18. GO-TEAM ACTIVATION

a) PURPOSE

The University of Maryland Medical System, R Adams Cowley Shock Trauma Center (STC) maintains a deployable advanced surgical team (Go-Team) that includes an attending physician with surgical skills and an anesthetist capable of assisting EMS providers with the care of seriously injured patients when extrication times are anticipated to be more than 1 hour. On-scene incident commanders may request the Go-Team by contacting SYSCOM.

b) INDICATIONS

The on-scene incident commander may contact SYSCOM and request the Go-Team for seriously injured patients with potentially life or limb threatening injuries when extrication times are anticipated to be more than 1 hour and who may require advanced resuscitative or surgical services that are beyond the scope of prehospital emergency services.

Examples include:

(1) During a prolonged extrication, assist rescue personnel with planning the type and pace of the rescue by assessing the extent of injury and determine potential consequences that delays in time to definitive care might have on patient outcome.
(2) A patient trapped in heavy machinery requiring anesthesia/pain management to perform extrication
(3) A patient surviving a building collapse requiring an amputation to enable extrication
(4) A patient with a prolonged extrication requiring advanced fluid resuscitation including the administration of blood products
(5) Insertion of chest tubes or gastric and urinary catheters during the course of prolonged extrication

c) PROCEDURE

(1) On-scene incident commander will request the Go-Team by contacting SYSCOM. SYSCOM will coordinate the Go-Team's transport to and from the scene with Maryland Express Care.
(2) If the Go-Team is dispatched by air, then SYSCOM will notify the Go-Team when the aircraft is landing on the STC helipad. If the Go-Team is dispatched by land, then Maryland Express Care will coordinate the Team's response.
(3) Prior to the Go-Team's departure to the scene, SYSCOM will notify the on-scene incident commander for the Go-Team's ETA and reconfirm the need for the Go-Team.

(4) If the Go-Team is dispatched, the EMS medical commander will contact them using the “Trauma Line” (or other radio) to update them about the circumstances of the entrapment and the patient’s condition.
(5) When the Go-Team arrives on the scene, they are to report to the on-scene incident commander and operate within the Incident Command System.
(6) Once the patient is extricated, the EMS system will transport the patient to the appropriate facility under established EMS guidelines with consultation by the Go-Team physician.
(7) The Go-Team will document the care they provide and file a patient care report with the State EMS Medical Director at MIEMSS.

19. IV ACCESS AND MAINTENANCE: EXTERNAL JUGULAR (EJ) INTRAVENOUS ACCESS

a) PURPOSE

The external jugular vein is a large vessel in the neck that may be used by a CRT-(I) or paramedic for intravenous cannulation.

b) INDICATIONS

EJs are appropriate when IV access is emergently indicated, but an extremity vein cannot be catheterized.

c) CONTRAINDICATIONS

(1) Inability to visualize the vein

(2) Suspected spinal trauma

d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

Hematoma, pain, infiltration, infection, dislodged catheter, nerve injury, thrombosis, air embolism, airway occlusion, and pneumothorax

e) PRECAUTIONS

Carefully secure EJ catheter and tubing.

20. GLUCOMETER PROTOCOL

a) PURPOSE

The glucometer should be utilized by ALS providers to determine the blood glucose level in an attempt to determine the etiology of the patient's condition and provide treatment tailored to the needs of the patient.

b) INDICATIONS

The glucometer should be utilized for any patient presenting with an altered mental status, seizure activity, or unresponsiveness, stroke, combative, suspected cyanide poisoning, reported history of high or low blood sugar, and pediatric bradycardia or cardiac arrest.

ALERT IN ADDITION FOR PEDIATRIC PATIENTS: DIZZINESS, SYNCOPAL EPISODES, VOMITING IN KNOWN DIABETIC, OR ALCOHOL INGESTION

c) TREATMENT

(1) ADULT

(a) If blood glucose is less than 70 mg/dL administer 10% dextrose in 50 mL (5 gram) boluses, one minute apart, to a maximum of 250 mL OR 25 grams of 50% dextrose IVP, until:

(i) the patient has a return to normal mental status, and;

(ii) the patient's blood glucose is at least 90 mg/dl or

(iii) if, following 250 mL of 10% dextrose or 25 grams of 50% dextrose, patient has persistently altered mental status and blood glucose less than 90 mg/dl, repeat dosing regimen in (a).

(b) If unable to initiate an IV and blood glucose is less than 70 mg/dL, administer glucagon 1 mg IM/IN.

ALERT IF, 20 MINUTES AFTER IM/IN GLUCAGON ADMINISTRATION, THE PATIENT HAS PERSISTENTLY ALTERED MENTAL STATUS **AND** BLOOD GLUCOSE LESS THAN 90 MG/DL, CONSIDER IO ADMINISTRATION OF 10% **OR D50W** DEXTROSE CONSISTENT WITH THE DOSING REGIMEN OUTLINED IN (a).

(c) If blood glucose is greater than 300 mg/dl, administer 10 mL/kg LR bolus unless rales, wheezing, pedal edema, or history of renal failure or CHF is present.

(2) PEDIATRIC

Patient less than 28 days - if blood glucose is less than 40 mg/dL administer 2 mL/kg of 10% dextrose IV/IO.
D10W is prepared by mixing one part of D50W with four parts LR.
Recheck glucose after first dose.


If blood glucose is less than 40 mg/dL, obtain medical consultation to administer second dose of D10W.

Patient 28 days or greater until the 18th birthday - if blood glucose is less than 70 mg/dL, administer 2–4 mL/kg of 10% dextrose IV/IO to a maximum of 25 grams.
Recheck glucose after first dose.


If blood glucose is less than 70 mg/dL, obtain medical consultation to administer second dose of D10W.

(i) If unable to start IV and blood glucose is less than 70 mg/dL, administer glucagon IM/IN:
5 years of age up to patient's 18th birthday: 1 mg
28 days–4 years of age: 0.5 mg

21. HIGH PERFORMANCE CPR

a) PURPOSE

To improve survival of sudden out-of-hospital cardiac arrest patients in Maryland. High Performance Cardio-Pulmonary Resuscitation (HPCPR) employed with Code Resource Management (CRM) is a proven concept based on a team approach that ensures effective and efficient use of EMS resources. This systematic change in treatment and management of cardiac arrest patients has demonstrated effectiveness in Maryland, and provides an example for systems embarking on measuring and improving care that is based upon proven research and practices.

b) INDICATIONS

Patients in cardiac arrest who are greater than 24 hours old.

c) CONTRAINDICATIONS

(1) Patients meeting the criteria for Pronouncement of Death in the Field Protocol
(2) Patients who are less than 24 hours old

d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

None

e) PRECAUTIONS

None

f) IMPORTANT ROLE OF DISPATCHER TELEPHONE CPR (T-CPR)

(1) Immediate recognition of unresponsiveness, activation of EMS system response via 9-1-1, and initiation of CPR by the lay rescuer is essential to maximize survival.
(2) In an unresponsive patient, rapid recognition of agonal (gasping) respirations, or no respirations should prompt dispatcher-directed compressions to the caller (Dispatch-directed T-CPR).
(3) Dispatch-directed T-CPR delivers CPR prior to EMS system arrival and presents a patient more responsive to EMS interventions, thus providing the ability to improve survival.

g) PROCEDURE FOR HIGH PERFORMANCE CPR

(1) The first provider at the patient's side will assess and initiate compressions.
(2) **Effective Compressions** - Manual chest compressions should be initiated immediately upon identification of cardiac arrest, as long as the scene is safe. When compressions are done manually, compressors should be rotated **every 2 minutes** in order to maintain high-quality compressions. Ideally, one compressor is on each side of the patient's chest: one person compressing the chest and the other person ready to start. Chest compressions will be performed at a depth of at least 2 inches allowing for complete recoil of the chest after each compression.

For patients **less than one year of age**, compressions will be performed at a depth of 1½ inches. For patients **greater than one year old up to age 13**, compressions will be at a depth of 2 inches.

(3) Compressions should be accomplished with equal time given for the down and up motion and achieve a rate of 100–120 per minute.

(4) **Continuous Compressions** - Chest compressions will be performed at a rate of 100–120 per minute and will NOT be interrupted during the two-minute cycle for any reason. Other treatments such as ventilations, IV access, or intubation attempts will be done while compressions are ongoing. After completion of a two-minute cycle, a brief pause to assess pulses and/or defibrillate will be limited to less than 10 seconds.

(5) **Defibrillation** – placement of the defibrillator pads will not interrupt chest compressions

(a) Automatic External Defibrillation

The AED will be powered on as soon as the cardiac arrest is confirmed. Do not interrupt chest compressions to remove clothing or place defibrillation pads. If the AED charges after analyzing, chest compressions will be performed while the device charges, then the patient will be "cleared" and defibrillated. Compressors will hover over the patient with hands ready during defibrillation so compressions can start immediately after a shock. Another two-minute cycle of compressions will be immediately performed. Pulse checks will not occur after a shock, but only after the AED prompts "no shock advised." If no pulse is palpated, or if unsure, immediately perform another two minutes of CPR.

(b) Cardiac Monitor/Defibrillator

When a manual defibrillator is in use, it will be charged to the appropriate energy level as the end of the compression cycle nears (approximately 1 minute and 45 seconds into a two-minute cycle). At the end of the two-minute cycle, the patient will be cleared, the rhythm will then be interpreted rapidly, and the patient will either be defibrillated or the defibrillator energy charge will be cancelled. This sequence must be performed within 10 seconds. During this sequence, the compressors will hover over the patient with hands ready. If a shock is delivered, the compressor will immediately resume CPR. Rhythm interpretation will not occur after a shock, but only occur after the two-minute cycle of CPR is performed. If a shock is not indicated, check for a pulse. If patient remains pulseless, immediately resume HPCPR.

(6) **Ventilations** - Ventilations will be performed without stopping chest compressions. Ventilations are important but can impede the cardiac output from compressions. Thus, rescuers should not provide too many breaths or use excessive force. One ventilation will be given every 10th compression during recoil (upstroke). Once an advanced airway is in place, ventilations will be interposed asynchronously with uninterrupted compressions (1 ventilation every 6 seconds, for all ages). Ventilation volume should be low volume (approximately 500 cc), best approximated by a three finger or end of bag squeeze. High performance, continuous compressions remain the priority. Ensure ventilations are adequate with bag-valve-mask attached to 100% oxygen. Providers will not interrupt compressions to obtain an advanced airway.

For children **up to age 13**, maintain a ratio of 2 ventilations every 30th compression for single rescuer CPR or 2 ventilations every 15th compression for two or more rescuer CPR (one ventilation on the recoil of the 14th compression and one ventilation on the recoil of the 15th compression).

Rescuers Should	Rescuers Should Not
Perform chest compressions at a rate of 100-120/min	Compress at a rate slower than 100/min or faster than 120/min
Compress to a depth of at least 2 inches (5 cm)	Compress to a depth of less than 2 inches (5 cm) or greater than 2.4 inches (6 cm)
Allow full recoil after each compression	Lean on the chest between compressions
Minimize pauses in compressions	Interrupt compressions for greater than 10 seconds
Ventilate adequately (2 breaths after 30 compressions, each breath delivered over 1 second, each causing chest rise)	Provide excessive ventilation (ie, too many breaths or breaths with excessive force)

(7) **Advanced Life Support** - ALS providers will address defibrillation, IV/IO access, medication administration, and advanced airway placement, as indicated within these protocols; however, the placement of an advanced airway is no longer an early focus of cardiac arrest management and will not interrupt chest compressions. Nasal capnography may be utilized to optimize CPR performance and evaluation of ROSC, with use of bag-valve-mask ventilation.

(8) **Return of Spontaneous Circulation (ROSC)** – Refer to ROSC Protocol.

(9) **Quality Improvement/Performance Metrics** – Time to CPR, time to defibrillation, and quality of CPR are all factors that have been shown to have a positive impact on survival. One metric that field crews can use to evaluate performance is CPR Fraction.

(a) CPR Fraction – The time CPR is being performed divided by the total time of the cardiac arrest. This fraction is typically reported as a percentage.

(i) A target goal for crews, that has been associated with improvements in survival, is a CPR fraction of equal to or greater than 80%.

(ii) Minimizing pre-shock pauses (e.g., charging defibrillator while providers performing chest compressions)

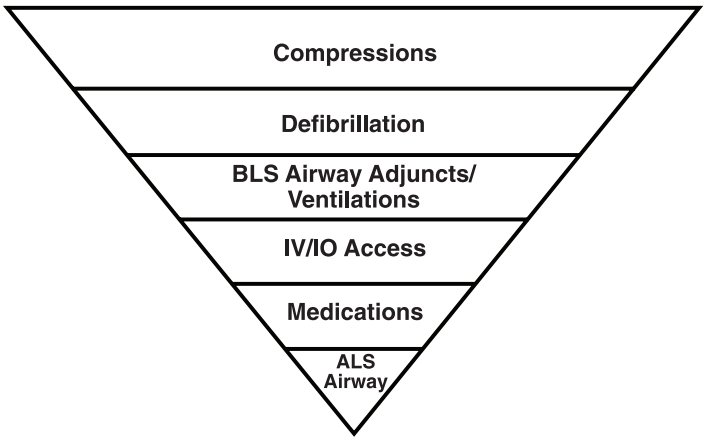
(iii) Feedback is best provided in real time or as close to the provision of care as possible.

(b) CPR compression rates should be between 100 and 120 per minute.

(c) Compression pauses should always be less than 10 seconds.

h) PROCEDURE: CODE RESOURCE MANAGEMENT (CRM)

Crews should coordinate their duties keeping the call priorities in mind. Intervention priorities are (in order of highest to lowest):



The number of personnel on a given incident and the qualifications of those personnel can vary; however, the priorities remain the same. Appropriate crew roles are outlined below:

2 provider crew:
Provider 1 – Chest compressions
Provider 2 – Ventilate, attach/operate AED/defibrillator, assume crew leader responsibilities (providers rotate positions every two minutes)
Roles remain the same even if providers are ALS equipped

3 provider crew:
Provider 1 – Chest compressions
Provider 2 – Ventilate
Provider 3 – Crew Leader, attach/operate AED/defibrillator
(Providers 1 and 2 rotate every two minutes)
Roles remain the same even if providers are ALS equipped

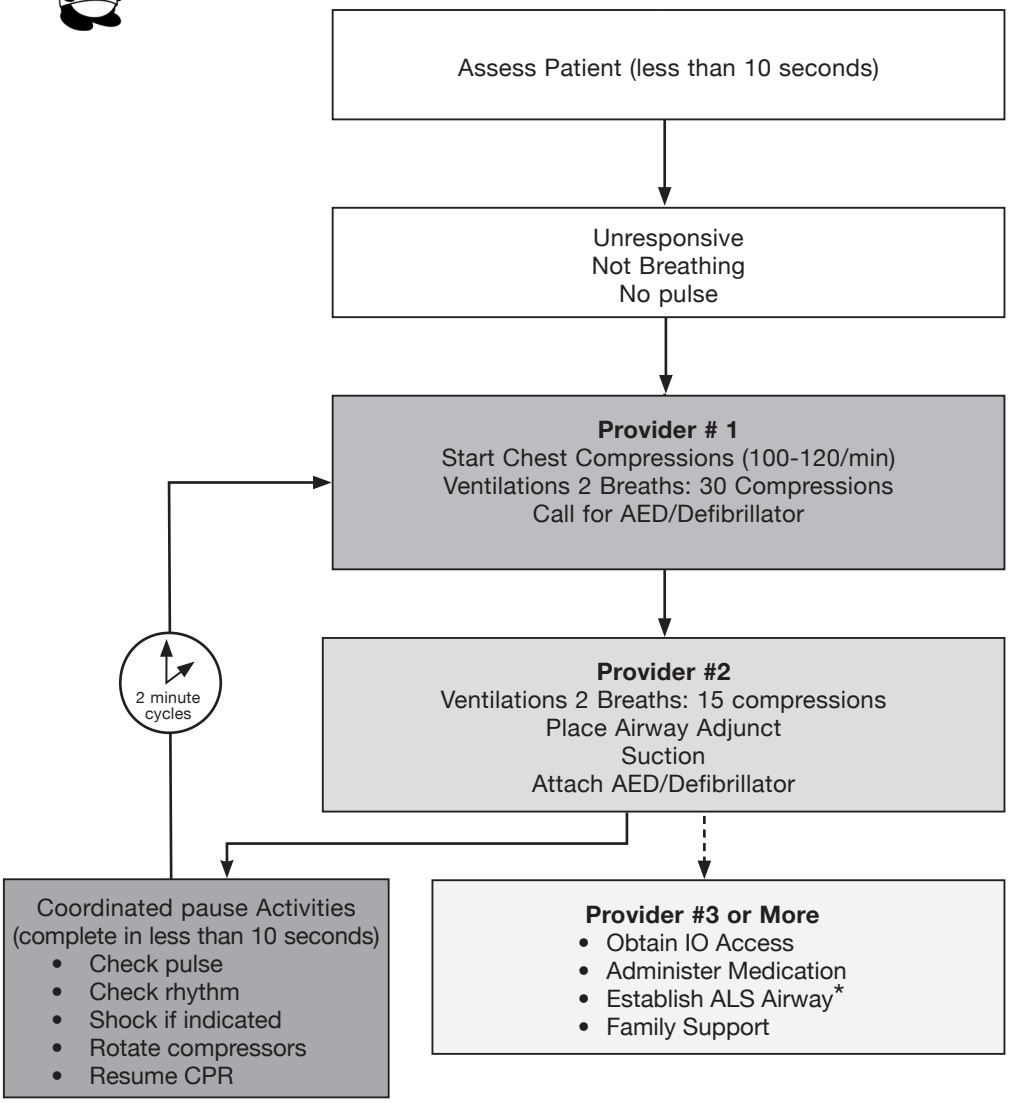
4 provider crew:
Provider 1 – Chest compressions
Provider 2 – Ventilate
Provider 3 – Attach/operate AED/defibrillator
Provider 4 – Crew leader
(Providers 1, 2, and 3 rotate every two minutes)

*** Once first two roles have begun treatment, ALS providers will establish IV/IO and administer medications.*

Greater than 4 providers - Utilize the same initial assignments as the four provider crew. The crew leader will assign additional roles such as informing the family of patient status, gathering patient information, and documenting the medical interventions performed on the call. If resources allow, rotate additional providers to do chest compressions to achieve optimal performance.

Crew leader - The crew leader will keep time, record interventions performed during the arrest, give compression feedback and ensure rotation of personnel doing compressions every two minutes. Verbal announcements of time should occur at one minute, 30 seconds before reassessment, 15 seconds left, and countdown to reassessment at 10 seconds.

PEDIATRIC HIGH PERFORMANCE CPR (HPCPR)



Pediatric HPCPR Team Member Initial Roles

Provider #1:

- Chest compressions at 100-120 per minute
- Call for AED

Provider #2:

- Ventilate at 2 breaths:15 compressions
- Attach AED

Provider #3 or MORE:

- Assume timekeeper role
- Assume AED role
- IO Access
- Medications
- Establish ALS Airway
- Family Support

Essentials of High Performance CPR for Pediatrics

1. Ensure proper chest compression rate
   - 100-120/min
2. Ensure proper compression depth
   - Less than 1year – 1 ½ inches (4 cm)
   - Greater than or equal to 1 year – 2 inches (5 cm)
3. Minimize interruptions (less than 10 second pause)
4. Ensure full chest recoil
5. Coordinate 2 minute cycles
6. Rotate Compressor

* Once an advanced airway is in place, one ventilation every 6 seconds interposed asynchronously

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22. INTRAOSSEOUS INFUSION

a) PURPOSE

The administration of fluids and medications via intraosseous (IO) infusion has long been known to be a relatively safe and effective procedure in the treatment of critically ill patients.

b) INDICATIONS

Patients in which the following conditions are present:

(1) Cardiac arrest, **OR**

(2) Profound hypovolemia, **OR**

(3) No available vascular access, or following two unsuccessful peripheral IV attempts for patients with any other life-threatening illness or injury requiring immediate pharmacological or volume intervention **OR**

(4) In pediatric patients in cardiac arrest, go directly to IO if no peripheral sites are obvious and without having to attempt peripheral access.

c) PROCEDURES

Allowable sites for IO:

(1) Sites for manual placement of IO needle

(a) IO needle with 18 gauge should be used in patients less than 3 kg.

(b) Patients 6 years of age or less, use the proximal tibial site: locate the preferred site of 1–3 cm distal to the tibial tuberosity on the anteromedial surface of the tibia.

(c) Patients greater than 6 years of age, use the distal tibial site: locate the medial surface of the distal tibia just proximal to the medial malleolus.

(2) Sites for mechanical placement of IO needle

(a) Select appropriate site :

(i) Patients 3–39 kg or who have not yet reached their 13th birthday: use the proximal tibial site. Extend the leg. Insertion site is approximately 1 cm **medial** to the tibial tuberosity, or just below the patella (approximately 1 cm or one finger width) and slightly **medial** (approximately 1 cm or one finger width), along the flat aspect of the tibia. Pinch the tibia between your fingers to identify the center of the medial and lateral borders. Aim the needle set at a 90-degree angle to center of the bone.

(ii) Patients 40 kg and greater and who have reached their 13th birthday:

a. Preferred site: use the proximal humerus site: Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated). Secure the arm in place across the abdomen.

i. Place your palm on the patient's shoulder anteriorly. The area that feels like a "ball" under your palm is the general target area. You should be able to feel this ball, even on obese patients, by pushing deeply.

ii. Place the ulnar aspect of your hand vertically over the axilla.
iii. Place the ulnar aspect of your other hand along the midline of the upper arm laterally.
iv. Place your thumbs together over the arm. This identifies the vertical line of insertion on the proximal humerus.
v. Palpate deeply up the humerus to the surgical neck. This may feel like a golf ball on a tee. The spot where the "ball" meets the "tee" is the surgical neck.
vi. The insertion site is 1 to 2 cm above the surgical neck, on the most prominent aspect of the greater tubercle. Point the needle set tip at a 45-degree angle to the anterior plane and posteromedial.

b. If proximal humerus site is not available, use the proximal tibial site. Extend the leg. Insertion site is approximately 2 cm medial to the tibial tuberosity, or approximately 3 cm (two finger widths) below the patella, and approximately 2 cm medial, along the flat aspect of the tibia. Aim the needle set at a 90-degree angle to the center of the bone.
c. If proximal site is not available, use the lower extremity distal tibia site. Insertion site is located approximately 3 cm (2 finger widths) proximal to the most prominent aspect of the medial malleolus. Palpate the anterior and posterior borders of the tibia to assure that your insertion site is on the flat center aspect of the bone. Aim the needle set at a 90-degree angle to the center of the bone.

(b) Select the appropriate needle :
(i) There are three lengths of 15 gauge mechanical IO needles.
(ii) Estimate tissue depth at selected site and select appropriate needle (15 mm, 25 mm, or 45 mm). Always use the 45 mm needle for the proximal humerus site. Point the needle set tip at a 45-degree angle to the anterior plane and posteromedial.
(iii) Insert so needle is touching bone.
(iv) Check the IO needle hub to assure that the 5 mm mark on the needle is visible when the tip of the needle touches the bone. The black line closest to the hub should be visible.
(v) Gently drill into the humerus 2 cm or until the hub is close to the skin. Gently drill, into the tibia approximately 1-2 cm after entry into the medullary space or until the needle set hub is close to the skin. Hold the hub in place and pull the driver straight off. Continue to hold the hub while twisting the stylet off the hub with counter-clockwise rotations. The catheter should feel firmly seated in the bone (1st confirmation of placement).
a. Place the stylet in a sharps container.
b. Place the dressing over the hub.
c. Attach an extension set to the hub if available; firmly secure by twisting clockwise.
d. Aspirate for blood/bone marrow (2nd confirmation of placement). For patients unresponsive to pain:
e. Flush the IO catheter with 5-10 mL IV fluid.

ALERT TWO ATTEMPTS WITHIN FIVE MINUTES ARE PERMITTED. MEDICAL CONSULTATION SHOULD BE OBTAINED FOR FURTHER ATTEMPTS.

(3) Pain due to infusion via IO

(a) To prevent or treat pain during an IO infusion for adults, administer 20–40 mg of 2% (only 1–2 mL preservative free/cardiac) lidocaine IO.

(b) To prevent or treat pain during an IO infusion for an adolescent patient (13–18 years of age), administer 20–40 mg of 2% (only 1–2 mL preservative free/cardiac) lidocaine IO.

(c) Medical consultation is required for patients under 13 years of age.

(d) Slowly infuse lidocaine IO. Allow lidocaine to dwell in IO space 60 seconds. Flush with IV fluid.

d) CONTRAINDICATIONS

(1) Conscious patient with stable vital signs
(2) Peripheral vascular access readily available
(3) Suspected or known fractures in the extremity targeted for IO infusion
(4) Previous attempt in the same bone within 48 hours
(5) Cellulitis at the intended site of the procedure
(6) Patient with known bone disorder
(7) Prior knee or shoulder joint replacement
(8) Inability to identify landmarks

e) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

(1) Extravasation of fluid
(2) Infection
(3) Compartment syndrome

f) PRECAUTIONS

Humeral site: Stabilize the needle prior to any attempt at removing the driver. The humeral cortex can be considerably less dense, and failure to stabilize the needle may cause inadvertent dislodgement. Also, as patients advance in age, bone density continues to decrease and the proximal humeral needle's stability must be routinely assessed.

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23. INTRAVENOUS MAINTENANCE THERAPY FOR EMT

a) Provider-controlled IV solutions

(1) The EMT is authorized to be the primary caregiver for patients with established intravenous (IV) therapy ONLY when the reason for transport is not related to complications associated with the IV line, and:

(a) The IV Solution **DOES NOT** contain:
  (i) **MEDICATIONS**,
  (ii) **WHOLE BLOOD**, or
  (iii) **BLOOD PRODUCTS** (such as plasma, platelets, or packed red blood cells)
(b) The IV catheter is placed in a **PERIPHERAL LIMB VEIN**, or
(c) The IV catheter is a capped (e.g., heparin-locked) peripheral or central line, and
(d) No other ALS interventions are required.

(2) IV fluids

The EMT is authorized to perform IV maintenance of **NON-MEDICATED** IV solutions that contain only:
(a) LR solution
(b) 2.5%–10.0% dextrose in water
(c) 0.25%–0.9% saline solution
(d) Potassium chloride (KCL) added to the solution. The amount of KCL in solution shall not exceed 20 milli-equivalents (mEq)/liter **OR**
(e) Peripheral Parenteral Nutrition (PPN) or Total Parental Nutrition (TPN)

IF IV FLUIDS OR PPN ARE BEING ADMINISTERED VIA INFUSION PUMP AND NOT PATIENT-CONTROLLED, THE PATIENT MUST BE ACCOMPANIED BY A NURSE OR APPROPRIATELY TRAINED ALS PROVIDER.

b) Patient-controlled medications or IV solutions

The EMT is authorized to be the primary caregiver for patients with established intravenous (IV) therapy ONLY when the reason for transport is not related to complications associated with the IV line or the medications being infused and the patient has been caring for the line, IV fluids, and/or IV medications at home without the assistance of a health care provider.

UNDER NO CIRCUMSTANCES SHALL THE EMT PROVIDER ATTEMPT TO MAKE ANY ADJUSTMENTS TO IV INFUSION PUMPS, NOR SHOULD THE EMT PROVIDER ADMINISTER ANY ADDITIONAL MEDICATIONS OR IV FLUIDS.

c) Provide patient care according to appropriate protocol.

d) Routine IV maintenance procedures

(1) Ensure IV solution and catheter placement meets criteria above.

(a) Request assistance of appropriate level health care provider if IV solution and/or IV catheter placement do not meet criteria above, or

(b) Request authorized personnel at health care facility to:

(i) Replace IV solution with an appropriate IV solution, or

(ii) Discontinue the IV prior to departing the scene.

(2) Confirm appropriate IV solution drip rate prior to transport.

(3) Ensure IV bag contains adequate volume of solution for duration of patient transport.

If IV solution is not adequate, request authorized personnel at health care facility to:

(a) Replace IV solution with an adequate volume, or

(b) Discontinue the IV prior to departing the scene.

(4) Ensure IV solution is flowing at appropriate rate.

(5) Ensure patient has no signs or symptoms specifically related to complications of IV therapy prior to transport.

If patient has signs or symptoms related to complications of IV therapy: Request authorized personnel at health care facility to correct the complication.

e) Complications of IV Therapy

(1) During patient transport, many possible complications of IV therapy may occur that the EMT must be prepared to manage.

(a) Local complications may include: pain, hematoma, infiltration, infection, dislodged catheter, and tissue sloughing.

ALERT DO NOT ATTEMPT TO REINSERT DISLODGED IV CATHETER.

(b) Central complications may include: syncope, sepsis (infection), air embolism, pulmonary edema, pulmonary thromboembolism, congestive heart failure, overhydration, and catheter embolism.

(c) General complications may include: restricted flow (e.g., bent tubing, fluid-filled air chamber, inappropriate bag placement), and empty IV solution bag.

(2)  Obtain medical direction and prepare to discontinue the IV if any of the complications described above are assessed and/or observed.

(3) If medical direction is genuinely not obtainable, the EMT shall discontinue the IV as soon as possible.

ALERT THE EMT IS AUTHORIZED TO DISCONTINUE PERIPHERAL LIMB VEIN IVs ONLY.

(4) Specific documentation includes:

(a) Type of provider-controlled IV solution

(b) Type of patient-controlled IV solution

(c) Type of patient-controlled IV medication

(d) Volume administered

(e) Complications encountered

24. MEDEVAC UTILIZATION

a) PURPOSE

Summarize Medevac Utilization Protocol indications, contraindications, principles for consideration of medevac request, medevac request process, standardized medevac request dataset, optimal landing zone setup, and safety recommendations when interacting with helicopters

b) INDICATIONS FOR "MEDEVAC REQUEST"

The following indications must meet the specific criteria of the indicated protocol(s)

(1) Trauma Category Alpha, Bravo, Charlie*, Delta*
(2) Specialty Category
    (a) Burn
    (b) Hand*
    (c) Eye
    (d) Head
    (e) Spinal
(3) Medical Category
    (a) Stroke
    (b) STEMI
    (c) Hyperbaric (CO, Toxic Inhalation, or SCUBA)
(4) Consult-Approved Critical/Unstable (Time-critical illness or disease requiring specialized care)*

All of the above requests containing an asterisk (*) (adult or pediatric) require acceptance at the Trauma/Medical/Specialty Center for medevac authorization before SYSCOM can dispatch the helicopter.

c) PRINCIPLES FOR CONSIDERATION OF MEDEVAC TRANSPORT MEETING ABOVE INDICATIONS:

(1) Priority 1 Patients (critically ill or injured person requiring immediate attention: unstable patients with life-threatening injury or illness)
    (a) Consider air transportation if the patient will **ARRIVE** at the appropriate receiving facility more quickly than could be accomplished by ground transportation.
    (b) The provider should consider all of the following:
        (i) Time for helicopter response
        (ii) Patient turnover (loading time)
        (iii) Flight time to appropriate facility
        (iv) Weather conditions
(2) Priority 2 Patients (less serious condition yet potentially life-threatening injury or illness, requiring emergency medical attention but not immediately endangering the patient's life)

Consider medevac transport if drive time is greater than 30 minutes.

Special Consideration:
Consider medevac transport if ground transport greater than 60 minutes to a trauma or specialty center would deplete limited EMS resources in the community.

d) CONTRAINDICATION FOR MEDEVAC REQUEST
EMS/DNR-B or MOLST B patients are not candidates for field medevac transport.

ALERT ALL REQUESTS FOR SCENE HELICOPTER TRANSPORTS SHALL BE MADE THROUGH SYSCOM.

e) FORMAL REQUEST PROCESS
The Systems Communications Center (SYSCOM) at MIEMSS serves as the communications center for the dispatching and management of Maryland's public safety helicopter resources. This mission is accomplished through the partnership between jurisdictional 9-1-1 call-centers and SYSCOM operations at MIEMSS. All helicopter requests must be routed through SYSCOM. The Medevac Request Data form is designed to provide a consistent standard by which SYSCOM receives "request" information. Considering the variety in the types of requests received by SYSCOM (e.g., medevac, search-and-rescue, law enforcement tracking) the information requested will vary, depending on the nature of the request. The county communications centers and the EMS providers that make the request should be familiar with the Medevac Data Request form to provide essential data to SYSCOM for prompt dispatch of the requested helicopter support.

EMS provider and 9-1-1 center medevac request process:
(1) Decision made to request medevac based on indication and principles above (if 9-1-1 center has enough information from phone interrogation of call, and trauma indications meet Trauma Decision Tree Category Alpha or Bravo, the 9-1-1 center operator does not have to wait for EMS provider to arrive on scene to make medevac request).
(2) If indicated, consult with trauma/specialty center for physician authorization to use medevac for transport and acceptance of the patient.
(3) Essential information gathered to complete the Medevac Data Request form (most of this is handled by 9-1-1 center).
(4) Contact SYSCOM for formal medevac request.
(5) Select and secure landing zone following optimal landing zone setup and safety tips.

Medevac Data Request Form

Maryland Helicopter Dispatch Request

	1 Identify Call Origin & Operator ID
	2 Identify Request Type: **Medevac, Search & Rescue, Airborne Law Enforcement**
	3 Jurisdictional Incident Number & 9-1-1 Dispatch Time

Medevac Dispatch

	1 Incident Type
	2 Incident Location: Community & Site
	3 Landing Zone
	4 ADC Map Page/Grid OR Lat/Lon
	5 Primary Condition
	6 Severity, Category & Priority
	7 Adult or Pediatric or Estimated Age?
	8 Multiple Patients?
	9 ALS Unit & LZ Contact Info
	10 Additional Relevant Information

Search & Rescue Dispatch

	1 Incident Type
	2 Incident Location: Community & Site
	3 ADC Map Grid OR Lat/Lon Info for LZ
	4 Primary Target Description
	5 Time Last Observed
	6 Ground Contact Unit
	7 Additional Relevant Information

Airborne Law Enforcement Dispatch

	1 Incident Type
	2 Incident Location: Community & Site
	3 ADC Map Grid OR Lat/Lon Info for LZ
	4 Primary Target
	5 Time Last Observed
	6 Ground Contact Unit
	7 Additional Relevant Information

f) HELICOPTER SAFETY

(1) OPTIMAL LANDING ZONE (LZ) SETUP

(a) **150 x 150 foot area close to the incident scene and free from obstructions is the minimum required with a 175 x 175 foot area preferred.**
(In mass casualty incident, identify a large enough area to land multiple large helicopters.)

(b) The landing zone should be a flat surface that is firm, free of overhead obstructions, and free of any debris that can blow up into the rotor system. The maximum allowable slope is 10 degrees.

(c) Obstacles such as wires, poles, signs, etc. can be difficult to see from the aircraft. If wires are present at or near the scene, this information must
be relayed to the flight crew prior to landing.

(d) Advise the flight crew on overhead radio contact if there are any obstructions in the area, obstructions at the edge of the LZ, or any obstructions in-line with the departure or approach path.

(e) The landing zone will not be located near fixed objects that may be susceptible to wind damage or unsecured objects (e.g., patio furniture, small boats) that may become airborne as the AW-139 aircraft produces a significant amount of main and tail rotor wash.

(f) If the roadway is too narrow, or numerous trees or other obstacles are present, another area must be selected as an alternate LZ and checked for obstacles and other unsafe conditions. After the LZ Officer has evaluated all areas, the best unobstructed landing site must be secured and the flight crew advised of any unsafe conditions they may encounter during the landing.
NOTE: In determining landing zones, be aware that helicopter take-offs and landings can be done in a vertical manner; however, these landings limit the pilot's visibility of the LZ. Increased power requirements on the helicopter may eliminate land-back areas should an engine malfunction occur, making the approach slower and causing extended periods of rotor wash.

(2) ADDITIONAL LANDING ZONE TIPS

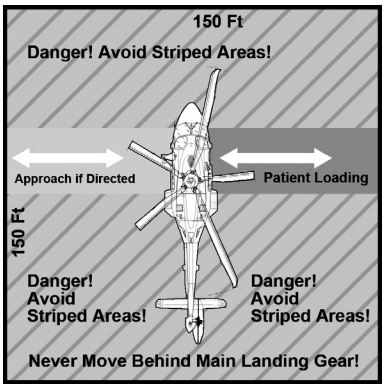
(a) The LZ Officer should walk the area on both sides of the LZ and check for hazards. During night operations, walk the LZ with a flashlight that is directed up and down to detect wires in and around the LZ.

(b) 45-Degree Test—The LZ Officer should stand in the middle of the LZ with one arm extended at a 45-degree angle in front of him/her. Any objects at or above this line are obstacles and need to be reported to the incoming aircraft. This test is done for the full 360 degrees.

(c) Do not recommend landing zones that contain loose material such as gravel. The rotor wash will cause stones or gravel to become airborne, striking personnel and/or damaging vehicles.

(d) When a roadway is to be used as an LZ, all traffic must be stopped in both directions of the roadway, even on multi-lane highways or interstates.
(e) The LZ Officer will ensure that enough personnel is available to prevent any breach of LZ security by pedestrians while the helicopter is approaching, on the ground, or while departing. Failure to do so may cause injuries and/or delay patient transport.
(f) Do not allow traffic to use the roadway until after the aircraft has departed. Traffic will be stopped at least 200 feet in both directions from the landing zone.
(g) Do not use flares or cones to mark the landing zone: they will become airborne during the landing. (Weighted cones/lights that are designed for aircraft operations are generally acceptable.)
(h) The flightcrew is the final authority when selecting an LZ. On some occasions, the flightcrew may not choose to utilize the ground personnel's suggested LZ and choose an alternate LZ. This decision is usually based on information that is unknown to the ground personnel (e.g., wind, aircraft performance limitations).

(3) APPROACHING THE AIRCRAFT
Personnel should only approach MSP aircraft under the following conditions:



AW-139

(a) Hearing and eye protection shall be utilized at all times when approaching the aircraft.
(b) Only when accompanied by an MSP flight crew member to the aircraft Response personnel are usually limited to four when loading patients. The crew will provide additional guidance prior to these personnel approaching the aircraft.
(c) In an emergency situation when it becomes necessary to render assistance or rescue occupants of the helicopter. In such cases: ***DO NOT APPROACH THE AIRCRAFT UNLESS THE MAIN ROTOR HAS STOPPED!***
(d) Only approach the aircraft from the Safe Zone (see diagram).

(i) Never approach the aircraft from the rear areas due to the hazards existing from the tail rotor.

REMAIN CLEAR OF THE REAR AND TAIL ROTOR AT ALL TIMES!

(ii) If it becomes necessary to go from one side of the aircraft to the other, this will be done by walking around the front of the aircraft; however, do not walk under the rotor blades.

(iii) Personnel shall not wear hats and loose clothing when approaching the aircraft. Do not lift anything above shoulder height (e.g., IV bags).

(e) If the aircraft has landed on a slope or hill, care must be taken when approaching the aircraft from the downhill side. Uphill side approaches should be avoided, as the main rotor blade is spinning and is lower to the ground on one side of the aircraft. The Trooper/Flight Paramedic will provide additional guidance in this situation.

(f) Never bring the patient to the aircraft prior to advising the Trooper/Flight Paramedic of the patient's information. Very high noise levels found in the general proximity of the aircraft make communication and patient turnover impossible.

(g) If debris gets in the eyes and it impairs the vision, do not continue to approach or egress from the aircraft. Personnel will immediately "take a knee," and the Trooper/Flight Paramedic will provide assistance.

(4) MISCELLANEOUS SAFETY TIPS

(a) **Aircraft Doors**

Personnel should not attempt to open or close any aircraft doors. If a person is in the aircraft, they should remain inside until the flight crew member opens the door, thus preventing damage to the door and greatly reducing the risk of an aircraft door opening inadvertently in flight.

(b) **Vehicles**

(i) No vehicles or personnel shall be permitted within 200 feet of the aircraft.

(ii) Do not direct spotlights onto the landing area or at the aircraft, but keep vehicle's emergency lights displayed until the aircraft is overhead. Once the LZ has been confirmed and verified by the flight crew, vehicle lighting can be reduced to running lights or parking lights for night vision purposes.

25. PATIENT-INITIATED REFUSAL OF EMS

a) Initiate General Patient Care.
For the purposes of this protocol, a patient is defined as any person encountered by in-service rescue or emergency medical personnel with an actual or potential injury or medical problem. (The term "patient," in this protocol only, refers both to patients and to persons who are potential patients. This protocol is not intended to determine the legal status of any person, the establishment of a provider-patient relationship, or a legal standard of care.)

A minor patient is defined as a patient who has not reached their 18th birthday and is not

(1) Married, **OR**
(2) Parent of a child, **OR**
(3) Requesting:
  (a) Treatment for drug abuse or for alcoholism,
  (b) Treatment for Sexual Transmitted Infection (STI) or for contraception,
  (c) Treatment of injuries from alleged rape or sexual offense, **OR**
(4) Living separate and apart from the minor's parent, parents, or guardian, whether with or without consent of the minor's parent, parents, or guardian, and is not self-supporting, regardless of the source of the minor's income.

An authorized decision maker for minor patients is defined as an adult who identifies themselves as the parent or guardian, or has written authorization for medical decision making or states that they have written authorization for medical decision making. Providers may request the parent or guardian to present identification and will document the name of the individual who identifies themselves as the decision maker.

IN CASES OF ALLEGED RAPE OR SEXUAL OFFENSE, LAW ENFORCEMENT OR SOCIAL SERVICES SHALL BE NOTIFIED.

b) These persons may have requested an EMS response or may have had an EMS response requested for them. Because of the hidden nature of some illnesses or injuries, an assessment must be offered and performed, to the extent permitted, on all patients. For patients initially refusing care, attempt to ask them, "Would you allow us to check you out and evaluate whether you are OK?"

IF THE AUTHORIZED DECISION MAKER REFUSES TO PERMIT THE EMS PROVIDER TO EXAMINE A MINOR PATIENT TO DETERMINE THE SEVERITY OF THE ILLNESS OR INJURY, THEN CONSIDER CONTACTING LAW ENFORCEMENT FOR ASSISTANCE. CONSIDER CONSULTATION WITH PEDIATRIC BASE STATION.

c) Each patient's assessment shall include:
   (1) Visual assessment - injuries, responsiveness, level of consciousness, orientation, respiratory distress, gait, skin color, diaphoresis
   (2) Primary survey - airway, breathing, circulation, and disability
   (3) Vital signs - pulse, blood pressure, respiratory rate and effort, pulse oximeter when available
   (4) Secondary survey - directed by the chief complaint
      (a) Medical calls - exam of lungs, heart, abdomen, and extremities. Blood glucose testing for patients with Diabetes Mellitus. Neurological exam for altered consciousness, syncope, or possible stroke.
      (b) Trauma calls - for patients meeting criteria in the Maryland Medical Protocols Trauma Decision Tree recommending transport to a Trauma Center: exam of neck and spine, neurological exam, palpation and auscultation of affected body regions (chest, abdomen, pelvis, extremities).
   (5) Capability to make medical decisions (complete questions 1 through 4 on the Patient-Initiated Refusal of EMS form):
      (a) Disorientation to person, place, time, situation
      (b) Evidence of altered level of consciousness resulting from head trauma, medical illness, intoxication, or other cause
      (c) Evidence of impaired judgment from alcohol or drug ingestion
      (d) Language communication barriers were removed by assuring "language line" translation when indicated
      (e) The patient understands the nature of the illness
d) Following the assessment, complete items 5 through 9 on the Patient-Initiated Refusal of EMS Form, noting the presence of conditions that may place the patient at higher risk of hidden illness/injury or of worse potential outcome.

Management

(1) Patients at the scene of an emergency who meet criteria to allow self-determination shall be allowed to make decisions regarding their medical care, including refusal of evaluation, treatment, or transport. These criteria include:
   (a) Medical capacity to make decisions - the ability to understand and discuss and understanding of the nature and consequences of the medical care decision
   (b) Adult (18 years of age or greater)
   (c) Those patients who have not reached their 18th birthday and are:
      (i) Married, **OR**
      (ii) Parent of a child, **OR**
      (iii) Requesting:
         a. Treatment for drug abuse or for alcoholism,
         b. Treatment for STI or for contraception,
         c. Treatment of injuries from alleged rape or sexual offense, **OR**

(iv) Living separate and apart from the minor's parent, parents, or guardian, whether with or without consent of the minor's parent, parents, or guardian, and is self-supporting, regardless of the source of the minor's income.

(d) A patient who has been evaluated by EMS providers as having 'no' answers to questions 1, 2, 3a, 3b, and 4 on the Patient-Initiated Refusal of EMS form shall be considered to be medically capable to make decisions regarding their own care.

(e) Patients with 'no' answers to questions 1, 2, 3a, 3b, and 4 on the Patient-Initiated Refusal of EMS form but one or more 'yes' answers to questions 5 through 8 (medical conditions) have a higher risk of medical illness. The EMS provider should consider consulting medical direction if the patient does not wish transport. The purpose of the consultation is to obtain a "second opinion" with the goal of helping the patient realize the seriousness of their condition and accept transportation.

(f) If the EMS provider is unsure whether the patient has adequate ability to make medical decisions, they should seek medical consultation.

(g) At any time the EMS provider identifies patient conditions that indicate that the patient should be transported to a hospital, and the patient is refusing transport, then the provider should seek medical consultation.

(2) Any person at the scene of an emergency requesting an EMS response, or for whom an EMS response was requested, and who is evaluated to have any one of the following conditions, shall be considered incapable of making medical decisions regarding care and shall be transported, with law enforcement involvement, to the closest appropriate medical facility for further evaluation:

(a) Continued altered mental status from any cause including altered vital signs, influence of drugs and/or alcohol, metabolic causes (CNS or hypoglycemia), head trauma, or dementia

(b) Attempted suicide, danger to self or others, or verbalizing suicidal intent

(c) Acting in an irrational manner, to the extent that a reasonable person would believe that the medical capacity to make decisions is impaired

(d) Judgment impaired by severe illness or injury to the extent that a reasonable and medically capable person would seek further medical care

(e) On an Emergency Petition

(3) Further care should be provided according to Maryland Medical Protocols, "III E. Behavioral Emergencies" or other protocol sections as appropriate, based on patient's condition.

e) Base Station Hospital Physician Consultation

Patient refusals are one of the highest risk encounters in clinical EMS. Careful assessment, patient counseling, and appropriate base hospital physician consultation can decrease non-transport of high-risk refusals. Patients who meet any of the following criteria require Base Station hospital physician consultation:

(1) The provider is unsure if the patient is medically capable of refusing transport.
(2) The provider disagrees with the patient's decision to refuse transport due to unstable vital signs, clinical factors uncovered by the assessment, or the provider's judgment that the patient may have a poor outcome if not transported.
(3) The patient was involved in any mechanism included in the Trauma Decision Tree of the Maryland Medical Protocols that would recommend transportation to a Trauma Center.
(4) Minor patients: No parent, guardian, or authorized decision maker is available or the provider disagrees with decision made by the parent, guardian, or authorized decision maker.

For patients with significant past medical history, consider consultation with the specialty center that follows the patient if possible.

Patients who do not meet the criteria above but have one or more positive answers to questions 6 through 10 on the Patient-Initiated Refusal of EMS form may have a higher risk of illness. In these situations, providers shall consult with the Base Station hospital physician.

f) Documentation
(1) Complete Section One of the Patient-Initiated Refusal of EMS form, documenting the patient's medical decision-making capability and any "At-Risk" criteria.
(2) Complete Section Two, which documents provider assessment and actions.
(3) Following patient counseling and Base Station hospital consultation, when indicated, complete Section Three: Initial Disposition, Interventions, and Final Disposition.
(4) Have the patient and witness sign the refusal statement as determined by your jurisdiction.
(5) Document your assessment, the care provided, elements of the refusal, medical decision-making capability, and "At-Risk" criteria on the jurisdiction's documentation (Medical Incident Report, MAIS form, or jurisdictional equivalent.)
(6) Submit copies of the Patient-Initiated Refusal of EMS form and the documentation form to the EMS Supervisor.
(7) If the patient/authorized decision maker refuses to sign the refusal statement:
    (a) Contact a supervisor.
    (b) Explain the need for a signature and again attempt to have the patient sign the refusal statement.
    (c) If not already done, have a witness sign the refusal statement.
    (d) Transmit the patient's unwillingness to sign the refusal statement on a recorded channel and document all steps taken to convince patient to sign.

Section One:

When encountering a patient who is attempting to refuse EMS treatment or transport, assess their condition and record whether the patient screening reveals any lack of medical decision-making capability (1, 2, 3a, 3b, and 4) or high risk criteria (5–8):

Medical Capacity

1. Disoriented to: Person? ❑ yes ❑ no
   Place? ❑ yes ❑ no
   Time? ❑ yes ❑ no
   Situation? ❑ yes ❑ no
2. Altered level of consciousness? ❑ yes ❑ no
3. Alcohol or drug ingestion by history or exam with:
   a. Slurred speech? ❑ yes ❑ no
   b. Unsteady gait? ❑ yes ❑ no
4. Patient does not understand the nature of illness and potential for bad outcome? ❑ yes ❑ no

4A. **Judgment impared by** severe illness or injury? **(NEW '19)** ❑ yes ❑ no

If yes, transport

At Risk Criteria

5. Abnormal vital signs

   For Adults

   Pulse greater than 120 or less than 60? ❑ yes ❑ no
   Systolic BP less than 90? ❑ yes ❑ no
   Respirations greater than 30 or less than 10? ❑ yes ❑ no

   For minor/pediatric patients

   Age inappropriate HR or ❑ yes ❑ no
   Age inappropriate RR or ❑ yes ❑ no
   Age inappropriate BP ❑ yes ❑ no

6. Serious chief complaint (chest pain, SOB, syncope) ❑ yes ❑ no
7. Head Injury with history of loss of consciousness? ❑ yes ❑ no
8. Significant MOI or high suspicion of injury ❑ yes ❑ no
9. For minor/pediatric patients: ALTE, significant past medical history, or suspected intentional injury

If yes, consult

10. Provider impression is that the patient requires hospital evaluation ❑ yes ❑ no

Section Two:

For providers: Following your evaluation, document information and care below:

1. Did you perform an assessment (including exam) on this patient? ❑ yes ❑ no
   If yes to #1, skip to #3
2. If unable to examine, did you attempt vital signs? ❑ yes ❑ no
3. Did you attempt to convince the patient or guardian to accept transport? ❑ yes ❑ no
4. Did you contact medical direction for patient still refusing service? ❑ yes ❑ no

Patient Refusal of EMS

I, _____, have been offered the following by _____ (EMS Operational Program) but refuse (check all that apply):

❑ Examination ❑ Treatment ❑ Transport

Patient Name: _____ Phone: _____

Patient Address: _____

Signature: _____Witness: _____

❑ Patient ❑ Parent ❑ Guardian ❑ Authorized Decision Maker (ADM)

If you experience new symptoms or return of symptoms after this encounter, we recommend that you seek medical attention promptly.

Section Three: (CHECK ALL THAT APPLY)

Initial Disposition:

❑ Patient refused exam ❑ Patient refused treatment ❑ Patient refused transport
❑ Patient accepted exam ❑ Patient accepted treatment ❑ Patient accepted transport
❑ ADM refused exam ❑ ADM refused treatment ❑ ADM refused transport

Interventions:

❑ Attempt to convince patient ❑ Attempt to convince family member/ADM
❑ Contact Medical Direction (Facility: _____)
❑ Contact Law Enforcement ❑ None of the above available

Final Disposition:

❑ Patient refused exam ❑ Patient refused treatment ❑ Patient refused transport
❑ Patient accepted exam ❑ Patient accepted treatment ❑ Patient accepted transport
❑ ADM refused exam ❑ ADM refused treatment ❑ ADM refused transport

Section Four: (MUST COMPLETE)

Provide in the patient's own words why they refused the above care/service:

_____
_____
_____
_____
_____
_____
_____
_____

Jurisdiction _____ Incident: _____ Date: _____
Unit #: _____ Provider Name/EID: _____Time: _____

26. PERIPHERAL IV ACCESS FOR CRT-(I) & PARAMEDIC, AND IV ACCESS OPTION FOR EMT APPROVED BY THE EMS OPERATIONAL PROGRAM

a) PURPOSE

IV access is an invasive skill reserved for ALS providers and "Program Approved Option" EMTs with IV Technician training. The purpose of establishing an IV line, or a saline-lock, is to provide direct venous access for the possible administration of fluids and ALS medications (ALS only), if necessary and appropriate.

b) INDICATIONS

(1) See treatment protocols for initiation of IV.

(2) If the protocol indicates to start an IV, the "Program Approved Option" EMT may initiate an IV or saline-lock, if appropriate.

(3) **Saline locks** may be substituted for IV KVO anywhere in the protocol with the understanding that if the patient needs a fluid bolus or medication, the saline lock is converted to an IV of LR.

(4) All ALS providers, in the event of a life-threatening emergency (with medical consult) or cardiac arrest, may access indwelling or implanted, central or peripheral venous catheters for medication administration.

(5) When a patient is a **Hemophiliac A or B** (Factor VIII or IX) and the family or patient states that the patient must have factor concentrate administered, the ALS provider may assist the patient in the IV administration of the patient's own factor concentrate (VIII or IX). Notify the receiving hospital of the administration of blood factor concentrate.

(6) All ALS providers may access lower extremity IV sites. The CRT-(I) and paramedic should consider lower extremity IV sites prior to IO attempts (EMT-IV technicians may not access lower extremity IV sites).

(7) The ALS provider may establish a peripheral IV in a patient whose vasoactive medication has been interrupted due to a malfunctioning long-term access device that cannot be repaired by the home health caregiver. The ALS provider can assist in reestablishment of an existing vasoactive infusion at the same dose or setting. Patient shall be transported to the nearest appropriate facility to access patient's long-term device. When in doubt, obtain medical consultation.

(8)  Maximum 2,000 mL LR without medical consultation.

(9)  Second IV requires medical consultation except when initiating the Sepsis Protocol and for ALS providers who have Priority 1 patient. Initiation of the second IV shall not delay transport.

c) CONTRAINDICATIONS

See treatment protocols.

d) POTENTIAL ADVERSE EFFECTS/COMPLICATIONS

See IV Maintenance Therapy for EMT.

e) PRECAUTIONS

All sharps must be properly disposed of in an appropriate container.

27. PHYSICAL AND CHEMICAL RESTRAINTS

a) PURPOSE

To prevent harm to patient and/or others

b) INDICATIONS

(1) Patient restraints (physical and/or chemical) should be utilized only when necessary and only in situations where the patient is exhibiting behavior that the EMS provider believes will present a danger to the patient or others.
(2) The procedure does apply to patients treated under implied consent.

c) PROCEDURE

(1) The physical restraint procedure applies to patients greater than 1 year of age.
   (a) Ensure that the scene is safe.
   (b) Ensure sufficient personnel are present to control the patient while restraining. USE POLICE ASSISTANCE WHENEVER AVAILABLE.
   (c) Position the patient for safe transport:

ALERT

PATIENT POSITIONING SHOULD BE MODIFIED WHEN RESTRAINING PATIENTS WITH LIMITED MOBILITY (E.G., CONFINED TO BED OR WHEELCHAIR). USE PASSIVE RESTRAINT AND PLACE PATIENTS WITH PREVIOUS INJURY OR PREEXISTING CONDITIONS, SUCH AS OSTEOPOROSIS OR CONTRACTURE, IN A NEUTRAL POSITION.

PATIENTS ARE NOT TO BE RESTRAINED IN A PRONE, HOBBLED, OR HOG-TIED POSITION. WHENEVER POSSIBLE, ALL PATIENTS WHO ARE PHYSICALLY RESTRAINED AND CONTINUE TO FIGHT THE RESTRAINTS SHOULD BE CONSIDERED FOR CHEMICAL RESTRAINT.

Method (Be prepared to logroll immediately in the event of vomiting.)
   (i) Place patient face up or on their side, if at all possible.
   (ii) Secure extremities:
   For adults, use 4-point restraints (ideally with one arm up and the opposite arm down) or use a sheet to carefully wrap the patient before applying a Reeves-type stretcher. For patients 12 years and under, use 3-point restraints (two arms, one leg) or use a sheet to carefully wrap the patient before applying a Reeves-type stretcher.

ALERT

IF POLICE HANDCUFFED THE PATIENT, JOINTLY WITH POLICE, REPOSITION THE PATIENT IN FACE-UP POSITION WITH HANDS ANTERIOR AND SECURED TO STRETCHER.

   (iii) If necessary, utilize cervical-spine precautions to control violent head or body movements.
   (iv) Place padding under patient's head. Pad any other area needed to prevent the patient from further harming him or herself or restricting circulation.

(v) Secure the patient onto the stretcher for transport, using additional straps if necessary. Be prepared at all times to logroll, suction, and maintain airway.

(d) Monitor airway status continuously, utilize pulse oximetry when available, vital signs, and neurocirculatory status distal to restraints. Document findings every 15 minutes, along with reason for restraint.

(e) For interfacility transfers, obtain a written physician's order for use of restraints.

(2) Chemical Restraint Procedure

ALERT

BE SURE TO ASSESS FOR EVIDENCE OF TRAUMATIC OR MEDICAL CAUSES FOR PATIENT'S AGITATION. IF EXCITED DELIRIUM SYNDROME IS SUSPECTED, WITHHOLD HADOL AND REFER TO EXCITED DELIRIUM PROTOCOL.

(a) Prepare airway equipment, including suction, BVM, and intubation equipment.

(b) Adults

(i) Administer combined medications of haloperidol and midazolam, which can be mixed in the same syringe. (If patient has head injury consider administration of only midazolam.)

a. **Patient 18–69 years of age:**

(i) Haloperidol 5 mg IM/IV **and**

(ii) Midazolam 5 mg IM/IV (Paramedic may perform without consult)

b. **Patient greater than 69 years of age:**

(i) Haloperidol 2.5 mg IM/IV **and**

(ii) Midazolam 2.5 mg IM/IV (paramedic may perform without consult

(iii) Repeat doses may be given with medical direction.

(c) Pediatric

(i) Administer haloperidol only.

a. **Less than 5 years of age is contraindicated.**

b. **5–12 years of age**

(i) Haloperidol 0.05 mg/kg IM/IV

(ii) Max dose 2.5 mg

c. **13 up to 18th birthday**

Haloperidol 2.5–5 mg IM/IV

(ii) Repeat doses may be given with medical direction.

(d) Establish IV access with LR, if appropriate.
(e) Use glucometer and treat accordingly.
(f) Monitor vital signs, EKG, and pulse oximetry.
(g) Be prepared to treat hypotension with fluid bolus.
(h)  Treat acute dystonic or extrapyramidal reactions with Diphenhydramine
Adult: 25–50 mg IV/IM; pediatrics 1 mg/kg SLOW IV/IO/IM; Maximum single dose 25 mg. Additional doses of diphenhydramine require medical consultation.
(i) Monitor airway status continuously, utilize pulse oximetry when available, vital signs, and neurocirculatory status distal to restraints. Document findings every 15 minutes, along with reason for restraint.

d) ADDITIONAL INFORMATION

(1) Physical-restraint guidelines:
(a) Use the minimum restraint necessary to accomplish necessary patient care and ensure safe transportation (soft restraints may be sufficient in some cases). If law enforcement or additional personnel are needed, call for assistance prior to attempting restraint procedures. Do not endanger yourself or your crew.
(b) Avoid placing restraints in such a way as to preclude evaluation of the patient's medical status (airway, breathing, and circulation). Consider whether placement of restraints will interfere with necessary patient-care activities or will cause further harm.
(c) Once restraints are placed, do not remove them until you arrive at the hospital unless there is a complication from their use. If at all possible, take extra personnel during transport to hospital to deal with potential complications.
(2) Chemical-restraint guidelines:
Sedative agents may be used to provide a safe method of restraining violently combative patients who present a danger to themselves or others, and to prevent violently combative patients from further injury while secured with physical restraints.

28. NEUROPROTECTIVE INDUCED HYPOTHERMIA (THERAPEUTIC) AFTER CARDIAC ARREST - SCENE AND INTERFACILITY TRANSFER

a) Indications:

Increased brain temperature contributes to ischemic brain damage in patients post-cardiac arrest. Studies have shown that lowering brain temperature, even by a few degrees, decreases ischemic brain damage. In studies of out-of-hospital cardiac arrest, induced hypothermia protocols have contributed to improved neurological outcomes. The initiating of hypothermia without the ability to continue the hypothermic intervention is detrimental.

b) Patient Inclusion Criteria:

(1) 18 years of age or older
(2) Return of spontaneous circulation post-cardiac arrest
(3) Comatose (GCS less than 8) after return of spontaneous circulation
(4) Secured airway with adequate ventilation (intubation preferred; ventilate slowly at the rate of 10–12 per minute for target $EtCO_2$ of 40–45 mmHg)
(5) Systolic Blood Pressure (SBP) can be maintained at 90 mmHg or greater spontaneously or with fluids and/or pressors. (Target is SBP greater than 110 or Mean Arterial Pressure (MAP) equal to or greater than 80)
(6) Destination hospital must have ability to continue hypothermic intervention.

c) Patient Exclusion Criteria:

(1) Cardiac instability
  (a) Refractory or recurrent dysrhythmia
  (b) Inability to maintain SBP at least 90 mmHg (MAP greater than 80) despite use of fluids and pressors
(2) Active bleeding or history of coagulopathy or thrombocytopenia (Thrombolytic/Fibrinolytic therapy does not preclude use of hypothermia)
(3) Pregnancy
(4) Trauma patients
(5) Environmental hypothermia or initial temperature of 32°C

d) Procedure:

(1) Institute cooling as early as possible. Core temperature goal is 33°C.
(2) Actively cool by applying ice/cold packs bilaterally to patient's neck, axilla, and femoral groins.
  PLUS
(3) Reduce the covering on the patient while maintaining dignity.

(4) If patient begins shivering, administer midazolam

Adult: (Reduce the below IV/IO/IM by 50% for patients 69 years or older.)

(a) 0.1 mg/kg in 2 mg increments SLOW IVP over 1–2 minutes per increment with maximum single dose 5 mg.

(b) Additional doses to a maximum of 10 mg requires medical consultation for all providers.

(5) Consider turning on vehicle air conditioning to assist with cooling en route.

(6) Document initial GCS and pupillary response.

(7) Transport to a Cardiac Interventional Center (by air or ground) that can maintain the hypothermic intervention.

(8) Interfacility maintenance of hypothermic interventions techniques and monitoring of core temperature by Specialty Care Transport team must be maintained from the sending hospital to the destination hospital with either commercial ambulance equipment or sending hospital resources. Vital signs will be documented every 15 minutes with core temperature. Do not allow core temperature to drop below 33°C.

29. 12-LEAD ELECTROCARDIOGRAM

a) PURPOSE

Coronary heart disease is the single largest cause of death in US men and women. Early identification and treatment of patients with acute myocardial infarction (AMI) has proven to reduce myocardial damage and decrease morbidity and mortality. Providers should be aware of both typical and atypical presentations.

b) INDICATIONS

(1) Chest pain that may radiate to the arm, shoulders, jaw, or back. Generally described as a crushing pain or toothache. May be accompanied by shortness of breath, sweating, nausea, or vomiting.
(2) Chest discomfort. Some heart attacks involve discomfort in the center of the chest that lasts for more than a few minutes or that goes away and comes back. This discomfort can feel like uncomfortable pressure, squeezing, or fullness.
(3) Discomfort in other areas of the upper body. Symptoms can include discomfort in one or both arms or in the back, neck, jaw, or stomach.
(4) Shortness of breath. This symptom often accompanies chest discomfort. However, it can also occur prior to the chest discomfort.
(5) Other signs. These may include breaking out in a cold sweat, nausea, lightheadedness, syncopal episode, or a sense of impending doom.
(6) Post cardiac arrest with ROSC.

c) PROCEDURE

(1) Position patient.
(2) Place chest and limb leads.
(3) Acquire 12-lead (15-lead, if trained) and document the patient's last name, first initial, age, and gender. These identifiers should be on the transmission copy (if able to transmit) and shall be on the delivered printed copy.
(4) Continue patient care.

30. ACUPRESSURE FOR NAUSEA

a) PURPOSE

Acupressure on the P6 point can be used to reduce the intensity of nausea for patients where ondansetron is not preferable or available. It may be helpful as adjunct therapy for patients who have received ondansetron.

b) INDICATION

(1) Patients with active nausea and vomiting
(2) As adjunct therapy to patients receiving ondansetron
(3) To prevent or reduce motion sickness

c) CONTRAINDICATION

None

d) ADVERSE EFFECTS

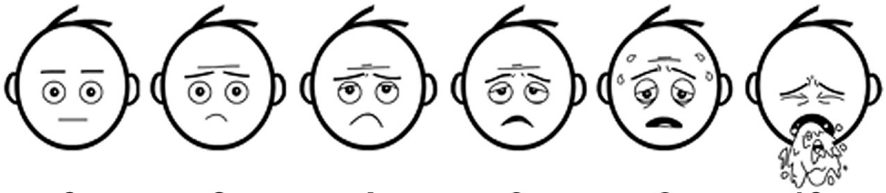
Redness, swelling, discomfort at site if commercial wrist bands are used

e) PRECAUTIONS

Patients experiencing nausea should receive a complete assessment, especially if cardiac risk factors are present.

f) PROCEDURE

(1) Identify P6 point.
  (a) Place three of the patient's fingers on the patient's opposite forearm at the wrist crease.
  (b) Mark the space between the two tendons on the forearm as the P6 point.
(2) Apply pressure at this point for several seconds and encourage the patient to take over care, or apply a commercial device per manufacturer's instructions. Have patient or parent maintain firm pressure. Onset of relief is between 30 seconds and 5 minutes.
(3) Reassess patient, rescore on BARF Scale at 5 minutes, and document response to therapy.



BARF Nausea Scale

31. MULTIPLE CASUALTY INCIDENT/UNUSUAL EVENT

A Multi-Casualty Incident (MCI) or Unusual Event is any event where the number of injured persons exceeds the normal capabilities of the EMS Operational Program in whose jurisdiction the event takes place. Due to the size of the incident, the responding EMS Operational Program may require additional resources and/or must distribute patients to multiple hospitals.

Local EMS Operational programs should have a plan or operational procedures that address response to multiple patient incidents or unusual events. This protocol does not supersede those plans. There are some general practices and procedures that must be followed to ensure the EMS system can be prepared to respond appropriately to support a local response.

ALERT: THIS PROTOCOL IS SIMPLY A LIST OF REQUIRED TASKS IN THE EVENT OF AN UNUSUAL EVENT. IT IS NOT ALL-INCLUSIVE. ALL PROVIDERS ARE ENCOURAGED TO REVIEW LOCAL EMERGENCY RESPONSE PLANS, THE MARYLAND TRIAGE SYSTEM TRAINING PROGRAM, START/JUMPSTART, AND NIMS PRACTICES AND PROCEDURES ON AT LEAST AN ANNUAL BASIS.

Procedure

a) Assess scene and recognize that the incident is an MCI or Unusual Event. The definition of MCI or Unusual Event for the purposes of this protocol is an incident that causes more than 5 patient encounters or that involves unusual circumstances that suggest it could place an extraordinary strain on EMS or health care resources. The following events are **examples** of an MCI or Unusual Event.
   (1) More than five patients from one or related incidents
   (2) Multi-patient events that require specialized rescue
   (3) Three or more immediate (Priority 1) patients
   (4) Multiple pediatric patients requiring specialty resources
   (5) More than one burn patient meeting burn center referral criteria
   (6) Use of more than two medevac helicopters
   (7) Use of Medical Ambulance Bus (MAB)
   (8) Multiple patients with unusual signs and symptoms
   (9) Unresolved WMD related activity that could result in multiple patients (active shooter, bomb threat, intentional WMD agent release, etc.)
   (10) Decontamination of more than 5 patients resulting in at least one transport
   (11) Unresolved hazardous material incident that has the potential to affect multiple patients
   (12) Evacuation of a licensed health care facility or housing complex for individuals requiring special assistance

b) Notify EMRC or the Regional EMRC as soon as the incident is recognized to be an MCI or Unusual Event. Use the specific terms “MCI” or ”Unusual Event” when communicating with EMRC to be clear this protocol is being enacted. This should be done as early in the incident as possible when there is a strong suspicion that such an event has occurred so that EMRC may begin to notify hospitals and response partners of the incident. Responding units can request their dispatchers notify EMRC before the scene is fully assessed if there is reasonable information to suggest that the incident meets the criteria above. As soon as available, the following information should be relayed to EMRC.
   (1) Type and general description of the incident
   (2) General location or address of the incident
   (3) Age range of patients
   (4) Estimated number of patients by priority
   (5) Approximate number of patients involved
   (6) Any hazardous agents involved

c) Initiate the incident command structure according to local SOPs and/or the National Incident Management System. Update EMRC with more details about the incident as they become available.

d) Consider utilization of the MCI Communications Protocol (Section II.G.7)

e) Triage patients using the START/JumpSTART methods (Section II.D.7.e).
   (1) Identify the patient’s triage category by utilizing the appropriately colored triage ribbon and securely attach a MIEMSS-approved Triage Tag.

f) Do not delay transport of patients for extensive patient care procedures. Provide only the care required to sustain life and limb during transport to the hospital.

g) Track the care, movement, and disposition of EVERY patient utilizing the locally approved triage/treatment/transport logs and/or the state electronic patient tracking system (PTS). Patient information should be written on the triage tag and be entered directly into the PTS as it becomes available.

h) Consider the need for and request specialty resources through the local dispatch center and/or emergency management as per local procedures. These may include,
   (1) Mass Casualty Support Units (MCSU) – (Medical Supply Caches)
   (2) Medical Ambulance Buses
   (3) CHEMPACK (Organophosphate antidotes - contact EMRC)
   (4) Ambulance Strike Teams or EMS Taskforces
   (5) Shock Trauma Go-Team

i) The Transportation Group Supervisor and Medical Communications Coordinator responsibilities should be assigned as early as possible. They are the critical link to EMRC, hospitals, and the health care system. Their duties include:
   (1) Establish a final checkpoint through which all transport units MUST pass to ensure accountability of all patients.
   (2) EMRC will have notified hospitals and acquired their bed availability based on the information originally received and will transmit that information to the scene when requested.
   (3) Coordinate through EMRC the patient destination, and communicate the number of patients, general illnesses, ages, and triage category on each transport unit as they leave the scene to the receiving facilities.
   (4) If a central point of contact cannot be established, individual transport units MUST communicate the above information individually through EMRC to the receiving hospitals during transport. Those units must announce that they are associated with the MCI or Unusual Event.

j) Coordinate with law enforcement and, if requested, assist the Coroner or Medical Examiner with identification and disposition of deceased casualties.

k) After the last patient has been transported, notify 9-1-1 dispatch center and EMRC that last patient has been transported. Demobilize scene, stand down or release resources dedicated to incident, and complete appropriate documentation. Cooperate with local officials, EMRC, hospitals, and emergency management to complete a final accounting of the disposition of all the patients.

32. POTENTIALLY VOLATILE ENVIRONMENTS WITH LIFE-SUSTAINING INTERVENTIONS

a) BACKGROUND

(1) A review of past active assailant incidents has shown that the conventional prehospital practice of not entering the scene until it is deemed safe by law enforcement (LE) has been associated with additional loss of life.

(2) This protocol is designed to be all-hazards in nature. It is meant to provide a clinical concept of operations that empowers trained and equipped, but not necessarily tactical, EMS prehospital providers, to access casualties and expedite life-sustaining interventions closer to the point and time of injury. For active assailant and other LE-related incidents, EMS providers shall be under LE escort. EMS providers shall use appropriate personal protective equipment as defined by local jurisdiction.

(a) Examples of such potentially volatile environments include, but are not limited to:

(i) Active assailant (active shooter/IED) situations
(ii) Post-blast detonations
(iii) Intentional release of a chemical agent
(iv) Industrial accident/explosion
(v) Hazardous materials incident
(vi) Structural collapse/urban search and rescue situations
(vii) Transportation mishaps with limited scene access
(viii) In the immediate aftermath of a natural disaster such as a tornado

b) INTRODUCTION

(1) This protocol provides guidelines for the type of intervention and care that should be rendered at various proximities to a threat in a potentially volatile environment.

(2) By definition, potentially volatile environments are dynamic in nature. Scene conditions may change and emergent evacuation of responders and patients may interfere with the delivery of interventions described in this protocol.

c) INDICATIONS

(1) This protocol does not replace or supersede the general patient care practices in *The Maryland Medical Protocols for EMS Providers*, which are still to be followed once the concern of active threat has been mitigated.

(2) Use of this protocol is an acknowledgement by the EMS provider that the situation is:

(a) Unique, austere, and different than the conventional environment of care in which EMS medicine is usually rendered AND

(b) The application of standard prehospital emergency practices could unnecessarily jeopardize the safety of the patient and/or medical provider.

(3) An active assailant incident or Potentially Volatile Environments with Life-Sustaining Interventions (PVE/LSI) Protocol is declared.

d) CONTRAINDICATIONS

(1) Absent the presence of perceived or actual threat, standard general patient care practices should be followed.

e) ZONES OF CARE/OPERATIONS

(1) The zones described below are intended to standardize the terminology used by responding emergency medical providers in Maryland and to establish a common understanding of the interventions to be performed within each zone.

(2) **Hot Zone (Direct Threat):** (Integrated Tactical EMS) Operational area with a direct and immediate threat to personal safety or health

(a) The overarching priority in the Hot Zone is mitigation of active threat. Medical care is a secondary function to threat mitigation.

(b) Medical providers must be an integrated tactical medic (i.e., TEMS) to operate in this environment. Medical priorities are to prevent casualties and responders from sustaining additional injuries and include prompt evacuation to a more secure zone.

(i) If at all possible, casualties should self-evacuate.

(ii) Goals of care include keeping the response team engaged in neutralizing the threat, minimizing public harm, and controlling life-threatening extremity hemorrhage.

a. Control of severe hemorrhage in the direct threat environment is best accomplished with commercially available tourniquets.

b. Tourniquet should be placed as high up on the limb as possible without taking the time to expose the area.

c. For full or partial amputation, immediately place a tourniquet if possible.

d. Cardiopulmonary resuscitation (CPR) is not indicated in this environment.

(iii) In circumstances of chemical agent exposure, administration of Nerve Agent Antidote Kits (NAAK/MARK-1) might be warranted if available.

(3) **Warm Zone (Indirect Threat):** (Limited LSI) Area with a potential threat to personal safety or health

(a) **Evacuation of patients to a completely safe area is the primary objective of care in this area. The following care guidance is dependent on the availability of equipment, supplies, and the appropriate level providers. Extrication should NOT be delayed to provide advanced or involved treatment measures.**

(i) The Warm Zone typically exists between the Hot Zone and Cold Zone, but is not geographic and depends on the evolving situation.

(ii) Responders must remain cognizant that scene security can change instantly.

(iii) A focused and deliberate approach to providing patient care should occur.

(iv) The potential benefits of providing medical care in these zones must outweigh the risks of the ongoing tactical operation and/or delaying opportunity to evacuate the patient.

(v) Care in the Warm Zone typically occurs at or near the point of injury once scene stabilizing measures have occurred. Care may also take place at a casualty collection point (CCP).

(vi) A CCP is a location concealed and covered from immediate threat where victims can be assembled for movement from areas of risk to the triage/treatment area. Multiple CCPs may be required, which may be located in the Warm or Cold Zone. CCPs should be established and locations communicated as early as possible through operations to ALL responders.

(vii) If possible, an abbreviated triage system should be set up to identify the priority for the extrication of patients. The use of ribbons or markers to clearly identify immediate and delayed (red and yellow, respectively) patients is highly recommended. Deceased individuals should also be labeled/tagged appropriately to prevent repeat assessments by multiple providers.

(viii) Medical care in the Warm Zone should be limited to essential interventions only and is guided by the mnemonic **"MARCHED"**

a. M – Massive Hemorrhage Control

i. Massive hemorrhage remains the greatest threat to life in most trauma patients. Attaining hemorrhage control is the top priority.

ii. Tourniquets remain the preferred means of hemorrhage control for life-threatening bleeding in this environment.

1. If a tourniquet was applied in the Hot Zone, it should be reassessed.
2. Tourniquets applied over clothing are not as effective and may need to be adjusted.
3. Tourniquets should only be discontinued by an appropriately trained ALS provider in consultation with medical control.
4. Other methods of hemorrhage control include deep wound packing with either sterile gauze or hemostatic impregnated gauze.
5. Vascular injuries in the neck, groin, and axilla (i.e., junctional zones) are not amenable to traditional extremity tourniquets. In addition, effective pressure dressings are often extremely difficult to apply. Hemostatic impregnated dressings with direct pressure (minimum 5 minutes with continuous pressure is preferred) have shown useful in such situations.

(b) A – Airway management
   (i) Patients in the Warm Zone with airway issues are high priority for evacuation due to their often intense resource requirements.
   (ii) Consider applying oxygen if available and indicated.
   (iii) Unconscious casualty without airway obstruction:
      a. Chin lift or jaw thrust maneuver
      b. Nasopharyngeal airway
      c. Place casualty in the recovery position
   (iv) Casualty with airway obstruction or impending airway obstruction:
      a. Chin lift or jaw thrust maneuver
      b. Nasopharyngeal airway
      c. Allow casualty to assume position that best protects the airway, including sitting up or leaning forward
      d. Place unconscious casualty in the recovery position
   (v) If previous measures unsuccessful, if time and resources permit, consider per protocol:
      a. Supraglottic Devices (e.g., King LT™, EASYTube®, or Combitube™).
      b. Oro/nasotracheal intubation
      c. Surgical cricothyroidotomy

(c) R – Respirations
  (i) The chest/upper abdomen should be assessed for any evidence of an open chest wound and an occlusive dressing should be applied accordingly.
  (ii) Tension pneumothorax remains a significant cause of preventable death in trauma patients.
    a. In suboptimal environments that interfere with complete physical assessment, any patient with significant blunt or penetrating chest trauma who displays dyspnea should be treated as a developing tension pneumothorax and receive needle decompression, if appropriate.
    b. To be effective, needle decompression needs to be performed using at least a 3.25 inch, 14g needle/catheter or needle decompression thoracostomy kit.
(d) C – Circulation
  (i) In general, healthy adult trauma patients with a radial pulse and normal mentation do not need IV therapy in the Warm Zone.
  (ii) Patients with evidence of hypotension:
    a. If the patient displays signs of a closed head injury, IV fluid therapy is indicated to maintain at least a radial pulse or SBP of at least 90 mmHg.
    b. Patients in hypovolemic shock should receive a one-time 500 mL bolus of IV fluid.
  (iii) Patients in traumatic cardiac arrest should be considered deceased and no CPR should be performed in this zone.
(e) H – Hypothermia
  (i) Hypothermia in trauma patients has been associated with increased mortality. Hypothermia is easier to prevent than treat.
    a. Patients should be moved to a warmed location if possible.
    b. Efforts should be made to minimize heat loss.
(f) E – Everything else
  (i) Consider Mark I/DuoDote for suspected organophosphate/nerve agent exposure.
  (ii) Dependent upon resource availability, burns, eye injuries, and acute pain should be managed per *The Maryland Medical Protocols for EMS Providers*.
(g) D – Documentation
  (i) Key findings and interventions should be conveyed to the next phase of care.

(4) **Cold Zone:** (Traditional Patient Care Protocols) Area surrounding the Warm Zone. Responders can operate without concern of danger or threat to personal safety or health.
   (a) Casualties are moved from the Warm Zone to the Cold Zone by way of an evacuation corridor(s).
      (i) Evacuation Corridor: An area transitioning between the Warm and Cold Zone that is secured from immediate threat and allows for a mitigated risk in transporting victims from the CCP to the triage/treatment area beyond the outer perimeter.
   (b) Once in the Cold Zone, casualties will require re-triage, particularly assessing for the development of a life-threatening condition and effects of Warm Zone therapy.
      (i) If massive hemorrhage has not been addressed or has been ineffectively managed, it should be immediately readdressed with strategies mentioned above.
   (c) Patients should be triaged and transported per standard practices.
   (d) Medical care in the Cold Zone should be dictated by resource availability and, when possible, equate to the general patient care standards in *The Maryland Medical Protocols for EMS Providers.*
   (e) CPR may have a larger role during the evacuation phase especially for patients with electrocution, hypothermia, non-traumatic arrest, or near drowning; however, it is still casualty count/resource dependent.

33. EMERGING INFECTIOUS DISEASE

1. Initiate General Patient Care.

2. Presentation
   An emerging infectious disease (EID) is an infectious disease for which incidence in humans has increased in the past two decades or threatens to increase in the near future. These diseases, which respect no national boundaries, include
   a) New infections resulting from changes or evolution of existing organisms
   b) Known infections spreading to new geographic areas or populations
   c) Previously unrecognized infections appearing in areas undergoing ecologic transformation
   d) Old infections reemerging as a result of antimicrobial resistance in known agents or breakdowns in public health measures.

   The most recent example is Ebola Viral Disease (EVD). EIDs that meet this protocol will be posted on the MIEMSS website under the Infectious Disease Tab. Seasonal influenza is not considered an EID, but some of the same principles of infection control may apply to the more common infectious diseases.

   e) Signs and Symptoms of an EID are based on specific case definitions for the disease:
      (1) EVD case definition includes:
          Travel history or exposure **and** a set of signs and symptoms that are included in the case definition, which has evolved over time.
      (2) Other future EID diseases may vary in their signs and symptoms, and could include:
          (a) Respiratory congestion
          (b) Sneezing/Coughing
          (c) Nausea/Vomiting
          (d) Skin rashes, hives, or “poxes”
          (e) Swollen lymph nodes
          (f) General malaise
          (g) Loss of appetite
          (h) Hemorrhage from mucosal membranes
          (i) Descending neurological deficits
   f) Case Definition
      As EIDs become more prevalent, the Centers for Disease Control and Prevention (CDC) typically publish a description of each disease, which is utilized to determine whether to include or exclude a Patient Under Investigation (PUI) for specific testing or treatment and specific isolation or quarantine measures. These case definitions will be posted on the MIEMSS website and include specific guidance on the identification, treatment, and appropriate transport of these patients and the appropriate use of PPE.
   g) Modes of transmission

(1) In direct transmission, an infectious agent is transferred from a reservoir to a susceptible host by direct contact or droplet spread.
   (a) Direct contact occurs through skin-to-skin contact, kissing, and sexual intercourse. Direct contact also refers to contact with soil or vegetation harboring infectious organisms.
   (b) Droplet spread refers to spray with relatively large, short-range aerosols produced by sneezing, coughing, or even talking. Droplet spread is classified as direct because transmission is by direct spray over a few feet, before the droplets fall to the ground.

(2) Indirect transmission refers to the transfer of an infectious agent from a reservoir to a host by suspended air particles, inanimate objects (vehicles), or animate intermediaries (vectors).
   (a) Airborne transmission occurs when infectious agents are carried by dust or droplet nuclei suspended in air. Airborne dust includes material that has settled on surfaces and become re-suspended by air currents as well as infectious particles blown from the soil by the wind. In contrast to droplets that fall to the ground within a few feet, droplet nuclei may remain suspended in the air for long periods of time and may be blown over great distances
   (b) Vehicles that may indirectly transmit an infectious agent include food, water, biologic products (blood), and fomites (inanimate objects such as handkerchiefs, bedding, or surgical scalpels).
   (c) Vectors such as mosquitoes, fleas, and ticks may carry an infectious agent through purely mechanical means or may support growth or changes in the agent.

3. Treatment
   a) If the presence of an EID at a scene is known prior to entering, don the appropriate PPE and limit entry into the scene to essential personnel only. If an EID is discovered during assessment, immediately don the appropriate PPE, clear the scene of non-essential personnel and initiate the recommended decontamination procedures.
   b) Initiate General Patient Care.
   c) Treat the patient according to the signs and symptoms presented and according to the MIEMSS guidance for the specific EID. Procedures that increase risk of distributing fluids or secretions should be limited to those absolutely necessary to maintain life and provide the patient with a reasonable level of comfort.
   d) Contain any bodily fluids or respiratory excretions prior to transporting the patient. A SURGICAL mask may be placed on the patient to limit respiratory droplet aerosolization.

N-95 SHOULD **NEVER** BE PLACED ON A PATIENT AS THEY RESTRICT THE EXCHANGE OF RESPIRATORY GASES AND TYPICALLY HAVE A ONE-WAY EXPIRATORY VALVE THAT ALLOWS DROPLETS TO BE AEROSOLIZED UPON EXPIRATION DEFEATING THE PURPOSE OF PLACING A MASK ON THE PATIENT.

e) Transport the patient to the appropriate hospital.
Hospitals have been categorized into three levels based on their capabilities to assess and treat PUIs for designated EIDs. A list of designated EIDs will be published on the MIEMSS website.
   (1) Frontline Hospitals (DHMH designated) – All hospitals with emergency departments must have the capability to accept, identify, and isolate a PUI for a designated EID, then follow the approved procedures to notify the local health department to arrange for transfer to an Assessment Hospital. These patients will typically be transferred within 24 hours.
   (2) Assessment Hospitals (DHMH designated) – A facility that has the capability to receive, isolate, and provide care for a patient while testing is completed to confirm or deny the diagnosis of the suspected EID. The patient will remain at that hospital for 4 to 5 days until the patient is discharged or transfer to an designated Treatment Hospital
   (3) Treatment Hospitals (DHMH designated) – A facility assessed by the CDC to have the capability to admit and provide comprehensive care for and manage a patient with a confirmed designated EID, until the patient is no longer ill or has died.

f) Transport from the scene
PUIs at a residence should be transported directly to an Assessment Hospital unless total transport time is no longer than 45 minutes greater than transport to the nearest Frontline Hospital ED. If transport time is longer than 45 minutes greater than transport to the nearest Frontline Hospital ED, the patient must be transported to the closest appropriate Frontline Hospital. Priority 1 and Priority 2 patients with unresolved symptoms that cannot be managed outside the hospital should be taken to the closest Frontline Hospital. Receiving hospital notification of all suspected PUI patients should be done as early as possible to allow for hospital staff to prepare. Helicopter transport **NOT** indicated for the PUI patient

g) Transport of a health department monitored patient
Individuals who were exposed and have some risk of contracting the disease may be monitored or even quarantined by the health department. MIEMSS will be notified by DHMH if these patients become ill and require transportation by EMS to hospitals and will contact the local jurisdictional or waivered commercial EMS Operational Program to arrange that transport. DHMH will determine the destination hospital.

h) Interfacility Transfer
Transfers between hospitals will be completed by EMSOPs who have been granted a waiver from licensing to modify an ambulance specifically to transport an EID patient and have specific plans, training and quality assurance processes in place to do so. Public Safety EMSOPs may be called upon as a backup if the waivered commercial services are not available. DHMH will determine the destination hospital in these cases.

i) Communication
EMS providers transporting PUIs for designated EIDs MUST contact the receiving hospital via EMRC **prior to beginning that transport** and enter the hospital through the entrance designated by the receiving hospital. The **term PUI must be used** to ensure the hospital understands and is prepared to receive the patient. Obtaining medical direction from the closest Frontline and Assessment Hospitals is always an option to determine the appropriate destination.

j) Refusal of transport
If a PUI for a designated EID refuses care or transport, the EMS provider should remove him/herself from the immediate presence of the patient and contact the local health department through their dispatch center or locally defined procedures and provide as much of the following information about the patient that is available.
(1) Full name
(2) Age
(3) Gender
(4) Home address
(5) Contact phone numbers
(6) Current location
(7) Recent travel history
(8) Signs and symptoms being displayed
(9) Recent contact history with Ebola patients
The EMS provider should expect to be involved in a discussion of the situation with health department and law enforcement officials, and if a quarantine/isolation order is issued, should be prepared to assist law enforcement in carrying out that order.

k) Treat the patient according to the signs and symptoms presented and according to the MIEMSS guidance for the specific EID. Limit invasive procedures and any that increase risk of distributing fluids or secretions to those absolutely necessary to maintain life and provide the patient with a reasonable level of comfort.

l) Pediatric patients under the age of 15 discovered at the home or in a non–health care environment should be transported to a Treatment Hospital that is also a pediatric trauma center if transport times are not longer than 45 minutes greater than transport to the nearest Frontline Hospital ED. If transport times are longer than 45 minutes greater than transport to the nearest Frontline Hospital ED, the patient should be taken to an Assessment Hospital (if within 45 minute transport time) or the closest Frontline Hospital.