        i. 0.5 mg/kg IN (undiluted) maximum single dose 18 mg
        ii.. May repeat after 10 minutes.

Used in the Following Protocols

Hyperactive Delirium Syndrome with Severe Agitation (Section 3 Adult Treatment)
Pain Management (Section 7 Procedures)

Ketorolac

Pharmacological Category: Analgesic, Nonopioid; Nonsteroidal Anti-inflammatory Drug (NSAID)

Routes: IM/IV

Indications:
1. Pain management

Contraindications:
1. Allergies to NSAIDs
2. Active labor or women who are breastfeeding
3. Renal impairment
4. Bleeding or high risk of bleeding
5. Pregnancy

Expected effects:
1. Pain Relief

Side effects:
1. Nausea/vomiting
2. Bloating

Dosing: PAIN MANAGEMENT
Adults administer:
1. Ketorolac 15 mg IM/IV

Pediatrics (patients over 5 years of age) administer:
1. Ketorolac according to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. Ketorolac 1 mg/kg IM/IV. Max dose 15 mg.

Used in the Following Protocols
Pain Management (Section 7 Procedures)

Lidocaine

Pharmacological Category: Antiarrhythmic, anesthetic

Routes: IV/IO

Indications:
1. Cardiac arrest from VF/VT
2. Wide complex tachycardia
3. As an anesthetic agent for IO establishment

Contraindications:
1. Bradycardia or heart block

Expected effects:
1. Increased VF threshold
2. Decreased ventricular irritability
3. Decreased pain with infusion

Dosing: ADULT CARDIAC ARREST
Indication: Cardiac arrest V-Fib, pulseless V-Tach, or multiple AED defibrillations
Adults administer:
1. Lidocaine 1 mg/kg IV/IO. May repeat 0.5 mg/kg every 5-10 minutes. Total dose of 3 mg/kg

Dosing: ADULT TACHYCARDIA
Indication: Regular Wide QRS rhythm (i.e., V-Tach, SVT/A-Flutter with aberrancy)
Adults administer:
1. Lidocaine 1 mg/kg IV. Repeat lidocaine 0.5 -1.0 mg/kg IV push every 5 - 10 minutes to a maximum of 3 mg/kg.

Dosing: PEDIATRIC CARDIAC ARREST
Indication: Cardiac arrest V-Fib, pulseless V-Tach, or multiple AED defibrillations
Pediatrics administer:
1. Lidocaine according to MI MEDIC cards
2. If MI MEDIC cards are not available administer Lidocaine 1 mg/kg IV/IO. May repeat 0.5 mg/kg twice at 5-10 minute intervals. Maximum 3 doses total

Dosing: PEDIATRIC TACHYCARDIA
Indication: For recurrent or refractory wide complex – unstable tachycardia
Pediatrics administer:
1. Lidocaine according to MI MEDIC cards
2. If MI MEDIC cards are not available administer Lidocaine 1 mg/kg IV/IO. May repeat 0.5 mg/kg twice at 5-10 minute intervals. Maximum 3 doses total

Dosing: VASCULAR ACCESS & IV FLUID THERAPY
Indication: Conscious patients experiencing pain with IO infusion
Adults administer:
1. Lidocaine 2%, 20 mg IO

Pediatrics administer:
1. Lidocaine 0.5 mg/kg, IO maximum dose of 20 mg

Used in the Following Protocols

General Cardiac Arrest (Section 5 Adult Cardiac)
Tachycardia (Section 5 Adult Cardiac)
Pediatric Cardiac Arrest – General (Section 6 Pediatric Cardiac)
Pediatric Tachycardia (Section 6 Pediatric Cardiac)
Vascular access & IV Fluid Therapy (Section 7 Procedures)

Magnesium Sulfate

Pharmacological Category: Antiseizure Agent, Electrolyte Supplement

Indications:
1. Cardiac: Torsades de Pointes
2. VF/VT in hypomagnesemia
3. Pre-eclampsia
4. Eclamptic seizures
5. Refractory status asthmaticus

Precautions:
1. Magnesium Sulfate is diluted for applications in these protocols

Expected effects:
1. Seizure cessation
2. Decreased respiratory distress

Side effects:
1. Respiratory depression
2. Hypotension
3. Asystole
4. Burning in IV site for conscious patients

Best Practice for Administering Magnesium Sulfate
1. Magnesium Sulfate dose added to 100 to 250 mL of NS and infusing over approximately 10 minutes.

Notes:
1. Magnesium Sulfate for Preeclampsia/Eclampsia can be administered prior, during, or up to 6 weeks post childbirth.
2. The dosing for preeclampsia and eclampsia are both 4 gm (see treatment protocol for pre/post radio requirements).

Dosing: ADULT RESPIRATORY DISTRESS
Indication: Status asthmaticus
Adults administer:
1. Magnesium Sulfate 2 gm slow IV (preferably added to 100-200 mL NS bag over 10 minutes).

Dosing: ADULT SEIZURES
Indication: Eclamptic seizure
Adults administer:

1. Magnesium Sulfate 4 gm over 10 minutes IV/IO until seizure stops (preferably added to 100-200 mL NS bag over 10 minutes).

Dosing: CHILDBIRTH & RELATED OBSTETRICAL EMERGENCIES
Indication: Preeclampsia or Eclamptic Seizure
Adults administer:

1. Magnesium Sulfate 4 gm over 10 minutes IV/IO until seizure stops (preferably added to 100-200 mL NS bag over 10 minutes).

Dosing: ADULT CARDIAC ARREST
Indications: Suspected torsades de pointes
Adults administer:

1. Magnesium Sulfate 2 gm IV/IO

Used in the Following Protocols:
Respiratory Distress (Section 3 Adult Treatment)
Seizures (Section 3 Adult Treatment)
Childbirth and Obstetrical Emergencies (Section 4 Obstetrics and Pediatrics)
General Cardiac Arrest (Section 5 Adult Cardiac)

Methylprednisolone

Pharmacological Category: Corticosteroid, Systemic

Routes: IV/IO/IM

Indications:
1. Allergic reactions
2. Airway inflammation
3. Reactive airway disease
4. Acute adrenal insufficiency

Contraindications:
1. Hypersensitivity to methylprednisolone (or similar)

Expected effects:
1. Decreased inflammation

Side effects:
1. Dizziness
2. Nausea/vomiting

Notes:
1. Prednisone PO is preferred over methylprednisolone for respiratory distress however prednisone it is not a required medication, and the PO tablet has restrictions (tablet cannot be cut, cannot be administered to children ≤ 6 years of age, cannot be administered to patient that is unable to safely take PO medication).

Dosing: ANAPHYLAXIS ALLERGIC REACTION
Indication: If patient is symptomatic of an allergic reaction but not in a severe allergic reaction or anaphylaxis OR after epinephrine administration
Adults administer:
1. Methylprednisolone 125 mg IV/IO/IM

Pediatrics administer:
1. Methylprednisolone according to MI MEDIC cards.
2. If MI MEDIC cards are not available administer Methylprednisolone 2 mg/kg IV/IO/IM. Maximum dose 125 mg.

Dosing: ADRENAL CRISIS
Indication: Patients with a known history of adrenal insufficiency, experiencing signs of crisis.
Adults administer:

1. Methylprednisolone 125 mg IV/IO/IM

Pediatrics administer:
1. Methylprednisolone according to MI MEDIC cards.

2. If MI MEDIC cards are not available administer Methylprednisolone 2 mg/kg IV/IO/IM. Maximum dose 125 mg

Dosing: ADULT RESPIRAOTRY DISTRESS
Indication: Respiratory distress patients with wheezing or diminished breath sounds due to asthma or COPD.
Adults administer:
1. Methylprednisolone 125 mg IV/IO/IM

Dosing: PEDIATRIC RESPIRATORY DISTRESS, FAILURE OR ARREST
Indication: Pediatric respiratory distress patients with suspected bronchospasm (wheezing)
Pediatrics administer:
1. Methylprednisolone according to MI MEDIC cards.
2. If MI MEDIC cards are not available administer Methylprednisolone 2 mg/kg IV/IO/IM. Maximum dose 125 mg

Used in the Following Protocols:
Anaphylaxis/Allergic Reaction (Section 1 General Treatment)
Adrenal Crisis (Section 1 General Treatment)
Respiratory Distress (Section 3 Adult Treatment)
Pediatric Respiratory Distress, Failure or Arrest (Section 4 Obstetrics and Pediatrics)

Midazolam

Pharmacological Category: Antiseizure Agent, Benzodiazepine; Benzodiazepine

Routes: IV/IO/IM/IN

Indications:
1. Adult or pediatric seizures
2. Procedural Sedation
3. Severe agitation that prohibits essential assessment and/or treatment

Contraindications:
1. Shock

Precautions:
1. Consider lower range of dosing for Geriatric patients

Expected effects:
1. Seizure cessation
2. Sedation

Side effects:
1. Respiratory depression
2. Hypotension

Dosing: ADULT SEIZURES
Indication: Actively seizing adult patient.
Adults administer:
1. Midazolam 10 mg IM prior to IV start
2. If IV established prior to the need for medication administration, midazolam 5 mg IV/IO
3. If seizure persists repeat midazolam 5mg IV/IO/IM/IN

Dosing: HYPERACTIVE DELIRIUM SYNDROME
Indication: Patients who are uncontrollably agitated despite de-escalation techniques
Adults administer:
1. Midazolam 10 mg IM/IN

Dosing: PEDIATRIC SEIZURES
Indication: Actively seizing pediatric patient.
Pediatrics administer:
1. Midazolam according to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. Midazolam 0.1 mg/kg IM, maximum individual dose 10 mg.

b. If IV established prior to the need for medication administration, administer midazolam 0.05 mg/kg IV/IO. Maximum single dose of 5 mg.
c. If seizures persisting 10 minutes after initial dose (and correction of low blood glucose if applicable) repeat midazolam one time
    i. Midazolam 0.1 mg/kg IM. Maximum single dose 10 mg
    OR
    ii. If IV available midazolam 0.05 mg/kg IV/IO maximum single dose of 5 mg.

Dosing: PATIENT RESTRAINT
Indication: when soft restraint placement alone would pose a safety risk or is ineffective in calming the patient
Adults administer:
1. Midazolam 0.1 mg/kg IM/IN. Maximum dose of 10 mg

Pediatrics administer:
1. Midazolam according to MI MEDIC cards
2. If MI MEDIC cards are not available administer Midazolam 0.1 mg/kg IM. Maximum single dose 5mg.

Dosing: PATIENT PROCEDURAL SEDATION
Indication: Sedation titrated to minimum amount necessary for patients requiring a painful medical procedure (i.e., cardioversion, transcutaneous pacing), post intubation sedation, CPAP, or HFNC.
Adults administer:
1. Midazolam 1-5 mg (maximum dose of 0.05 mg/kg) IV/IO titrated slowly or IN. May repeat once in 5 minutes. Maximum total dose 0.1 mg/kg. Titrate to minimum amount necessary.

Pediatrics administer:
1. Midazolam according to MI MEDIC cards
2. If MI MEDIC cards are not available administer Midazolam 0.05 mg/kg IV/IO titrated slowly or IN. May repeat once in 5 minutes to a maximum of 0.1 mg/kg. Titrate to minimum amount necessary.

Used in the Following Protocols:
Seizures (Section 3 Adult Treatment)
Hyperactive Delirium Syndrome (Section 3 Adult Treatment)
Pediatric Seizures (Section 4 Obstetrics and Pediatrics)
Patient Restraint (Section 7 Procedures)
Patient Procedure Sedation (Section 7 Procedures)

Naloxone

Pharmacological Category: Antidote; Opioid Antagonist

Indications for administration:
1. Known opioid overdose WITH respiratory depression
2. Respiratory depression or arrest of unknown origin (per treatment protocol)

Precautions:
1. Rapid IV push may cause agitation.

Expected effects:
1. Increased mental status
2. Increased respiratory drive

Side effects:
1. Agitation
2. Nausea/vomiting

Dosing: OPIOID OVERDOSE TREATEMENT AND PREVENTION
Indication: Decreased level of consciousness associated with respiratory depression from Opioid Overdose
Adults administer:
1. Narcan® Nasal Spray 4 mg in one nostril. May repeat one time in 3-5 minutes in opposite nostril if effective respirations not restored.
   OR
2. Naloxone prefilled 2 mg/2 mL IN via Atomizer. Half dose in each nostril. May repeat one time in 3-5 minutes if effective respirations not restored.
   OR
3. Naloxone 2 mg IM or slow IV push titrating to improvement in respiratory status. IV naloxone may be repeated as needed every 3-5 minutes.

Pediatrics administer:
1. According to MI MEDIC cards administer naloxone prefilled 2 mg/2 mL IN via atomizer. Half dose each nostril.
2. If MI MEDIC cards are not available administer naloxone prefilled 2 mg/2 mL IN via atomizer. Half dose each nostril.
   a. Age 36 months/3 years of age or older: 2mL (2 mg)
   b. Age 19-35 months old: 1.5 mL (1.5 mg)
   c. Age 3-18 months old: 1 mL (1.0 mg)
   d. Age 0-2 months old: 0.5 mL (0.5 mg)
   OR

3. According to MI MEDIC cards administer naloxone IM or slow IV push titrating to improvement in respiratory status. IV naloxone may be repeated as needed every 3-5 minutes.
4. If MI MEDIC cards are not available administer Naloxone 0.1 mg/kg IM or slow IV push titrating to improvement in respiratory status. IV naloxone may be repeated as needed every 3-5 minutes

Dosing: ADULT CARDIAC ARREST
Indication: Adult cardiac arrest with known or highly suspected opioid overdose
Adults administer:

1. Naloxone 2 mg IV/IO or 2-4 mg IN

Used in the Following Protocols:
Opioid Overdose Treatment and Prevention (Section 1 General Treatment)
General Cardiac Arrest (Section 5 Adult Cardiac)

Nitroglycerin

Pharmacological Category: Antianginal Agent; Vasodilator

Routes: SL

Indications:
1. Cardiac pain
2. Pulmonary edema

Contraindications:
1. Use of erectile dysfunction medications in previous 48 hours.
2. Use of medication to treat pulmonary hypertension in previous 48 hours
3. BP < 120 mm Hg without IV access
4. BP < 100 mm Hg with IV access

Expected effects:
1. Decreased blood pressure
2. Relief of chest pain

Side effects:
1. Headache
2. Flushing
3. Hypotension

Dosing: PULMONARY EDEMA/CARDIOGENIC SHOCK
Indication: Pulmonary edema
Adults administer:
1. Nitroglycerin 0.4 mg SL (without IV access) maximum of 3 doses.
2. Nitroglycerin 0.4 mg SL (with IV access) every 3-5 minutes

Dosing: CHEST PAINE/ACUTE CORONARY SYNDROME
Indication: Cardiac chest pain
Adults administer:
1. Nitroglycerin 0.4 mg SL (without IV access) maximum of 3 doses.
2. Nitroglycerin 0.4 mg SL (with IV access) every 3-5 minutes

Used in the Following Protocols:
Pulmonary Edema/Cardiogenic Shock (Section 5 Adult Cardiac)
Chest Pain/Acute Coronary Syndrome (Section 5 Adult Cardiac)

Ondansetron

Pharmacological Category: Antiemetic

Indications:

1. Nausea and vomiting

Routes: IV/IM; ODT (for patients ≥ 30 kg)

Contraindications:

1. Patients with Phenylketonuria (PKU)

Precautions:

1. Do not administer ODT to patients that are actively vomiting

Expected effects:

1. Diminished nausea

Side effects:

1. Headache
2. Dry mouth
3. Drowsiness

Notes:

1. Orally Disintegrating Tablet (ODT) is an MCA optional medication and may not be available.

Dosing: NAUSEA & VOMITING

Indication: Nausea & vomiting

Adults administer:

1. Ondansetron ODT 4mg if not actively vomiting and ODT is available.
2. Ondansetron 4mg IV/IM if patient is actively vomiting, vomited post ODT administration, or ODT is not available.
3. May administer a second dose of ondansetron 4 mg (IV/IM only). Total dose (including ODT) not to exceed 8 mg.

Pediatrics administer:

1. Ondansetron according to MI MEDIC cards
2. If MI MEDIC cards are not available administer:
    a. Pediatrics ≥ 30 kg that is not actively vomiting and ODT is available administer:
        i. Ondansetron 4 mg ODT
    b. Pediatrics < 30 kg, or if the patient is actively vomiting, or if the patient vomited post OD administration, or ODT is not available, administer:
        i. Ondansetron 0.1 mg/kg IV/IM, maximum dose of 4 mg.
    c. May repeat ondansetron 0.1 mg/kg IV/IM, maximum dose of 4 mg. Total dose (including ODT) may not exceed 8 mg.

Used in the Following Protocol(s):
Nausea & Vomiting (Section 1 General Treatment)

Pralidoxime

Pharmacological Category: Cholinesterase reactivator

Routes: IV/IM

Indications:
1. Exposure to organophosphate or nerve agents

Expected effects:
1. Decrease in symptoms

Side effects:
1. Blurred vision
2. Headache
3. Dizziness
4. Nausea

Notes:
1. This medication may be part of a Nerve Agent (NA) Antidote kit.
2. When not part of an NA kit, 600 mg pralidoxime (along with 2 mg Atropine) will be administered in place of each NA kit that was to be administered.

Dosing: NERVE AGENT/ORGANOPHOSPHATE PESTICED ESPOSURE
Indication: Symptomatic nerve agent or organophosphate pesticide exposure when a NA Antidote Kt is not available.
Adults and Pediatrics administer:
1. Pralidoxime 600 mg IV/IM for every one (1) NA Kit as required on Chart below.

	Clinical Findings	Signs/Symptoms	Required Conditions	NA Kits To Be Delivered
SELF-RESCUE	**Threshold Symptoms**	• Dim vision • Increased tearing • Runny nose • Nausea/vomiting • Abdominal cramps • Shortness of breath	Threshold Symptoms *-and-* Positive evidence of nerve agent or OPP on site  Medical Control Order	1 NA Kit (self-rescue)
ADULT PATIENT > 8 years of age	**Mild Symptoms and Signs**	• Increased tearing • Increased salivation • Dim Vision • Runny nose • Sweating • Nausea/vomiting • Abdominal cramps • Diarrhea	 Medical Control Order	1 NA Kit
	Moderate Symptoms and Signs	• Constricted pupils • Difficulty breathing • Severe vomiting	Constricted Pupils	2 NA Kits
	Severe Signs	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Constricted Pupils	3 NA Kits (If 3 NA Kits are used, administer 1st dose of available benzodiazepine)

PEDIATRIC < 8 years of age	**Pediatric Patient with Non-Severe Signs/ Symptoms**	• *Mild or moderate symptoms as above*	Threshold Symptoms *-and-* Positive evidence of nerve agent or OPP on site Medical Control Order	1 NA Kit
	Pediatric Patient with Severe Signs/ Symptoms	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Severe breathing difficulty Weakness	1 NA Kit

Used in the Following Protocols
Nerve Agent/Organophosphate Pesticide Exposure (Section 10 Special Operations)

Prednisone

Pharmacological Category: Corticosteroid, Systemic

Routes: PO

Indications:
1. Allergic Reaction
2. Inflammatory respiratory issues

Contraindications:
1. Hypersensitivity to steroids
2. Known systemic fungal infections
3. Children ≤ 6 years of age
4. Inability to take PO medication

Expected effects:
1. Decreased inflammation

Side effects:
1. Retention of fluids

Notes:
1. Do not cut prednisone tablets

Dosing: ANAPHYLAXIS ALLERGIC REACTION
Indication: If patient is symptomatic of an allergic reaction but not in a severe allergic reaction or anaphylaxis OR after epinephrine administration.
Adults administer:
1. Prednisone tablet 50 mg PO

Pediatrics > 6 years of age administer:
1. Prednisone tablet 50 mg PO

Dosing: ADRENAL CRISIS
Indication: Patients with a known history of adrenal insufficiency, experiencing signs of crisis.
Adults administer:
1. Prednisone tablet 50 mg PO

Pediatrics > 6 years of age administer:
1. Prednisone tablet 50 mg PO

Dosing: ADULT RESPIRATORY DISTRESS
Indication: Respiratory distress patients with wheezing or diminished breath sounds due to asthma or COPD
Adults administer:

1. Prednisone tablet 50 mg PO

Dosing: PEDIATRIC RESPIRATORY DISTRESS, FAILURE, OR ARREST
Indication: Pediatric respiratory distress patients with suspected bronchospasm (wheezing)
Pediatrics > 6 years of age administer:

1. Prednisone tablet 50 mg PO

Used in the Following Protocols
Anaphylaxis/Allergic Reaction (Section 1 General Treatment)
Adrenal Crisis (Section 1 General Treatment)
Respiratory Distress (Section 3 Adult Treatment)
Pediatric Respiratory Distress, Failure or Arrest (Section 4 Obstetrics and Pediatrics)

Sodium Bicarbonate

Pharmacological Category: Alkalinizing Agent; Antacid; Electrolyte Supplement,

Indications:
1. Cardiac arrest in dialysis patient with suspected hyperkalemia
2. Symptomatic tricyclic antidepressant overdose
3. Acidosis related to crush injury
4. Hyperkalemia

Contraindications:
1. Severe pulmonary edema
2. Known Alkalosis

Precautions:
1. Must flush IV line between medications
    a. Calcium and epinephrine are not compatible with sodium bicarbonate
2. Administer slowly

Dosing: GENERAL CRUSH INJURY
Indication: If extrication is prolonged, and/or hyperkalemia is suspected.
Adults administer:
1. Sodium bicarbonate 100 mEq IVP prior to extrication. May repeat 50 mEq/hr IVPB or slow IVP

Pediatrics administer:
1. Sodium bicarbonate according to MI MEDIC cards
2. If MI MEDIC cards are not available administer Sodium bicarbonate 1 mEq/kg (max dose 50 mEq) IVP

Dosing: POSIONING/OVERDOSE/ENVIRONMENTAL EXPOSURE GENERAL CRUSH INJURY
Indication: symptomatic tricyclic antidepressant ingestions (tachycardia, wide complex QRS)
Adults administer:
1. Sodium bicarbonate 50 mEq IV. Repeat as needed

Pediatrics administer:
1. Sodium bicarbonate according to MI MEDIC cards.
2. If MI MEDIC cards are not available administer Sodium bicarbonate 1 mEq/kg IV. Repeat as needed

Dosing: ADULT CARDIAC ARREST
Indications: Cardiac arrest with known or highly suspected tricyclic antidepressant overdose or known or highly suspected hyperkalemia (e.g., dialysis patient, EKG changes)
Adults administer:

1. Sodium bicarbonate 1 mEq/kg IV/IO

Dosing: PEDIATRIC CARDIAC ARREST
Indication: Cardiac arrest with hyperkalemia (renal failure)
Pediatrics administer:
1. Sodium bicarbonate according to MI MEDIC cards
2. If MI MEDIC cards are not available administer Sodium bicarbonate 1 mEq/kg IV/IO

Used in the Following Protocols:
General Crush Injury (Section 2 Trauma and Environmental)
Poisoning/Overdose/Environmental Exposure (Section 2 Trauma and Environmental)
General Cardiac Arrest (Section 5 Adult Cardiac)
Pediatric Cardiac Arrest – General (Section 6 Pediatric Cardiac)

Racepinephrine

Pharmacological Category: Adrenergic Agonist Agent; Alpha-/Beta- Agonist; Vasoconstrictor

Routes: Nebulized

Indications:
1. Pediatric patients with stridor at rest without suspected airway obstruction.

Expected effects:
1. Respiratory difficulty and stridor resolves

Dosing: PEDIATRIC RESPIRATORY DISTRESS, FAILURE, OR ARREST
Indication: Pediatric patient presents with stridor at rest without suspected airway obstruction.
Pediatrics administer:
1. Racepinephrine 0.5 mL of 2.25% inhalation solution diluted with 3 mL of NS via nebulizer.

Used in the Following Protocol(s):
Pediatric Respiratory Distress, Failure or Arrest (Section 4 Obstetrics and Pediatrics)

Tetracaine

Pharmacological Category: Local Anesthetic; Local Anesthetic, Ophthalmic

Indications:
1. Eye pain relief related to chemical exposure and subsequent eye irrigation.

Contraindications:
1. Hypersensitivity to anesthetics
2. Large area application
3. Infants < 1 year old

Precautions:
1. Patient should not rub eyes after administration

Expected effects:
1. Numbing of eye

Side effects:
1. Burning
2. Irritation
3. Rash

Notes:
1. Tetracaine is an MCA optional medication and may not be available.

Dosing: POISONING/OVERDOSE/ENVIRONMENTAL EXPOSURE
Adults and Pediatrics administer:
1. Tetracaine, 1-2 drops per eye every 5 minutes, maximum of 5 doses

Dosing: CHEMICAL EXPOSURE
Adults and Pediatrics administer:
1. Tetracaine, 1-2 drops per eye every 5 minutes, maximum of 5 doses

Used in the Following Protocols:
Poisoning/Overdose/Environmental Exposure (Section 2 Trauma and Environmental)
Chemical Exposure (Section 10 Special Operations)

Tranexamic Acid

Pharmacological Category: Hemostatic Agent

Routes: IV/IO

Indications:
1. Massive uncontrolled hemorrhage internal or external

Contraindications:
1. Intracranial bleeding
2. ≤ 18 years of age
3. Injury time greater than 3 hours

Precautions:
1. Transport to hospital that will continue TXA
    a. TXA delivered in the field is FIRST DOSE
    a. NOT effective if a SECOND DOSE is not given at the appropriate time in the hospital
2. Ensure receiving facility is aware of exact time of first dose prior to arrival, upon arrival and that it is documented in the EPCR.
3. Do not delay transport for administration of TXA

Expected effects:
1. Reduction of blood loss

Notes:
1. Draw up and mix 1 gram of TXA into a 100 mL bag of normal saline
    a. Use a filter needle if the medication is supplied in an ampule.
    b. Apply pre-printed “TXA added” fluorescent-colored label to IV bag.
    c. Administer mixed medication via piggyback into IV/IO line over 10 minutes.

Dosing: HEMORRHAGIC SHOCK
Indication: Massive uncontrolled hemorrhage internal or external
Adults > 18 years if age administer:
1. TXA 1 gram diluted in 100 mL NS IV/IO piggyback NS

Used in the Following Protocol(s):
Hemorrhagic Shock (Section 2 Trauma and Environmental)

Verapamil

Pharmacological Category: Antianginal Agent: Antiarrhythmic Agent

Routes: IV

Indications:
1. Symptomatic Tachycardia: Narrow Complex (Regular and Narrow or Irregular and Narrow rhythms)

Contraindications:
1. Hypotension
2. Patient under the age of 1 year.

Expected effects:
1. Slower heart rate
2. Potential conversion to NSR

Side effects:
1. Hypotension
2. Bradycardia

Dosing: TACHYCARDIA (Adult)
Indication: Regular Narrow Complex Tachycardia (i.e., SVT, A-Flutter) and Irregular Narrow Complex Tachycardia (i.e., A-Fib/A-Flutter)
Adults administer:
1. Verapamil 5 mg IV

Used in the Following Protocols
Tachycardia (Section 5 Cardiac)

ENGLISH

MI-MEDIC

Michigan Medication Emergency Dosing and Intervention Cards

MDHHS Michigan Department of Health & Human Services | Bureau of Emergency Preparedness, EMS and Systems of Care

Based on the State of Michigan EMS Protocols
Revised 2023

Digital Version 4.1.5

MI-MEDIC Instructions

Determine the appropriate card to be used based on the following order:

1. Select the card that matches the patient's weight when known. Be sure not to confuse pounds and kilograms.
2. Use approved length-based pediatric resuscitation tape to determine the correct card when weight is unknown.
3. Use the patient's age to determine the correct card when resuscitation tape is not available, estimating age when unknown.
4. If pediatric patient exceeds length-based tape, use **BLACK** (adult) card.

Pediatric Patients (≤ 14 years old)

1. Select the desired medication or intervention.
2. Assure the medication concentration on hand is the SAME as specified on the MI-MEDIC.
3. Administer volume of medication listed at the far right of the card, including dilution amount, if necessary.

Adult Patients (> 14 years old) – Black Cards

1. Select the desired medication or intervention.
2. Assure the medication concentration on hand is the SAME as specified on the MI-MEDIC.
3. Administer volume of medication listed at the far right of the card, including dilution amount, if necessary.

- ❑ Confirm medication DOSE and VOLUME to be delivered with colleague when possible.
- ❑ Contact Medical Control for questions or concerns.

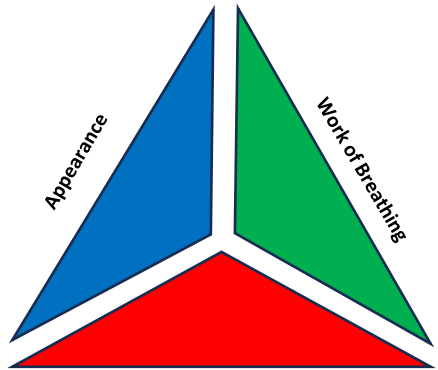
Note: Protocols are dynamic and may change based on current science. EMS personnel must be familiar with the most current set of approved protocols which take precedence over the information included in the MI-MEDIC.

Pediatric Assessment Tools

	Pediatric Glasgow Coma Scale		
	< 1 Year	> 1 Year	Score
Eye Opening	Spontaneous	Spontaneous	4
	To Speech	To verbal command	3
	To pain	To pain	2
	No response	No response	1
Verbal Response	Coos, babbles	Oriented	5
	Cries and is consolable	Disoriented/Confused	4
	Cries to pain	Inappropriate words	3
	Grunts, moans	Incomprehensible sounds	2
	No response	No response	1
Motor Response	Spontaneous	Obeys	6
	Localizes pain	Localizes pain	5
	Withdraws from pain	Withdraws from pain	4
	Flexion (decorticate)	Flexion (decorticate)	3
	Extension (decerebrate)	Extension (decerebrate)	2
	No Response	No Response	1

Pain Scale

Pediatric Assessment Triangle



APGAR Scale			
Sign	0	1	2
Appearance: Color	Blue or Pale	Cyanosis in extremities	Completely pink
Pulse: Heart Rate	Absent	Less than 100 bpm	Greater than 100 bpm
Grimace: Reflex Irritability	No Response	Grimace	Cry or Active Withdrawal
Activity: Muscle Tone	Limp	Some Flexion	Active Motion
Respiration	Absent	Weak Cry: Hypoventilation	Good, Crying

Pediatric Burn Considerations

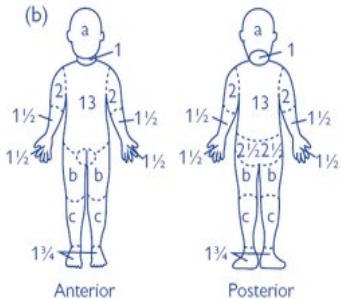
- Children have a greater body surface area (BSA) per unit of body mass than adults.
- Children require greater amounts of resuscitation fluid proportionally.
- Heads comprises > percentage of BSA.
- Large head contributes to > heat loss.
- Skin is thinner & more permeable; toxins will be absorbed faster & exert > systemic effects.

Calculating Burn Percentages in Children

Lund and Browder Chart - For large and TBSA burns.

- This method compensates for variation in body shape with age.

	0 yr.	1 yr.	5 yrs.	10 yrs.	15 yrs.
a - ½ of head	9.5	8.5	6.5	5.5	4.5
b - ½ of 1 thigh	2.75	3.25	4	4.25	4.5
c – ½ of 1 lower leg	2.5	2.5	2.75	3	3.25



The Palm Method
For burns scattered over the body:

- Use ***patient's hand*** as a guide.
- Entire palmar surface = 1% of the patient's body.

Poison Control
1-800-222-1222

Child Abuse Hotline
1-855-444-3911

Human Trafficking Hotline
1-888-373-7888

Human Trafficking Flags

Living circumstances

- No personal space, too many people in one place
- No or very few personal items
- No identification, may not know address
- Unusual security; barred windows, locks, cameras

Behavior

- Exhibit fear/paranoia of law enforcement or authority figures
- Avoid eye contact with responders
- Often trafficker is with them, controlling them & prevents person from speaking for themselves

Physical Signs

- Physical abuse; bruises, cuts, burns, scars
- Malnourishment
- Unusual tattoos and markings

Infectious Disease Precautions

Standard Precautions are used on all patient encounters and protect against contact with blood, body fluids, non-intact skin and mucous membranes.

PPE:

- Gloves during patient contact.
- Goggles/face shield and surgical masks for any airway procedures.
- Impermeable gown if splash or liquid generation expected.

Transport Considerations:

- Standard transportation to appropriate health care facility.
- If the patient compartment is equipped with an exhaust fan, ensure that it is on.

Contact Precautions are used to provide fluid-resistant barriers to infectious agents that are either highly pathogenic, drug resistant, contagious, or persistent and that can easily be contracted or spread to other environments via surface contact.

PPE:

- Disposable fluid-resistant gown that protects the provider's legs or consider disposable fluid-resistant coveralls.
- Disposable gloves.
- Ensure strict adherence to standard precautions based on situation (e.g., mask, goggles/face shield for splatter risk or airway interventions).

Transport Considerations:

- Consider applying a fluid-resistant barrier sheet to the patient to protect the responder and environmental surfaces in the presence of excessive wound drainage, fecal incontinence, or other discharges.
- Advise receiving hospital of patient on contact precautions who should preferably be transported to a private room.

Additional precautions may apply for special respiratory and viral hemorrhagic viruses.

Airborne Precautions provide respiratory protection against inhalation of potentially infectious airborne particles.

PPE:

- N95 respirator.
- Disposable gloves.
- Eye protection – goggles or face shield.

Transport Considerations:

- Notify the receiving hospital of the need for an airborne infection isolation room (AIIR) for patient placement.
- If possible, have the patient compartment exhaust vent on high and isolating the driver compartment from the patient compartment. Consider having the driver compartment ventilation fan set to high without recirculation.
- If driver/pilot compartment is not isolated from the patient compartment, vehicle operator should wear N95 respirator.
- Patients who are intubated should be ventilated with a bag-valve device or ventilator equipped with a HEPA filter in-line or on the exhalation port.

Droplet Precautions provide protection to the responder's mucous membranes and respiratory system from exposure to potentially infectious droplets during direct patient care activities.

PPE:

- Disposable surgical mask (N95 respirator per protocols).
- Disposable gloves.
- Eye protection – goggles or face shield.

Transport Considerations:

- If possible, have the patient compartment exhaust vent on high and isolating the driver compartment if performing aerosol generating procedures.
- Increase ventilation by having air or heat on non-recirculating cycle and/or open windows.
- Advise receiving hospital of respiratory symptoms and need for a private room (negative pressure not necessary) would be preferred.

TEN-4-FACESp

Bruising Clinical Decision Rule for Children < 4 Years of Age

When is bruising concerning for abuse in children < 4 years of age?
If bruising in any of the three components (Regions, Infants, Patterns) is present without a reasonable explanation, strongly consider evaluating for child abuse and/or consulting with an expert in child abuse.

REGIONS

TEN

Torso | **E**ars | **N**eck

FACES

Frenulum
Angle of Jaw
Cheeks *(fleshy part)*
Eyelids
Subconjunctivae

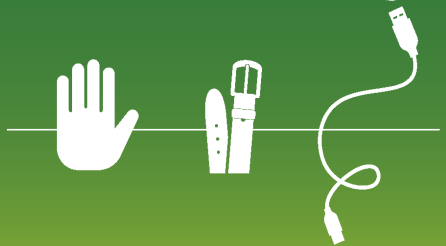
INFANTS

4 months and younger

Any bruise, anywhere

PATTERNS

Patterned bruising



Bruises in specific patterns like slap, grab or loop marks

See the signs

Unexplained bruises in these areas most often result from physical assault.
TEN-4-FACESp is not to diagnose abuse but to function as a screening tool to improve the recognition of potentially abused children with bruising who require further evaluation.

Ann & Robert H. Lurie Children's Hospital of Chicago

TEN-4-FACESp was developed and validated by Dr. Mary Clyde Pierce and colleagues. It is published and available for FREE download at **luriechildrens.org/ten-4-facesp**.

Pediatric Equipment Sizes and Normal Vital Signs

	3 - 5 Kg 6-12 lbs GREY	6 - 7 Kg 13-16 lbs PINK	8 - 9 Kg 17-20 lbs RED	10 - 11 Kg 21-25 lbs PURPLE	12 - 14 Kg 26-31 lbs YELLOW	15 - 18 Kg 32-40 lbs WHITE	19 - 23 Kg 41-51 lbs BLUE	24 - 29 Kg 52-64 lbs ORANGE	30 - 36 Kg 65-79 lbs GREEN
NORMAL VITALS									
Heart Rate	100-180	100-180	100-180	80-160	80-130	80-120	70-110	70-110	70-110
Respiratory Rate	30-60	30-45	25-35	20-30	20-30	20-30	18-24	18-22	16-20
Systolic BP	60-100 mmHg	65-100 mmHg	70-110 mmHg	72-110 mmHG	74-110 mmHg	76-110 mmHg	80-110 mmHg	80-110 mmHg	90-120 mmHg
Blood Glucose	>60 mg/dl	>60 mg/dl	>60 mg/dl	>60 mg/dl	>60 mg/dl	>60 mg/dl	>60 mg/dl	>60 mg/dl	>60 mg/dl
Development	Flexed position when prone. Inhibited grasp reflex.	Rolls from front to back, back to side. Carries object to mouth.	Clear preference for caregiver with stranger anxiety. Sits steady without support	Able to cruise and beginning to walk. Uses cup well along with some spoon agility.	Able to manipulate small objects, turn door knobs and unscrew lids.	Speaks in sentences of 5 to 6 words. Draws circles and squares.	Able to tell a brief story with a complete sentence. Able to balance on one foot for a short period of time.	Dresses themselves, can catch a ball more easily.	Demonstrate abstract thinking. Highly emotional development stage.
EQUIPMENT SIZES									
OPA	50 mm	50 mm	50 mm	60 mm	60 mm	60 mm	70 mm	80 mm	80 mm
NPA	14 F	14 F	14 F	18 F	20 F	22 F	24 F	26 F	30 F
BVM	Infant	Infant	Infant	Child	Chlid	Child	Child	Child	Adult
Laryngoscope	0-1 (straight)	1 (straight)	1 (straight)	1 (straight)	2 (straght/curved)	2 (straight/curved)	2 (straight/curved)	2-3 (straight/curved)	2-3 (straight/curved)
iGel	1.0 - 1.5	1.5	1.5	1.5 - 2.0	2.0	2.0	2.0	2.0-2.5	2.5-3.0
LMA Supreme	1.0 - 1.5	1.5	1.5	1.5	2.0	2.0	2.0	2.0-2.5	2.5-3.0
King-LT	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0-2.5	2.5-3.0
ETI NOTE	**** NO ETI unless unable to ventilate ----- ETCO2 Mandatory ----- NO ETI unless unable to ventilate ----- ETCO2 Mandatory ****								
ET Tube	2-2.5 (cuffed)	3 (cuffed)	3-3.5 (cuffed)	3.5 (cuffed)	3.5-4 (cuffed)	4.5-5 (cuffed)	5 (cuffed)	5.5 (cuffed)	6 (cuffed)
ET Depth	10-11 cm	11.5 cm	12-12.5 cm	13 cm	13-14 cm	15 cm	16-17 cm	18 cm	19-19.5 cm

GRAY

3-5 kilograms *(6-12 pounds)* / 0-2 Months
CARDIAC RESUSCITATION

Normal Vitals: HR: 100-180, RR: 30-60, Systolic BP: 60-100 mmHg, BG > 60 mg/dl

Resuscitation Medication - **(confirm concentration is as specified)**	**Dose**	**Volume**
Epinephrine (1 mg/10 mL prefilled syringe) IV/IO Q 3-5 min for arrest/bradycardia[1]	0.05 mg	**0.5 mL**
Amiodarone (150 mg/3 mL) IV/IO for shock resistant V-Fib (or wide-complex tachycardia*)	25 mg	**0.5 mL**
Lidocaine (100 mg/5 mL) IV/IO for shockable V-Fib (or wide-complex tachycardia*)	6 mg	**0.3 mL**
Atropine (1 mg/10 mL) IV/IO for bradycardia unresponsive to Epinephrine[1]	0.1 mg	**1 mL**
*Adenosine (6 mg/2 mL) IV/IO **1st Dose**. 0.1 mg/kg. For SVT (HR > 220)	0.5 mg	**0.2 mL**
*Adenosine (6 mg/2 mL) IV/IO **2nd Dose.** For SVT (HR > 220)	1 mg	**0.4 mL**
Epinephrine IV/IO (1 mg/10 mL) **Push Dose - Dilute 1 mL with 9 mL Normal Saline** = 10 mcg/1 mL	5 mcg	**0.5 mL (Diluted)**
Electrical Therapy	**Initial[2]**	**Repeat[2]**
Defibrillation (pediatric pads preferred) Adult pads may be used anterior/posterior.	**7 J**	**15 J**
*Synchronized Cardioversion[2] for unstable tachycardia	**5 J**	**10 J**

Equipment

OPA: **50 mm** NPA: **14 F** BVM: **Infant** Laryngoscope: **0-1 (straight)** iGel: **1.0-1.5** LMA Supreme: **1.0-1.5** King-LT: **0-1.0**

ET Tube: **2-2.5 (cuffed)** ET Depth: **10-11 cm** *No ETI unless unable to ventilate*

Fluid Bolus

Normal Saline **100 mL IV/IO** - **May repeat x 1 PRN**

***CONTACT MEDICAL CONTROL** **[1]CPR if HR < 60 after O2** **[2]May adjust to closest available energy setting**

3-5 kilograms *(6-12 pounds)* / 0-2 Months

CONDITIONS/MEDICATIONS

GRAY

Normal Vitals: HR: 100-180, RR: 30-60, Systolic BP: 60-100 mmHg, Blood Glucose > 60 mg/dl. **Special Precautions**: Be sure to keep the baby warm.

Development: Flexed position when prone. Inhibited grasp reflex.

Condition	Medication - (confirm concentration is as specified)	Dose	Volume
Wheezing	Albuterol Nebulized (2.5 mg/3 mL)	2.5 mg	**3 mL**
	Ipratropium Bromide Nebulized (0.5 mg/2.5 mL if wheezing)	500 mcg	**2.5 mL**
Anaphylaxis	Diphenhydramine IM/IV/IO (50 mg/mL)	5 mg	**0.1 mL**
	Methylprednisolone IV/IO/IM (125 mg/2 mL)	10 mg	**0.2 mL**
Anaphylaxis/ Profound Distress	Epinephrine IM (1 mg/mL) ***or*** 1 Pediatric Epinephrine Autoinjector IM (**Severe symptoms only**). Contact medical control, if possible.	0.1 mg	**0.1 mL IM**
Stridor	Racepinephrine 2.25% Nebulized (place 0.5 mL in 3 mL normal saline)	11.25 mg	**3.5 mL**
	Epinephrine (1 mg/mL) nebulized	5 mg	**5 mL**
Seizure	Midazolam IM (5 mg/mL)	0.5 mg	**0.1 mL IM**
Fever/Pain	Acetaminophen PO (160 mg/5 mL)	44.8 mg	**1.4 mL PO**
Hypoglycemia (<60 mg/dL)	D12.5% (6.25 g/50 mL) **12.5 mL of D50% diluted with 37.5 mL Normal Saline = D12.5% Give slow IV**	2.5 g	**20 mL (D12.5%)**
	Dextrose 10% (100mg/mL)	2.5 g	**25 mL**
	Glucagon IM (1 mg/mL)	0.5 mg	**0.5 mL IM**
Pain Management	Fentanyl IV/IN (100 mcg/2 mL)	5 mcg	**0.1 mL**
Narcotic OD	Naloxone IV/IM (2 mg/2 mL)	0.5 mg	**0.5 mL**
	Naloxone IN (2 mg/2 mL) **Divide dose equally between both nostrils**	0.5 mg	**0.5 mL IN**
Open Fracture	Cefazolin (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS **IV SLOWLY.**	150 mg	**1.5 mL IV Slowly**

6-7 kilograms *(13-16 pounds)* / 3-6 Months PINK

CARDIAC RESUSCITATION

Normal Vitals: HR: 100-180, RR: 30-45, Systolic BP: 65-100 mmHg, Blood Glucose > 60 mg/dl

Resuscitation Medication - (confirm concentration is as specified)	**Dose**	**Volume**
Epinephrine (1 mg/10 mL prefilled syringe) IV/IO Q 3-5 min for arrest/bradycardia[1]	0.1 mg	**1 mL**
Amiodarone (150 mg/3 mL) IV/IO for shock resistant V-Fib (or wide-complex tachycardia*)	35 mg	**0.7 mL**
Lidocaine (100 mg/5 mL) IV/IO for shockable V-Fib (or wide-complex tachycardia*)	8 mg	**0.4 mL**
Atropine (1 mg/10 mL) IV/IO for bradycardia unresponsive to Epinephrine[1]	0.15 mg	**1.5 mL**
*Adenosine (6 mg/2 mL) IV/IO **1st Dose.** For SVT (HR >220)	0.6 mg	**0.2 mL**
*Adenosine (6 mg/2 mL) IV/IO **2nd Dose.** For SVT (HR > 220)	1.2 mg	**0.4 mL**
Epinephrine IV/IO (1 mg/10 mL) **Push Dose - Dilute 1 mL with 9 mL Normal Saline** = 10 mcg/1 mL	7 mcg	**0.7 mL (Diluted)**
Electrical Therapy	**Initial[2]**	**Repeat[2]**
Defibrillation (pediatric pads preferred) Adult pads may be used anterior/posterior.	**15 J**	**30 J**
*Synchronized Cardioversion[2] for unstable tachycardia	**10 J**	**20 J**

Equipment

OPA: **50 mm** NPA: **14 F** BVM: **Infant** Laryngoscope: **1 (straight)** iGel: **1.5** LMA Supreme: **1.5** King-LT: **1.0**

ET Tube: **3 (cuffed)** ET Depth: **11.5 cm** *No ETI unless unable to ventilate*

Fluid Bolus

Normal Saline **130 mL IV/IO** - **May repeat x 1 PRN**

***CONTACT MEDICAL CONTROL** [1]**CPR if HR < 60 after O2** [2]**May adjust to closest available energy setting**

6-7 kilograms *(13-16 pounds)* / 3-6 Months

CONDITIONS/MEDICATIONS

PINK

Normal Vitals: HR: 100-180, RR: 30-45, Systolic BP: 65-100 mmHg, Blood Glucose > 60 mg/dl. **Special Precautions**: Be sure to keep the baby warm.

Development: Rolls from front to back, back to side. Carries object to mouth.

Condition	Medication - (confirm concentration is as specified)	Dose	Volume
Wheezing	Albuterol Nebulized (2.5 mg/3 mL)	2.5 mg	**3 mL**
	Ipratropium Bromide Nebulized (0.5 mg/2.5 mL if wheezing)	500 mcg	**2.5 mL**
Anaphylaxis	Diphenhydramine IM/IV/IO (50 mg/mL)	10 mg	**0.2 mL**
	Methylprednisolone IV/IO/IM (125 mg/2mL)	12.5 mg	**0.2 mL**
Anaphylaxis/ Profound Distress	Epinephrine IM (1 mg/mL) ***or*** 1 Pediatric Epinephrine Autoinjector IM (**Severe symptoms only**) Contact medical control, if possible.	0.1 mg	**0.1 mL**
Stridor	Racepinephrine 2.25% Nebulized (place 0.5 mL in 3 mL normal saline)	11.25 mg	**3.5 mL**
	Epinephrine (1 mg/mL) nebulized	5 mg	**5 mL**
Seizure	Midazolam IM (5 mg/mL)	1 mg	**0.2 mL**
Fever/Pain	Acetaminophen PO (160 mg/5 mL)	96 mg	**3 mL PO**
Hypoglycemia (<60 mg/dL)	D25% (12.5 g/50 mL) **25 mL of D50% diluted with 25 mL of Normal Saline = D25% Give Slow IV**	3.25 g	**13 mL (D25%)**
	Dextrose 10% (100mg/mL)	3.3 g	**33 mL (D10%)**
	Glucagon IM (1 mg/mL)	0.5 mg	**0.5 mL IM**
Pain Management	Fentanyl IV (100 mcg/2 mL)	10 mcg	**0.2 mL**
Narcotic OD	Naloxone IV/IM (2 mg/2 mL)	0.7 mg	**0.7 mL**
	Naloxone IN (2 mg/2 mL) **Divide dose equally between both nostrils**	1 mg	**1 mL IN**
Open Fracture	Cefazolin (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS **IV SLOWLY.**	200 mg	**2 mL IV SLOWLY**
	Ceftriaxone (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	300 mg	**3 mL**

8-9 kilograms *(17-20 pounds)* / 7-10 Months

CARDIAC RESUSCITATION

RED

Normal Vitals: HR: 100-180, RR: 25-35, Systolic BP: 70-110 mmHg, Blood Glucose > 60 mg/dl

Resuscitation Medication - (confirm concentration is as specified)	**Dose**	**Volume**
Epinephrine (1 mg/10 mL prefilled syringe) IV/IO Q 3-5 min for arrest/bradycardia[1]	0.1 mg	**1 mL**
Amiodarone (150 mg/3 mL) IV/IO for shock resistant V-Fib (or wide-complex tachycardia*)	50 mg	**1 mL**
Lidocaine (100 mg/5 mL) IV/IO for shockable V-Fib (or wide-complex tachycardia*)	10 mg	**0.5 mL**
Atropine (1 mg/10 mL) IV/IO for bradycardia unresponsive to Epinephrine[1]	0.2 mg	**2 mL**
*Adenosine (6 mg/2 mL) IV/IO **1st Dose.** For SVT (HR > 220)	0.9	**0.3 mL**
*Adenosine (6 mg/2 mL) IV/IO **2nd Dose.** For SVT (HR > 220)	1.8	**0.6 mL**
Epinephrine IV/IO (1 mg/10 mL) **Push Dose - Dilute 1 mL with 9 mL Normal Saline** = 10 mcg/1 mL	9 mcg	**0.9 mL (Diluted)**
Electrical Therapy	**Initial[2]**	**Repeat[2]**
Defibrillation (pediatric pads preferred) Adult pads may be used anterior/posterior.	**20 J**	**50 J**
*Synchronized Cardioversion[2] for unstable tachycardia	**10 J**	**20 J**

Equipment

OPA: **50 mm** NPA: **14 F** BVM: **Infant** Laryngoscope: **1 (straight)** iGel: **1.5** LMA Supreme: **1.5** King-LT: **1.0**

ET Tube: **3-3.5 (cuffed)** ET Depth: **12-12.5 cm** *No ETI unless unable to ventilate*

Fluid Bolus

Normal Saline **170 mL IV/IO** - **May repeat x 1 PRN**

***CONTACT MEDICAL CONTROL** **[1]CPR if HR < 60 after O2** **[2]May adjust to closest available energy setting**

8-9 kilograms *(17-20 pounds)* / 7-10 Months

CONDITIONS/MEDICATIONS

RED

Normal Vitals: HR 100-180, RR: 25-35, Systolic BP: 70-110 mmHg, Blood Glucose > 60 mg/dl. **Special Precautions**: Infants must be kept warm.

Development: Clear preference for caregiver with stranger anxiety**.** Sits steady without support.

Condition	Medication - (confirm concentration is as specified)	Dose	Volume
Wheezing	Albuterol Nebulized (2.5 mg/3 mL)	2.5 mg	**3 mL**
	Ipratropium Bromide Nebulized (0.5 mg/2.5 mL if wheezing)	500 mcg	**2.5 mL**
Anaphylaxis	Diphenhydramine IM/IV/IO (50 mg/mL)	10 mg	**0.2 mL**
	Methylpredinsolone IV/IO/IM (125 mg/2 mL)	12.5 mg	**0.2 mL**
Analphylaxis/ Profound Distress	Epinephrine IM (1 mg/mL) ***or*** 1 Pediatric Epinephrine Autoinjector IM (**Severe symptoms only**). Contact Medical Control, if possible.	0.1 mg	**0.1 mL IM**
Stridor	Racepinephrine 2.25% Nebulized (place 0.5 mL in 3 mL normal saline)	11.25 mg	**3.5 mL**
	Epinephrine (1 mg/mL) nebulized	5 mg	**5 mL**
Seizure	Midazolam IM (5mg/mL) **Give first if no IV**	1 mg	**0.2 mL IM**
	Midazolam IV (5mg/mL)	0.5 mg	**0.1 mL**
Fever/Pain	Acetaminophen PO (160 mg/5 mL)	128 mg	**4 mL PO**
	Ibuprofen PO (100 mg/5 mL)	80 mg	**4 mL PO**
Hypoglycemia (<60 mg/dL)	D25% (12.5 g/50 mL) **25 mL of D50% diluted with 25 mL of Normal Saline = D25% Give Slow IV**	4.25 g	**17 mL (D25%)**
	Dextrose 10% (100mg/mL)	4.3 g	**43mL**
	Glucagon IM (1 mg/mL)	0.5 mg	**0.5 mL IM**
Pain Control	Fentanyl IV/IN (100 mcg/2 mL)	10 mcg	**0.2 mL**
Narcotic OD	Naloxone IV/IM (2 mg/2 mL)	0.9 mg	**0.9 mL**
	Naloxone IN (2 mg/2 mL) **Divide dose equally between both nostrils**	1 mg	**1 mL IN**
Open Fracture	Cefazolin (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS IV **SLOWLY.**	250 mg	**2.5 mL IV SLOWLY**
	Ceftriaxone (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	400 mg	**4 mL**

10-11 kilograms *(21-25 pounds)* /11-18 Months PURPLE

CARDIAC RESUSCITATION

Normal Vitals: HR: 80-160, RR: 20-30, Systolic BP: 72-110 mmHg, Blood Glucose > 60 mg/dl

Resuscitation Medication - (confirm concentration is as specified)	**Dose**	**Volume**
Epinephrine (1 mg/10 mL prefilled syringe) IV/IO Q 3-5 min for arrest/bradycardia[1]	0.1 mg	**1 mL**
Amiodarone (150 mg/3 mL) IV/IO for shock resistant V-Fib (or wide-complex tachycardia*)	50 mg	**1 mL**
Lidocaine (100 mg/5 mL) IV/IO for shockable V-Fib (or wide-complex tachycardia*)	10 mg	**0.5 mL**
Atropine (1 mg/10 mL) IV/IO for bradycardia unresponsive to Epinephrine[1]	0.2 mg	**2 mL**
*Adenosine (6 mg/2 mL) IV/IO **1st Dose.** For SVT (HR >180)	1.2 mg	**0.4 mL**
*Adenosine (6 mg/2 mL) IV/IO **2nd Dose.** For SVT (HR > 180)	2 mg	**0.7 mL**
Epinephrine IV/IO (1 mg/10 mL) **Push Dose - Dilute 1 mL with 9 mL Normal Saline** = 10 mcg/1 mL	10 mcg	**1 mL (Diluted)**
Electrical Therapy	**Initial[2]**	**Repeat[2]**
Defibrillation (pediatric pads preferred) Adult pads may be used anterior/posterior.	**20 J**	**50 J**
*Synchronized Cardioversion[2] for unstable tachycardia	**10 J**	**20 J**

Equipment

OPA: **60 mm** NPA: **18 F** BVM: **Child** Laryngoscope: **1 (straight)** iGel: **1.5-2.0** LMA Supreme: **1.5** King-LT: **1.0**

ET Tube: **3.5 (cuffed)** ET Depth: **13 cm** *No ETI unless unable to ventilate*

Fluid Bolus

Normal Saline **200 mL IV/IO** - **May repeat x 1 PRN**

***CONTACT MEDICAL CONTROL** **[1]CPR if HR < 60 after O2** **[2]May adjust to closest available energy setting**

10-11 kilograms *(21-25 pounds)* /11-18 Months

CONDITIONS/MEDICATIONS

PURPLE

Normal Vitals: HR: 80-160, RR: 20-30, Systolic BP: 72-110 mmHg, Blood Glucose > 60 mg/dl

Development: (12 mos) Able to cruise and beginning to walk. (15-18 mos) Uses cup well along with some spoon agility.

Condition	Medication - (confirm concentration is as specified)	Dose	Volume
Wheezing	Albuterol Nebulized (2.5 mg/3 mL)	2.5 mg	**3 mL**
	Ipratropium Bromide Nebulized (0.5 mg/2.5 mL if wheezing)	500 mcg	**2.5 mL**
Anaphylaxis	Diphenhydramine IM/IV/IO (50 mg/mL)	15 mg	**0.3 mL**
	Methylprednisolone IV/IO/IM (125 mg/2 mL)	18.8 mg	**0.3 mL**
Anaphylaxis/ Profound Distress	Epinephrine IM (1 mg/mL) ***or*** 1 Pediatric Epinephrine Autoinjector IM (**Severe symptoms only**)	0.1 mg	**0.1 mL IM**
Stridor	Racepinephrine 2.25% Nebulized (place 0.5 mL in 3 mL normal saline)	11.25 mg	**3.5 mL**
	Epinephrine (1 mg/mL) nebulized	5 mg	**5 mL**
Seizure	Midazolam IM (5 mg/mL) **Give first if no IV**	1 mg	**0.2 mL IM**
	Midazolam IV (5 mg/mL)	0.5 mg	**0.1 mL**
Fever/Pain	Acetaminophen PO (160 mg/5 mL)	160 mg	**5 mL PO**
	Ibuprofen PO (100 mg/5 mL)	100 mg	**5 mL PO**
Hypoglycemia (<60 mg/dL)	D25% (12.5 g/50 mL) **25 mL of D50% diluted with 25 mL of Normal Saline = D25% Give Slow IV**	5.0 g	**20 mL (D25%)**
	Dextrose 10% (100mg/mL)	5.0 g	**50 mL**
	Glucagon IM (1 mg/mL)	0.5 mg	**0.5 mL IM**
Pain Management	Fentanyl IV/IO/IN (100 mcg/2 mL) **(For IN, divide dose between two nostrils)**	10 mcg	**0.2 mL**
	Ketamine IN (100 mg/1 mL)	10 mg	**0.1 mL IN**
Narcotic OD	Naloxone IV/IM (2 mg/2 mL)	1 mg	**1 mL**
	Naloxone IN (2 mg/ 2mL) **Divide dose equally between both nostrils**	1 mg	**1 mL IN**
Open Fracture	Cefazolin (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS **IV SLOWLY.**	300 mg	**3 mL IV SLOWLY**
	Ceftriaxone (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	500 mg	**5 mL**

12-14 kilograms *(26-31 pounds)* /19-35 Months **YELLOW**

CARDIAC RESUSCITATION

Normal Vitals: HR: 80-130, RR: 20-30, Systolic BP: 74-110 mmHg, Blood Glucose > 60 mg/dl

Resuscitation Medication - **(confirm concentration is as specified)**	**Dose**	**Volume**
Epinephrine (1 mg/10 mL prefilled syringe) IV/IO Q 3-5 min for arrest/bradycardia[1]	0.15 mg	**1.5 mL**
Amiodarone (150 mg/3 mL) IV/IO for shock resistant V-Fib (or wide-complex tachycardia*)	75 mg	**1.5 mL**
Lidocaine (100 mg/5 mL) IV/IO for shockable V-Fib (or wide-complex tachycardia*)	14 mg	**0.7 mL**
Atropine (1 mg/10 mL) IV/IO for bradycardia unresponsive to Epinephrine[1]	0.25 mg	**2.5 mL**
*Adenosine (6 mg/2 mL) IV/IO **1st Dose.** For SVT (HR > 180)	1.5 mg	**0.5 mL**
*Adenosine (6 mg/2 mL) IV/IO **2nd Dose.** For SVT (HR > 180)	3 mg	**1 mL**
Epinephrine IV/IO (1 mg/10 mL) **Push Dose - Dilute 1 mL with 9 mL Normal Saline** = 10 mcg/1 mL	10 mcg	**1 mL (Diluted)**
Electrical Therapy	**Initial[2]**	**Repeat[2]**
Defibrillation (pediatric pads preferred) Adult pads may be used anterior/posterior.	**30 J**	**50 J**
*Synchronized Cardioversion[2] for unstable tachycardia	**15 J**	**30 J**

Equipment

OPA: **60 mm** NPA: **20 F** BVM: **Child** Laryngoscope: **2 (straight/curved)** iGel: **2.0** LMA Supreme: **2.0** King-LT: **2.0**

ET Tube: **3.5-4 (cuffed)** ET Depth: **13-14 cm** *No ETI unless unable to ventilate*

Fluid Bolus

Normal Saline **250 mL IV/IO** - **May repeat x 1 PRN**

***CONTACT MEDICAL CONTROL** **[1]CPR if HR < 60 after O2** **[2]May adjust to closest available energy setting**

12-14 kilograms *(26-31 pounds)* /19-35 Months

CONDITIONS/MEDICATIONS

YELLOW

Normal Vitals: HR: 80-130, RR: 20-30, Systolic BP: 74-110 mmHg, Blood Glucose > 60 mg/dl

Development: Able to manipulate small objects, turn door knobs and unscrew lids.

Condition	Medication - (confirm concentration is as specified)	Dose	Volume
Wheezing	Albuterol Nebulized (2.5 mg/3 mL)	2.5 mg	**3 mL**
	Ipratropium Bromide Nebulized (0.5 mg/2.5 mL if wheezing)	500 mcg	**2.5 mL**
Anaphylaxis	Diphenhydramine IM/IV/IO (50 mg/mL)	15 mg	**0.3**
	Methylprednisolone IV/IO/IM (125 mg/2mL)	18.75 mg	**0.3 mL**
Anaphylaxis/ Profound Distress	Epinephrine (1 mg/mL) ***or*** 1 Pediatric Epinephrine Autoinjector IM (**Severe symptoms only**)	0.2 mg	**0.2 mL**
Stridor	Racepinephrine 2.25% Nebulized (place 0.5 mL in 3 mL normal saline)	11.25 mg	**3.5 mL**
	Epinephrine (1 mg/mL) nebulized	5 mg	**5 mL**
Seizure	Midazolam IM (5 mg/mL) **Give first if no IV**	1.5 mg	**0.3 mL IM**
	Midazolam IV (5 mg/mL)	1 mg	**0.2 mL**
Fever/Pain	Acetaminophen PO (160 mg/5 mL)	192 mg	**6 mL PO**
	Ibuprofen (100 mg/5 mL)	120 mg	**6 mL PO**
Hypoglycemia (<60 mg/dL)	D25% (12.5 g/50 mL) **25 mL of D50% diluted with 25 mL of Normal Saline = D25% Give Slow IV**	6.25 g	**25 mL (D25%)**
	Dextrose 10% (100mg/mL)	6.25 g	**62.5 mL**
	Glucagon IM (1 mg/mL)	0.5 mg	**0.5 mL IM**
Pain Management	Fentanyl IV/IN (100 mcg/2 mL) (For IN, divide dose between two nostrils)	10 mcg	**0.2 mL**
	Ketamine IN (100 mg/1 mL)	10 mg	**0.1 mL**
	Morphine IV/IM/IO (10 mg/mL)	2 mg	**0.2 mL**
Narcotic OD	Naloxone IV/IM (2 mg/2 mL)	1.5 mg	**1.5 mL**
	Naloxone IN (2 mg/2 mL) **Divide dose equally between both nostrils**	1.5 mg	**1.5 mL IN**
Open Fracture	Cefazolin (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	400 mg	**4 mL**
	Ceftriaxone (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	650 mg	**6.5 mL**

15-18 kilograms *(32-40 pounds)* / 3-4 Years

CARDIAC RESUSCITATION

WHITE

Normal Vitals: HR: 80-120, RR: 20-30, Systolic BP: 76-110 mmHg, Blood Glucose > 60 mg/dl

Resuscitation Medication - (confirm concentration is as specified)	**Dose**	**Volume**
Epinephrine (1 mg/10 mL prefilled syringe) IV/IO Q 3-5 min for arrest/bradycardia[1]	0.2 mg	**2 mL**
Amiodarone (150 mg/3 mL) IV/IO for shock resistant V-Fib (or wide-complex tachycardia*)	100 mg	**2 mL**
Lidocaine (100 mg/5 mL) IV/IO for shockable V-Fib (or wide-complex tachycardia*)	20 mg	**1 mL**
Atropine (1 mg/10 mL) IV/IO for bradycardia unresponsive to Epinephrine[1]	0.35 mg	**3.5 mL**
*Adenosine (6 mg/2 mL) IV/IO **1st Dose.**	1.8 mg	**0.6 mL**
*Adenosine (6 mg/2 mL) IV/IO **2nd Dose.**	3.6 mg	**1.2 mL**
Epinephrine IV/IO (1 mg/10 mL) **Push Dose - Dilute 1 mL with 9 mL Normal Saline** = 10 mcg/1 mL	10 mcg	**1 mL (Diluted)**
Electrical Therapy	**Initial[2]**	**Repeat[2]**
Defibrillation (pediatric pads preferred) Adult pads may be used anterior/posterior.	**50 J**	**70 J**
*Synchronized Cardioversion[2] for unstable tachycardia	**20 J**	**40 J**

Equipment

OPA: **60 mm** NPA: **22 F** BVM: **Child** Laryngoscope: **2 (straight/curved)** iGel: **2.0** LMA Supreme: **2.0** King-LT: **2.0**

ET Tube: **4.5-5.0 (cuffed)** ET Depth: **15 cm** *No ETI unless unable to ventilate*

Fluid Bolus

Normal Saline **300 mL IV/IO** - **May repeat x 1 PRN**

***CONTACT MEDICAL CONTROL** **[1]CPR if HR < 60 after O2** **[2]May adjust to closest available energy setting**

15-18 kilograms *(32-40 pounds)* / 3-4 Years

CONDITIONS/MEDICATIONS

WHITE

Normal Vitals: HR: 80-120, RR: 20-30, Systolic BP: 76-110 mmHg, Blood Glucose > 60 mg/dl
Development: Speaks in sentences of 5 to 6 words. Draws circles and squares.

Condition	Medication - (confirm concentration is as specified)	Dose	Volume
Wheezing	Albuterol Nebulized (2.5 mg/3 mL)	2.5 mg	**3 mL**
	Ipratropium Bromide Nebulized (0.5 mg/2.5 mL if wheezing)	500 mcg	**2.5 mL**
Anaphylaxis	Diphenhydramine IM/IV/IO (50 mg/mL)	20 mg	**0.4 mL**
	Methylprednisolone IV/IO/IM (125 mg/2mL)	31 mg	**0.5 mL**
Anaphylaxis/ Profound Distress	Epinephrine IM (1 mg/mL) ***or*** 1 Pediatric Epinephrine Autoinjector IM (**Severe symptoms only**)	0.2 mg	**0.2 mL**
Stridor	Racepinephrine 2.25% Nebulized (place 0.5 mL in 3 mL normal saline)	11.25 mg	**3.5 mL**
	Epinephrine (1 mg/mL) nebulized	5 mg	**5 mL**
Seizure	Midazolam IM (5 mg/mL) **Give first if no IV**	1.5 mg	**0.3 mL IM**
	Midazolam IV (5 mg/mL)	1 mg	**0.2 mL**
Fever/Pain	Acetaminophen PO (160 mg/5 mL)	224 mg	**7 mL PO**
	Ibuprofen PO (100 mg/5 mL)	150 mg	**7.5 mL PO**
Hypoglycemia (<60 mg/dL)	D25% (12.5 g/50 mL) **25 mL of D50% diluted with 25 mL of Normal Saline = D25% Give Slow IV**	8 g	**32 mL (D25%)**
	Dextrose 10% (100mg/mL)	8 g	**80 mL**
	Glucagon IM (1 mg/mL)	0.5 mg	**0.5 mL IM**
Pain Management	Fentanyl IV (100 mcg/2 mL)	15 mcg	**0.3 mL**
	Ketamine IN (100 mg/1 mL)	10 mg	**0.1 mL IN**
	Morphine IV/IM/IO (10 mg/mL)	2 mg	**0.2 mL**
Narcotic OD	Naloxone IV/IM (2 mg/2 mL)	1.8 mg	**1.8 mL**
	Naloxone IN (2 mg/2 mL) **Divide dose equally between both nostrils**	1.8 mg	**1.8 mL IN**
Open Fracture	Cefazolin (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	500 mg	**5 mL**
	Ceftriaxone (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	850 mg	**8.5 mL**

19-23 kilograms *(41-51 pounds)* / 5-6 Years

CARDIAC RESUSCITATION

BLUE

Normal Vitals: HR: 70-110, RR: 18-24, Systolic BP: 80-110 mmHg, Blood Glucose >60 mg/dl

Resuscitation Medication - **(confirm concentration is as specified)**	**Dose**	**Volume**
Epinephrine (1 mg/10 mL prefilled syringe) IV/IO Q 3-5 min for arrest/bradycardia[1]	0.2 mg	**2 mL**
Amiodarone (150 mg/3 mL) IV/IO for shock resistant V-Fib (or wide-complex tachycardia*)	100 mg	**2 mL**
Lidocaine (100 mg/5 mL) IV/IO for shockable V-Fib (or wide-complex tachycardia*)	20 mg	**1 mL**
Atropine (1 mg/10 mL) IV/IO for bradycardia unresponsive to Epinephrine[1]	0.4 mg	**4 mL**
*Adenosine (6 mg/2 mL) IV/IO **1st Dose. Follow with 10 mL Normal Saline flush. For SVT (HR > 180)**	2.1 mg	**0.7 mL**
*Adenosine (6 mg/2 mL) IV/IO **2nd Dose. Follow with 10 mL Normal Saline flush. For SVT (HR > 180)**	4.2 mg	**1.4 mL**
Epinephrine IV/IO (1 mg/10 mL) **Push Dose - Dilute 1 mL with 9 mL Normal Saline** = 10 mcg/1 mL	10 mcg	**1 mL (Diluted)**
Electrical Therapy	**Initial[2]**	**Repeat[2]**
Defibrillation (pediatric pads preferred) Adult pads may be used anterior/posterior.	**50 J**	**100 J**
*Synchronized Cardioversion[2] for unstable tachycardia	**20 J**	**50 J**

Equipment

OPA: **70 mm** NPA: **24 F** BVM: **Child** Laryngoscope: **2 (straight/curved)** iGel: **2.0** LMA Supreme: **2.0** King-LT: **2.0**
ET Tube: **5 (cuffed)** ET Depth: **16-17 cm** *No ETI unless unable to ventilate*

Fluid Bolus

Normal Saline **400 mL IV/IO** - **May repeat x 1 PRN**

***CONTACT MEDICAL CONTROL** **[1]CPR if HR < 60 after O2** **[2]May adjust to closest available energy setting**

19-23 kilograms *(41-51 pounds)* / 5-6 Years

CONDITIONS/MEDICATIONS

BLUE

Normal Vitals: HR: 70-110, RR: 18-24, Systolic BP 80-110 mmHg, Blood Glucose > 60 mg/dl

Development: Able to tell a brief story with a complete sentence. Able to balance on one foot for a short period of time.

Condition	Medication - (confirm concentration is as specified)	Dose	Volume
Wheezing	Albuterol Nebulized (2.5 mg/3 mL)	2.5 mg	**3 mL**
	Ipratropium Bromide Nebulized (0.5 mg/2.5 mL if wheezing)	500 mcg	**2.5 mL**
Anaphylaxis	Diphenhydramine IM/IV/IO (50 mg/mL)	25 mg	**0.5 mg**
	Methylprednisolone IV/IO/IM (125 mg/2mL)	37.5 mg	**0.6 mL**
Anaphylaxis/ Profound Distress	Epinephrine IM (1 mg/mL) ***or*** 1 Pediatric Epinephrine Autoinjector IM (**Severe symptoms only**)	0.2 mg	**0.2 mL**
Stridor	Racepinephrine 2.25% Nebulized (place 0.5 mL in 3 mL normal saline)	11.25 mg	**3.5 mL**
	Epinephrine (1 mg/mL) nebulized	5 mg	**5 mL**
Seizure	Midazolam IM (5 mg/mL) **Give first if no IV**	2 mg	**0.4 mL IM**
	Midazolam IV (5 mg/mL)	1 mg	**0.2 mL**
Fever/Pain	Acetaminophen PO (160 mg/5 mL)	288 mg	**9 mL PO**
	Ibuprofen PO (100 mg/5 mL)	190 mg	**9.5 mL PO**
Hypoglycemia (<60 mg/dL)	D25% (12.5 g/50 mL) **25 mL of D50% diluted with 25 mL of Normal Saline = D25% Give Slow IV**	10 g	**40 mL (D25%)**
	Dextrose 10% (100mg/mL)	10 g	**100 mL**
	Glucagon IM (1 mg/mL)	1 mg	**1 mL IM**
Pain Management	Fentanyl IV/IN (100 mcg/2 mL) **For IN, divide dose equally between both nostrils**	20 mcg	**0.4 mL IV/IN**
	Ketamine IN (100 mg/1 mL)	20 mg	**0.2 mL IN**
	Ketorolac IV/IM (15 mg/1 mL)	10.5 mg	**0.7 mL IV/IM**
	Morphine IV/IM/IO (10 mg/mL)	2 mg	**0.2 mL**
Narcotic OD	Naloxone IV/IM (2 mg/2 mL)	2 mg	**2 mL**
	Naloxone IN (2 mg/2 mL) **Divide dose equally between both nostrils**	2 mg	**2 mL IN**
Open Fracture	Cefazolin (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	600 mg	**6 mL**
	Ceftriaxone (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	1 g	**10 mL**

24-29 kilograms *(52-64 pounds)* / 7-9 Years

CARDIAC RESUSCITATION

ORANGE

Normal Vitals: 70-110, RR: 18-22, Systolic BP: 80-110 mmHg, Blood Glucose > 60 mg/dl

Resuscitation Medications - (confirm concentration is as specified)	**Dose**	**Volume**
Epinephrine (1 mg/10 mL prefilled syringe) IV/IO Q 3-5 min for arrest/bradycardia[1]	0.3 mg	**3 mL**
Amiodarone (150 mg/3 mL) IV/IO for shock resistant V-Fib (or wide-complex tachycardia*)	125 mg	**2.5 mL**
Lidocaine (100 mg/5 mL) IV/IO for shockable V-Fib (or wide-complex tachycardia*)	30 mg	**1.5 mL**
Atropine (1 mg/10 mL) IV/IO for bradycardia unresponsive to Epinephrine[1]	0.5 mg	**5 mL**
*Adenosine (6 mg/2 mL) IV/IO **1st Dose.** For SVT (HR > 180)	3 mg	**1 mL**
*Adenosine (6 mg/2 mL) IV/IO **2nd Dose**. For SVT (HR > 180)	6 mg	**2 mL**
Epinephrine IV/IO (1 mg/10 mL) **Push Dose - Dilute 1 mL with 9 mL Normal Saline** = 10 mcg/1 mL	10 mcg	**1 mL (Diluted) IV/IO**
Electrical Therapy	**Initial[2]**	**Repeat[2]**
Defibrillation (pediatric pads preffered) Adult pads may be used anterior/posterior.	**50 J**	**100 J**
*Synchronized Cardioversion[2] for unstable tachycardia	**30 J**	**70 J**

Equipment

OPA: **80 mm** NPA: **26 F** BVM: **Child** Laryngoscope: **2-3 (straight/curved)** iGel: **2.0-2.5** LMA Supreme: **2.0-2.5** King-LT: **2.0-2.5**
ET Tube: **5.5 (cuffed)** ET Depth: **18 cm** *No ETI unless unable to ventilate*

Fluid Bolus

Normal Saline **500 mL IV/IO** - **May repeat x 1**

***CONTACT MEDICAL CONTROL** **[1]CPR if HR < 60 after O2** **[2]May adjust to closest available energy setting**

24-29 kilograms *(52-64 pounds)* / 7-9 Years

ORANGE

CONDITIONS/MEDICATIONS

Normal Vitals: HR: 70-110, RR: 18-22, Systolic BP: 80-110 mmHg, Blood Glucose > 60 mg/dl

Condition	Medication - (confirm concentration is as specified)	Dose	Volume
Wheezing	Albuterol Nebulized (2.5 mg/3 mL)	2.5 mg	**3 mL**
	Ipratropium Bromide Nebulized (0.5 mg/2.5 mL if wheezing)	500 mcg	**2.5 mL**
Anaphylaxis	Diphenhydramine IM/IV/IO (50 mg/mL)	30 mg	**0.6 mL**
	Prednisone PO (50 mg tablet)	50 mg	**1 tablet PO**
	Methylprednisolone IV/IO/IM (125 mg/2mL)	50 mg	**0.8 mL**
Anaphylaxis/ Profound Distress	Epinephrine IM (1 mg/mL) ***or*** 1 Pediatric Epinephrine Autoinjector IM (**Severe symptoms only**)	0.2 mg	**0.2 mL**
Stridor	Racepinephrine 2.25% Nebulized (place 0.5 mL in 3 mL normal saline)	11.25 mg	**3.5 mL**
	Epinephrine (1 mg/mL) nebulized	5 mg	**5 mL**
Seizure	Midazolam IM (5 mg/mL) **Give first if no IV**	2.5 mg	**0.5 mL IM**
	Midazolam IV (5 mg/mL)	1.5 mg	**0.3 mL**
Fever/Pain	Acetaminophen PO (160 mg/5 mL)	384 mg	**12 mL PO**
	Ibuprofen PO (100 mg/5 mL)	260 mg	**13 mL PO**
Hypoglycemia (<60 mg/dL)	D50% (25 g/50 mL) **Give Slow IV**	12.5 g	**25 mL (D50%)**
	Dextrose 10% (100mg/mL)	12.5 g	**125 mL**
	Glucagon IM (1 mg/mL)	1 mg	**1 mL IM**
Pain Management	Fentanyl IV/IN (100 mcg/2 mL) For IN, divide dose equally between both nostrils	25 mcg	**0.5 mL**
	Ketamine IN (100 mg/1 mL) Divide dose equally between both nostrils	30 mg	**0.3 mL**
	Ketorolac IV/IM (15 mg/1 mL)	15 mg	**1 mL IV/IM**
	Morphine IV/IO (10 mg/mL)	3 mg	**0.3 mL**
Narcotic OD	Naloxone IV/IM (2 mg/2 mL)	2 mg	**2 mL**
	Naloxone IN (2 mg/2 mL) **Divide dose equally between both nostrils**	2 mg	**2 mL IN**
Open Fracture	Cefazolin (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	800 mg	**8 mL**
	Cefazolin (1000 mg/10 mL) Mix as above. **Add specific dose to 100 mL NS.**	800 mg	**8 mL in 100 mL NS**
	Ceftriaxone (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	1.3 g	**13 mL**
	Ceftriaxone (1000 mg/10 mL) Mix as above. **Add specific dose to 100 mL NS.**	1.3 g	**13 mL in 100 mL NS**

30-36 kilograms *(65-79 pounds)* / 10-14 Years

CARDIAC RESUSCITATION

GREEN

Normal Vitals: HR: 70-110, RR: 16-20, Systolic BP: 90-120 mmHg, Blood Glucose > 60 mg/dl

Resuscitation Medications - **(confirm concentration is as specified)**	**Dose**	**Volume**
Epinephrine (1 mg/10 mL prefilled syringe) IV/IO Q 3-5 min for arrest/bradycardia[1]	0.3 mg	**3 mL**
Amiodarone (150 mg/3 mL) IV/IO for shock resistant V-Fib (or wide-complex tachycardia*)	150 mg	**3 mL**
Lidocaine (100 mg/5 mL) IV/IO for shockable V-Fib (or wide-complex tachycardia*)	30 mg	**1.5 mL**
Atropine (1 mg/10 mL) IV/IO for bradycardia unresponsive to Epinephrine[1]	0.5 mg	**5 mL**
*Adenosine (6 mg/2 mL) IV/IO **1st Dose.** For SVT (HR > 180)	4 mg	**1.3 mL**
*Adenosine (6 mg/2 mL) IV/IO **2nd Dose**. For SVT (HR > 180)	8 mg	**2.6 mL**
Epinephrine IV/IO (1 mg/10 mL) **Push Dose - Dilute 1 mL with 9 mL Normal Saline** = 10 mcg/1 mL	10 mcg	**1 mL (Diluted) IV/IO**
Electrical Therapy	**Initial[2]**	**Repeat[2]**
Defibrillation (pediatric pads preferred) Adult pads may be used anterior/posterior.	**70 J**	**150 J**
*Synchronized Cardioversion[2] for unstable tachycardia	**30 J**	**70-75 J**

Equipment

OPA: **80 mm** NPA: **30 F** BVM: **Adult** Laryngoscope: **2-3 (straight/curved)** iGel: **2.5-3.0** LMA Supreme: **2.5-3.0** King-LT: **2.5-3.0**
ET Tube: **6 (cuffed)** ET Depth: **19-19.5 cm** *No ETI unless unable to ventilate*

Fluid Bolus

Normal Saline **700 mL IV/IO** - **May repeat x 1 PRN**

***CONTACT MEDICAL CONTROL** **[1]CPR if HR < 60 after O2** **[2]May adjust to closest available energy setting**

30-36 kilograms *(65-79 pounds)* / 10-14 Years

CONDITIONS/MEDICATIONS

GREEN

Normal Vitals: HR: 70-110, RR: 16-20, Systolic BP: 90-120 mmHg, Blood Glucose > 60 mg/dl

Condition	Medication - (confirm concentration is as specified)	Dose	Volume
Wheezing	Albuterol Nebulized (2.5 mg/3 mL)	2.5 mg	**3 mL**
	Ipratropium Bromide Nebulized (0.5 mg/2.5 mL if wheezing)	500 mcg	**2.5 mL**
Anaphylaxis	Diphenhydramine IM/IV/IO (50 mg/mL)	40 mg	**0.8 mL**
	Prednisone PO (50 mg tablet)	50 mg	**1 tablet PO**
	Methylprednisolone IV/IO/IM (125 mg/2mL)	62.7 mg	**1 mL**
Anaphylaxis/ Profound Distress	Epinephrine IM (1 mg/mL) ***or*** 1 Epinephrine Authoinjector IM (**Severe symptoms only**)	0.3 mg	**0.3 mL**
Stridor	Racepinephrine 2.25% Nebulized (place 0.5 mL in 3 mL normal saline)	11.25 mg	**3.5 mL**
	Epinephrine (1 mg/mL) nebulized	5 mg	**5 mL**
Seizure	Midazolam IM (5 mg/mL) **Give first if no IV**	3 mg	**0.6 mL IM**
	Midazolam IV (5 mg/mL)	1.5 mg	**0.3 mL**
Fever/Pain	Acetaminophen PO (160 mg/5 mL)	480 mg	**15 mL**
	Ibuprofen PO (100 mg/5 mL)	300 mg	**15 mL**
Hypoglycemia (<60 mg/dL)	D50% (25 g/50 mL) **Give Slow IV**	15 g	**30 mL (D50%)**
	Dextrose 10% (100mg/mL)	15 g	**150 mL**
	Glucagon IM (1 mg/mL)	1 mg	**1 mL IM**
Pain Management	Fentanyl IV/IN (100 mcg/2 mL) For IN, divide dose equally between both nostrils	30 mcg	**0.6**
	Ketamine IV/IO (100 mg/1 mL) **Mix dose in 100 mL NS, administer over 10 minutes**	10 mg	**0.1 mL in 100 mL NS**
	Ketamine IN (100 mg/1 mL) Divide dose equally between both nostrils	30 mg	**0.3 mL**
	Ketorolac IV/IM (15 mg/1 mL)	15 mg	**1 mL IV/IM**
	Morphine IV/IO (10 mg/mL)	4 mg	**0.4 mL**
Narcotic OD	Naloxone IV/IM/IN (2 mg/2 mL) **For IN, divide dose equally between both nostrils**	2 mg	**2 mL**
Open Fracture	Cefazolin (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	1 g	**10 mL**
	Cefazolin (1000 mg/10 mL) Mix as above. **Add specific dose to 100 mL NS.**	1 g	**10 mL in 100 mL NS**
	Ceftriaxone (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	1.7 g	**17 mL**
	Ceftriaxone (1000 mg/10 mL) Mix as above. **Add specific dose to 100 mL NS.**	1.7 g	**17 mL in 100 mL NS**

>36 kilograms (> 80lbs) Adult >14 Years

CARDIAC RESUSCITATION

BLACK

Normal Vitals: HR: 60-100, RR: 12-20, Systolic BP: 100-140 mmHg, Blood Glucose > 60 mg/dl

Resuscitation Medications - (confirm concentation is as specified)	**Dose**	**Volume**
Epinephrine (1 mg/10 mL prefilled syringe) IV/IO Q 3-5 min **for arrest/bradycardia**	1 mg	**10 mL**
Amiodarone (150 mg/3 mL) IV/IO **for shock resistant V-Fib**	300 mg	**6 mL**
Lidocaine (100 mg/5 mL) IV/IO for shockable V-Fib (or wide-complex tachycardia)	100 mg	**5 mL**
Amiodarone (150 mg/3 mL) IV for stable wide-complex tachy or symptomatic irregular narrow tachy. **Over 10 minutes**	150 mg	**3 mL**
Diltiazam (25 mg/5 mL) IV for symptomatic irregular narrow tachycardia.	20 mg	**4 mL**
Verapamil (10 mg/4 mL) IV for symptomatic irregular narrow tachycardia.	5 mg	**2 mL**
Atropine (1 mg/10 mL) IV/IO **for bradycardia, every 3-5 min to a max of 3 mg**	1 mg	**10 mL**
Adenosine (6 mg/2 mL) IV/IO **1st Dose.** For SVT (HR > 150)	6 mg	**2 mL**
Adenosine (6 mg/2 mL) IV/IO **2nd Dose.** For SVT (HR > 150)	12 mg	**4 mL**
Epinephrine IV/IO (1 mg/10 mL) **Push Dose - Dilute 1 mL with 9 mL Normal Saline** = 10 mcg/1 mL	10 -20 mcg	**1 - 2 mL (Diluted)**
Electrical Therapy	**Initial[1]**	**Repeat[1]**
V-Fib or Pulseless V-Tach: **Defibrillation**	**120-200 J**	**Maximum**
Unstable, wide irregular tachycardia. Heart rate > 150 bpm: **Defibrillation**	**120-200 J**	**Maximum**
Unstable, narrow complex tachycardia. Heart rate > 150 bpm: **Synchronized Cardioversion**	**100 J**	**≥ 100 J[2]**
Narcotic Overdose	**Dose**	**Volume**
Naloxone IV/IM (2 mg/2 mL)	2 mg	**2 mL**
Naloxone IN (2 mg/2 mL) **Divide dose equally between both nostrils**	2 mg	**2 mL IN**
Fluid Bolus		
Normal Saline **1000 mL IV/IO** - **May repeat one time, PRN**		

[1]Based on biphasic, use manufacturer's recommended energy

[2]If no response to first shock, increase energy in a stepwise manner by 20-50 J

>36 kilograms (> 80lbs) Adult >14 Years (Black)

CONDITIONS/MEDICATIONS

BLACK

Normal Vitals: HR: 60-100, RR: 12-20, Systolic BP: 100-140 mmHg, Blood Glucose > 60 mg/dl

Condition	Medication - (confirm concentration is as specified)	Dose	Volume
Wheezing	Albuterol Nebulized (2.5 mg/3 mL)	2.5 mg	**3 mL**
	Ipratropium Bromide Nebulized (0.5 mg/2.5 mL if wheezing)	500 mcg	**2.5 mL**
Anaphylaxis	Diphenhydramine IM/IV/IO (50 mg/mL)	50 mg	**1 mL**
	Prednisone PO (50 mg tablet)	50 mg	**1 tablet PO**
	Methylprednisolone IV/IO/IM (125 mg/2mL)	125 mg	**2 mL**
Anaphylaxis/ Profound Distress	Epinephrine IM (1 mg/mL) ***or*** 1 Epinephrine Autoinjector IM (**Severe symptoms only**)	0.3 mg	**0.3 mL**
Seizure (Sedation)	Midazolam IM (5 mg/mL) **Give first if no IV**	10 mg	**2 mL IM**
	Midazolam IV (5 mg/mL)	5 mg	**1 mL**
Fever/Pain	Ibuprofen PO (100 mg/5 mL)	600 mg	**30 mL PO**
	Acetaminophen PO (160 mg/5 mL) 15 mg/kg, max dose 1 g	800 mg	**25 mL PO**
Hypoglycemia (<60 mg/dL)	D50% (25 g/50 mL) **Give Slow IV**	25 g	**50 mL (D50%)**
	D10% (25 g/250 mL)	25 g	**250 mL**
	Glucagon IM (1 mg/mL)	1 mg	**1 mL IM**
Pain Management	Fentanyl IV (100 mcg/2 mL) **For IN, divide dose equally between nostrils**	50-100 mcg	**1-2 mL**
	Ketamine IV/IO (500mg/5 mL) **Mix dose in 100 mL NS, administer over 10 minutes**	10-20 mg	**0.1-0.2 mL in 100 mL NS**
	Ketamine IN (500 mg/5 mL) Divide dose equally between both nostrils	30-50 mg	**0.3-0.5 mL**
	Ketorolac IV/IM (15 mg/ 1 mL)	15 mg	**1 mL IV/IM**
	Morphine IV/IO/IM (10 mg/mL)	4-5 mg	**0.4-0.5 mL**
Procedural Sedation	Midazolam (5 mg/mL) 1-5 mg titrated **SLOWLY**	1-5 mg	**0.2 - 1 mL**
	Diazepam (10 mg/2mL) 5-10 mg titrated **SLOWLY**	5-10 mg	**1 - 2 mL**
	Fentanyl IV (100 mcg/2 mL) 50-100 mcg titrated **SLOWLY**	50-100 mcg	**1 - 2 mL**
	Ketamine IV (500 mcg/5 mL) 1.5 mg/kg	75-150 mg	**0.75-1.5 mL**
Delirium w/Severe Agitation	Ketamine IM (500 mg/5 mL) 4 mg/kg, MAX dose 500 mg **FOR SEVERE AGITATION ONLY**	200-400 mg	**2-4 mL IM**
Open Fracture	Cefazolin (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	2 g	**20 mL**
	Cefazolin (1000 mg/10 mL) Mix as above. **Add specific dose to 100 mL NS.**	2 g	**20 mL in 100 mL NS**
	Ceftriaxone (1000 mg/10 mL) Mix 1 gm of medication per 10 mL NS. **Administer IV SLOWLY.**	2 g	**20 mL**
	Ceftriaxone (1000 mg/10 mL) Mix as above. **Add specific dose to 100 mL NS.**	2 g	**20 mL in 100 mL NS**

Nerve Agent/Organophosphate Antidotes/Countermeasures

Weight	Age	Duodote[1] Mod-Severe Sxs	Atropen[2] (1 mg) Mod-Severe Sxs	Atropine Dose (0.1 mg/kg) IM/IV/IO	Atropine Vial[2] (1 mg/mL)	Cardiac Atropine[2,3] (1 mg/10 mL)	Midazolam[4] (10 mg/2 mL) IM/IV/IO
3-5 kg (6-11 lbs)	0-2 months	1	1	0.4 mg	0.4 mL	4 mL	0.1 mL
6-7 kg (13-16 lbs)	3-6 months	1	1	0.7 mg	0.7 mL	7 mL	0.2 mL
8-9 kg (17-20 lbs)	7-10 months	1	1	0.9 mg	0.9 mL	9 mL	0.2 mL
10-11 (21-25 lbs)	11-18 months	1	1	1 mg	1 mL	10 mL	0.2 mL
12-14 kg (26-31 lbs)	19-35 months	1	2	1.3 mg	1.3 mL	13 mL	0.25 mL
15-18 kg (32-40 lbs)	3-4 years	1	2	1.6 mg	1.6 mL	16 mL	0.3 mL
19-23 kg (41-51)	5-6 years	1	2	2 mg	2 mL	20 mL	0.4 mL
24-29 kg (52-64)	7-9 years	2	3	2.6 mg	2.6 mL	26 mL	0.5 mL
30-36 kg (65-79 lbs)	10-14 years	2	3	3.3 mg	3.3 mL	33 mL	0.6 mL
Adult	>14 years	2 to 3	4 to 6	4 to 6 mg	4 to 6 mL	40-60 mL	2 mL

[1]Preferred initial autoinjector, [2]May Repeat atropine every 5 minutes until airway secretions decrease (6 mg maximum), [3]Not available in MEDDRUN, [4]Patients with severe symptoms should receive midazolam even if not obviously seizing

Cyanokit® Administration for Suspected Cyanide Poisoning (including serious smoke inhalation)

Broselow (Weight)	Age	Cyanokit® Dose[1] (~70 mg/ml +/-) IV/IO	Cyanokit® Volume to Administer[2] IV/IO
3-5 kg (6-11 lbs)	**0-2 months**	250 mg	**10 mL[3]**
6-7 kg (13-16 lbs)	**3-6 months**	500 mg	**20 mL[3]**
8-9 kg (17-20 lbs)	**7-10 months**	625 mg	**25 mL[3]**
10-11 (21-25 lbs)	**11-18 months**	750 mg	**30 mL[3]**
12-14 kg (26-31 lbs)	**19-35 months**	900 mg	**36 mL[3]**
15-18 kg (32-40 lbs)	**3-4 years**	1100 mg	**44 mL[3]**
19-23 kg (41-51)	**5-6 years**	1400 mg	**56 mL[3]**
24-29 kg (52-64)	**7-9 years**	1750 mg	**70 mL[3]**
30-36 kg (65-79 lbs)	**10-14 years**	2500 mg	**100 mL[4] (1/2 bottle)**
Adult	**>14 years**	5000 mg	**200 mL[4] (full bottle)**

[1]The safety and efficacy in pediatrics has not been established, [2]Administer slowly over 15 minutes.
[3]Push slowly over 15 minutes, [4]Infuse over 15 minutes

MDHHS Michigan Department of Health & Human Services | Bureau of Emergency Preparedness, EMS and Systems of Care

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If you have questions or comments about MI-MEDIC, contact: EMS@Michigan.Gov

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Call 1-833-34-STRONG or go to www.fst5.org