General CBRNE Identification of Agents

Purpose: This is written to provide general pre-arrival information for suspected HAZMAT and CBRNE (chemical, biological, radiological, nuclear, and explosive) incidents.

NOTE: This information is an overview of different types of incidents and agents.

Signs of an Incident

1. A chemical or biological incident may not always be obvious.
2. Many of the early signs and symptoms produced by chemical agents may resemble those of a variety of disorders. Biological symptoms are generally delayed.
3. The patient's clinical presentation may offer clues about the type of toxic substance exposure.
    - A. **CHEMICAL INCIDENT**
        - i. Explosions or suspected release of liquids, vapors or gases
        - ii. Mass casualties without obvious trauma
        - iii. Similar presentation and/or symptoms for multiple patients.
    - B. **BIOLOGICAL INCIDENT**
        - i. An unusual increase in the number of individuals seeking care, especially with similar symptoms such as respiratory, neurological, gastrointestinal, or dermatological symptoms.
        - ii. Any clustering of patients in time or location (e.g., persons who attended the same public event).
    - C. **RADIOLOGICAL INCIDENT**
        - i. Notification of the detonation of a nuclear device.
        - ii. Dirty bomb
        - iii. Known issues with nuclear power plant or other radioactive source.
    - D. **NUCLEAR INCIDENT**
        - i. Explosion with mushroom cloud and devastation of a large geographical area
    - E. **EXPLOSIVE INCIDENT**
        - i. Responders should be aware of the possibility of secondary incendiary devices and agents.
        - ii. Obvious trauma.

Medical Response

4. First responding units must approach with caution.
5. Approach upwind, uphill and upstream, as appropriate.
6. Utilize resource materials such as the Emergency Response Guidebook, Emergency Care for Hazardous Materials Exposure, or smart phone applications.
7. Utilize appropriate PPE.
8. Be aware of contaminated terrain and contaminated objects.
9. Hazmat response protocols must be initiated, as well as unified incident command.
10. Maintain a safe distance from the exposure area.

11. Attempt to identify the nature of the exposure by looking for placards, mode of dispersal (vehicle explosion, bomb, aerosolized gas, etc.)
12. Victims and potential victims must be evacuated rapidly from the contaminated area and decontaminated as quickly as possible, if appropriate.
13. Treatment may be initiated within the hot and/or warm zones of an incident by properly trained, protected, and equipped personnel.
14. Be alert for secondary devices.

Select Agents

1. **Chemical Agents**
    A. Chemical agents are compounds that may produce damaging or lethal effects.
    B. The potential of the agent to do damage is measured by how readily it disperses. Wind and rain will increase the dispersion rate of a chemical agent.
        i. **Persistent agents** have low volatility, evaporate slowly and are particularly hazardous in liquid form. They stay around for long periods of time (24 hours or longer) and contaminate not only the air but objects and terrain as well. Mustard and the nerve agent VX are examples of persistent agents.
        ii. **Non-persistent agents** are volatile and evaporate quickly, within several hours. Gases, aerosols, and highly volatile liquids tend to disperse rapidly after release. Phosgene, cyanide and certain nerve agents (with the exception of GD-Soman) are non-persistent agents. Because of their volatility, they pose an immediate respiratory hazard but are not particularly hazardous in liquid form.
    C. Chemical agents are classified by their effects:
        i. **Nerve agents**, the most deadly of all chemical agents, disrupt nerve transmission within organs and are quickly fatal in cases of severe exposure.
        ii. **Blood agents** (cyanides) interfere with the blood's ability to transport oxygen throughout the body; often rapidly fatal.
        iii. **Blister agents,** or vesicants, cause a blistering of the skin and mucous membranes, especially the lungs.
        iv. **Choking agents,** or pulmonary agents, irritate the lungs, causing them to fill with fluid.
        v. **Incapacitating agents,** cause an intense (but temporary) irritation of eyes and respiratory tract.
2. **Biological Agents:** Micro-organisms and toxins, generally, of microbial, plant or animal origin to produce disease and/or death in humans, livestock and crops.
    A. Biological agents
        i. Bacterial Agents (e.g. Anthrax, Cholera, Plague, Tularemia, Q-Fever)
        ii. Viral Agents (e.g. Smallpox, Viral Hemorrhagic Fevers)
        iii. Biological Toxins (e.g. Botulinum Toxins, Staphylococcal Enterotoxin B, Ricin, Trichothecene Mycotoxins (T2))

*Biological agents utilized as a CBRNE may not become evident until hours, days, or weeks after the exposure due to the various incubation periods for each pathogen.

3. **Radiological Agents:** Exposure typically has no immediate effect. The sooner the victim has symptoms (example: nausea and vomiting) the more significant the exposure.
4. **Nuclear Agents:** Primary risk is massive trauma and devastation as the result of a large-scale blast.
5. **Explosives:** Threats with explosive devices may be or large or small scale.

Personal Protective Equipment

1. **NIOSH/OSHA/EPA classification system:**
   A. **Level A:** Fully encapsulating, chemical resistant suit, gloves and boots, and a pressure demand, self-contained breathing apparatus (SCBA) or a pressure-demand supplied air respirator (air hose) and escape SCBA. (Maximum protection against vapor and liquids)
   B. **Level B:** Non-encapsulating, splash-protective, chemical-resistant suit that provides Level A protection against liquids but is not airtight. (Full respiratory protection is required but danger to skin from vapor is less)
   C. **Level C:** Utilizes chemical resistant clothing along with a full-faced/half mask air purifying respirator or PAPR rather than an SCBA or air-line.
   D. **Level D:** Limited to coveralls or other work clothing, boots, and gloves
2. **Universal Precautions:**
   A. Assume that all patients are potentially contagious and use appropriate barriers to prevent the transmission of pathogenic organisms. PPE include gloves, gowns, HEPA respirators, face shields and appropriate handwashing.
   B. If a chemical exposure is suspected, appropriate protective suits and respirators (PAPR) with Organic Vapor/HEPA cartridges should be donned.

Chemical Exposure

Purpose: To provide guidance for the treatment of chemical exposure patients.

Assessment/Management – Chemical Agents
If there is a confirmation of, or symptoms indicative of, a chemical incident, utilize appropriate protective suits and respirators (PAPR) with Organic Vapor/HEPA cartridges should be donned.

I. Nerve Agents & Cyanide Compounds – refer to **Nerve Agent/Organophosphate Pesticide Exposure-Special Operations Protocol** and **Cyanide Exposure-Special Operations Protocol.**

II. Choking Agents (e.g., Phosgene, Chlorine, Chloropicrin)
- A. Exposure Route: Inhalation
- B. Signs and symptoms:
  1. Cough, dyspnea, irritation of mucous membranes, pulmonary edema
- C. Patients should be promptly removed from the area to a clean atmosphere.
- D. Treatment
  1. Assist ventilations, as necessary.
  2. Provide 100% oxygen
  3. If wheezing, administer **albuterol** 2.5 mg/3ml **NS** nebulized per **Nebulized Bronchodilators-Medication Protocol** (Per MCA selection may be EMT skill)

Nebulized **albuterol** administration
☑ EMT

  a. 4 puffs from patient's own prescribed albuterol metered dose inhaler (with spacer if available)
  3. For severe exposure consider early interventional airway and aggressive ventilatory support (including CPAP per **CPAP-Procedure Protocol**)
  4. If eye exposure,
     a. Eye irrigation
        i. Remove contact lenses
        ii. Flush with 1000cc of **NS** each eye
     b. For eye pain, use **tetracaine hydrochloride** 1-2 drops in each eye, if available.

III. Vesicant Agents (Blister agents)
- A. Examples: Sulfur Mustard (HD), Nitrogen Mustard (HN), Lewisite, Phosgene Oxime (CX) Vesicant agents are named for their tendency to cause blisters.
- B. Exposure Route: Dermal/Inhalation
- C. Decontamination is critical:
  1. Medical providers will require the proper PPE as determined by unified command before decontaminating patient.

2. Remove patient's clothing, if necessary.
3. Patients may begin self-decontamination by removing clothing and using soap (if available) and water.
4. Decontaminate by blotting and cleansing with soap (if available) and water.
5. Remember that time is critical for effective mustard decontamination.

D. Management/Treatment
   1. Immediate attention should be directed toward:
      a. Assisted ventilation
      b. Administration of 100 % oxygen
   2. Symptomatic treatment per protocol.

IV. Lacrimator Agents (Tear Gas)
   A. Information: Lacrimator (tearing) agents are widely used by law enforcement, the military, and widely available to the public.
   B. Exposure Route: Inhalation/Ocular
   C. Signs and Symptoms: The most common effects are nasal and ocular discharges, photophobia, and burning sensations in the mucous membranes.
   D. Decontamination:
      1. Patients should be decontaminated with soap and water.
      2. Medical providers require protective masks and clothing for patient management since lacrimator agents are transmitted by physical contact.
      3. Decontaminate by blotting and cleansing with soap (if available) and water.
   E. Treatment
      1. Symptomatic treatment per protocol (no specific antidote).
      2. Eye irrigation
         a. Remove contact lenses
         b. Flush with 1000cc of **NS** each eye
         c. Use **Tetracaine hydrochloride**, if available, 1-2 drops in each eye.

<u>Medication Protocols</u>
Albuterol
Tetracaine hydrochloride

Nerve Agent/Organophosphate Pesticide Exposure Treatment

Purpose: This protocol is intended for EMS personnel at all levels that have been trained in the use of these devices and authorized by the medical control authority to assess and treat patients exposed to nerve agents and organophosphate pesticides utilizing the **Duo Dote/Mark I Antidote Kits** and/or a combination of auto injectors and/or nasal sprays. Administration of non-prepackaged kits is restricted to ALS.

The following medications in this protocol are not required to be carried on EMS vehicles and may be available through special response units.

Medications/Definitions:

A. One (1) Nerve Agent (NA) Antidote Kit – for the purpose of this protocol means either one (1) Duodote OR one (1) Mark I
   1. **Duodote** – a single device with 2 chambers. The front chamber contains 2.1 mg atropine, the back chamber contains 600 mg pralidoxime (2-PAM). When activated the device sequentially administers both drugs through a single needle.
   2. **Mark I Antidote kit**– 2 separate injectors. One containing 2mg atropine, the second containing 600 mg of pralidoxime (2-PAM).
B. **Atropine auto injector**- a single auto-injector of atropine that comes in 3 doses: atropine 0.5 mg, atropine 1 mg, atropine 2 mg.
C. **Midazolam auto-injector** – 20 mg midazolam per device
D. **Midazolam nasal spray** – 5 mg per device
E. **Diazepam auto-injector** – 10 mg per device
F. Non prepackaged kit administration: Administer 600 mg **pralidoxime** and 2 mg of **atropine** for every one (1) NA Antidote Kit.(ALS only)

Chemical Agents

1. Agents of Concern
   A. Military Nerve Agents including: Sarin (GB), Soman (GD), Tabun (GA), VX
   B. Organophosphate Pesticides (OPP) including Glutathione, Malathion, Parathion, etc.
2. Detection: The presence of these agents can be detected through a variety of monitoring devices available to most hazardous materials response teams and other public safety agencies.

Patient Assessment

1. **SLUDGEM** Syndrome
   A. **S** Salivation / Sweating / Seizures
   B. **L** Lacrimation (Tearing)
   C. **U** Urination
   D. **D** Defecation / Diarrhea
   E. **G** Gastric Emptying (Vomiting) / GI Upset (Cramps)

F. **E** Emesis
G. **M** Muscle Twitching or Spasm

2. Threshold Symptoms: These are symptoms that may allow rescuers to recognize that they may have been exposed to one of these agents and include:
   A. Dim vision
   B. Increased tearing / drooling
   C. Runny nose
   D. Nausea/vomiting
   E. Abdominal cramps
   F. Shortness of breath

NOTE: Many of the above may also be associated with heat related illness.

1. Mild Symptoms and Signs:
   A. Threshold Symptoms *plus*:
   B. Constricted Pupils*
   C. Muscle Twitching
   D. Increased Tearing, Drooling, Runny Nose
   E. Diaphoresis
2. Moderate Symptoms and Signs
   A. Any or all above *plus:*
   B. Constricted Pupils
   C. Urinary Incontinence
   D. Respiratory Distress with Wheezing
   E. Severe Vomiting
3. Severe Signs
   A. Any or All of Above *plus*
   B. Constricted Pupils*
   C. Unconsciousness
   D. Seizures
   E. Severe Respiratory Distress

***NOTE**: Pupil constriction is a relatively unique finding occurs early and persists after antidote treatment. The presence of constricted pupils with SLUDGEM findings indicates nerve agent / OPP toxicity. Constricted pupils may not be present with localized dermal exposure.

Personal Protection

1. Be Alert for secondary device in potential terrorist incident
2. Personal Protective Equipment (PPE)
   A. Don appropriate PPE as directed by Incident Commander.
   B. Minimum PPE for Non-Hot Zone (i.e., DECON Zone)
      a. Powered Air Purifying Respirator or Air Purifying Respiratory with proper filter
      b. Chemical resistant suit with boots
      c. Double chemical resistant gloves (butyl or nitrile)
      d. Duct tape glove suit interface and other vulnerable areas
3. Assure EMS personnel are operating outside of Hot Zone
4. Avoid contact with vomit if ingestion suspected – off gassing possible

5. Assure patients are adequately decontaminated *prior* to transport
    A. Removal of outer clothing provides significant decontamination
    B. Clothing should be removed before transport
    C. DO NOT transport clothing with patient
6. Alert hospital(s) as early as possible

Patient Management (After Evacuation and Decontamination)

1. Evaluate and maintain the airway, provide oxygenation and support ventilation as needed.
2. NOTE: Anticipate need for extensive suctioning
3. Administer appropriate number of NA Antidote kits (**Duo Dote OR Mark I)** kits per Chart A. below.
    A. NOTE: For NA kit administration only:
        i. Adult is > 8 years of age
        ii. Pediatrics is ≤ 8 years of age

    B. NOTE: Medical Control contact is required prior to administration for:
        i. Patients that meet self-administration criteria
        ii. Patients that meet mild symptoms and signs criteria in chart below:

	Clinical Findings	Signs/Symptoms	Required Conditions	NA Kits To Be Delivered
SELF-RESCUE	**Threshold Symptoms**	• Dim vision • Increased tearing • Runny nose • Nausea/vomiting • Abdominal cramps • Shortness of breath	Threshold Symptoms *-and-* Positive evidence of nerve agent or OPP on site Medical Control Order	1 NA Kit (self-rescue)
ADULT PATIENT > 8 years of age	**Mild Symptoms and Signs**	• Increased tearing • Increased salivation • Dim Vision • Runny nose • Sweating • Nausea/vomiting • Abdominal cramps • Diarrhea	Medical Control Order	1 NA Kit
	Moderate Symptoms and Signs	• Constricted pupils • Difficulty breathing • Severe vomiting	Constricted Pupils	2 NA Kits
	Severe Signs	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Constricted Pupils	3 NA Kits (If 3 NA Kits are used, administer 1st dose of available benzodiazepine)

	Clinical Findings	Signs/Symptoms	Required Conditions	NA Kits To Be Delivered
PEDIATRIC ≤ 8 years of age	**Pediatric Patient with Non-Severe Signs/Symptoms**	*Mild or moderate symptoms as above*	Threshold Symptoms *-and-* Positive evidence of nerve agent or OPP on site Medical Control Order	1 NA Kit
	Pediatric Patient with Severe Signs/Symptoms	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Severe breathing difficulty Weakness	1 NA Kit

4. Establish vascular access per **Vascular Access and IV Fluid Therapy-Procedure Protocol** when feasible, do NOT delay medication administration
5. If NA Antidote kit is not available:
   A. Administer **atropine auto injector** 2 mg IM for every 1 NA Kit- that is required.
   B. Administer atropine 2 mg IV/IM for every 1 NA Kit that is required
   C. Administer 600 mg pralidoxime IV/IM for every 1 NA Kit that is required (when available)
6. Treat seizures
   A. Adult (> 14 years of age)
      a. Administer **midazolam** 10 mg IM or 5 mg IN
         1. If available, midazolam auto-injector or midazolam nasal spray may be utilized, ensure total dose (regardless of dosage per device) equals 10 mg IM or 5 mg IN.

      OR

      b. Administer **Valium (diazepam**) auto-injector.

   B. Pediatrics (≤ 14 years of age)
      a. Administer **midazolam** 0.1 mg/kg IM (maximum individual dose 10 mg) or 5 mg IV/IO/or IN

      OR

         1. If available, **diazepam auto-injector** or **diazepam nasal spray** may be utilized, ensure total dose (regardless of dosage per device) does not exceed 10 mg IM or 5 mg IN.

7. Monitor EKG
8. For continued secretions, contact Medical Control and administer additional **atropine** per orders.
   A. Adults (> 14 years of age) **atropine** 2 mg IV/IM
   B. Pediatrics (< 14 years of age) **atropine** 0.05 mg/kg IV/IM

Nerve Agent/Organophosphate Antidotes/Countermeasures

Weight	Age	Duodote[1] Mod-Severe Sxs	Atropen[2] (1 mg) Mod-Severe Sxs	Atropine Dose (0.1 mg/kg) IM/IV/IO	Atropine Vial[2] (1 mg/mL)	Cardiac Atropine[2,3] (1 mg/10 mL)	Midazolam[4] (10 mg/2 mL) IM/IV/IO
3-5 kg (6-11 lbs)	**0-2 months**	**1**	**1**	0.4 mg	**0.4 mL**	**4 mL**	**0.1 mL**
6-7 kg (13-16 lbs)	**3-6 months**	**1**	**1**	0.7 mg	**0.7 mL**	**7 mL**	**0.2 mL**
8-9 kg (17-20 lbs)	**7-10 months**	**1**	**1**	0.9 mg	**0.9 mL**	**9 mL**	**0.2 mL**
10-11 (21-25 lbs)	**11-18 months**	**1**	**1**	1 mg	**1 mL**	**10 mL**	**0.2 mL**
12-14 kg (26-31 lbs)	**19-35 months**	**1**	**2**	1.3 mg	**1.3 mL**	**13 mL**	**0.25 mL**
15-18 kg (32-40 lbs)	**3-4 years**	**1**	**2**	1.6 mg	**1.6 mL**	**16 mL**	**0.3 mL**
19-23 kg (41-51)	**5-6 years**	**1**	**2**	2 mg	**2 mL**	**20 mL**	**0.4 mL**
24-29 kg (52-64)	**7-9 years**	**2**	**3**	2.6 mg	**2.6 mL**	**26 mL**	**0.5 mL**
30-36 kg (65-79 lbs)	**10-14 years**	**2**	**3**	3.3 mg	**3.3 mL**	**33 mL**	**0.6 mL**
Adult	**>14 years**	**2 to 3**	**4 to 6**	4 to 6 mg	**4 to 6 mL**	**40-60 mL**	**2 mL**

[1]Preferred initial autoinjector, [2]May Repeat atropine every 5 minutes until airway secretions decrease (6 mg maximum), [3]Not available in MEDDRUN, [4]Patients with severe symptoms should receive midazolam even if not obviously seizing

Medication Protocols
Atropine
Midazolam
Nerve Agent Antidote Kit
Pralidoxime

CHEMPACK/MEDDRUN

Purpose: The CHEMPACK Project provided the State of Michigan, in collaboration with the Center for Disease Control (CDC) and the U.S. Department of Homeland Security, with a sustainable, supplemental source of pre-positioned nerve agent/organophosphate antidotes and associated pharmaceuticals. A large-scale event would rapidly overwhelm both the pre-hospital and hospital healthcare systems.

The CHEMPACK project is one component of the Michigan Emergency Preparedness Pharmaceutical Plan (MEPPP), a comprehensive statewide plan for coordinating timely application of pharmaceutical resources in the event of an act of terrorism or large-scale technological emergency/disaster.

The Michigan Emergency Drug Delivery and Resource Utilization Network (MEDDRUN) established standardized caches of medications and supplies strategically located throughout the State of Michigan. In the event of a terrorist incident or other catastrophic event resulting in mass casualties, MEDDRUN is intended to rapidly deliver medications and medical supplies, when local supplies are not adequate or become exhausted. The goal is to deploy MedPack within 15 minutes of the request.

Only authorized agencies and officials can request MEDDRUN. These agencies include any Michigan Hospital, local public health agency, or emergency management program. Authorized officials include designated representatives from the Bureau of Emergency Preparedness, EMS, and Systems of Care (BEPESOC), the Michigan State Police (MSP) and the Regional Bioterrorism Preparedness projects.

Activation

I. Recognition of need can come from EMS personnel, or it may be a hospital, public health, EOC, or Emergency management that identifies the need for activation.
   A. EMS Identifies a need for medication support.
      1. Contact Central Dispatch or a hospital/MCA
      2. Central Dispatch or hospital/MCA contacts MEDDRUN and/or CHEMPACK Communications Agency
   B. Hospital, Public Health, EOC or Emergency Management
      1. Identifies need
      2. Hospital, Public Health, EOC or Emergency Management contacts MEDDRUN and/or CHEMPACK Communications Agency
   C. To activate MEDDRUN and/or CHEMPACK call:
      1. Primary Communication Agency: 877-633-7786
      2. Backup Communication Agency: 616-391-5330

II. CHEMPACK/MEDDRUN Communications Agency:
   A. Conducts analysis & issues deployment orders to selected CHEMPACK/MEDDRUN storage sight, (CSS) Point of Contact (POC).

III. Storage site notifies the transport unit and moves cache to designated loading area.

A. If confirmed, the Agency loads CHEMPACK/MEDDRUN supplies onto transport unit.
B. If deployed, Dispatch notifies the MCA regarding dispatching transport vehicle.

Responsibilities

I. BEPESOC follow-up will include:
   A. Contacting the requesting agency to authenticate the request.
   B. Contacting Communications Agency to provide confirmation or initiate recall. If confirmed, advise if Alert Orders should be initiated.
   C. Contacts Michigan State Police (MSP) East Lansing Operations Center (ELOP)
   D. Coordinates potential Inter-Hospital Formulary Distribution.
   E. Coordinates a MI-HAN Alert.

II. Communications:
   A. Provides Certificate Order/Recall Order.
   B. Notifies storage site Point of Contact of either a Certification Order or Recall Order.
   C. If BEPESOC issues an alert, Communications Agency issues an Alert Order to appropriate CHEMPACK storage site(s) for possible deployment.

III. Storage Site:
   A. Once confirmed, the Agency loads the supplies into the transportation vehicle and transports to the specific location.

IV. Designated Transportation Agency:
   A. Ensure adequate security of the cache materials while being transported to the delivery point.
   B. Maintain communications with the storage site's Point of Contact while en route to the delivery point, providing periodic updates regarding present location/circumstances that may impact time of delivery.
   C. Follow the routes specified by the CSS POC and advise upon arrival to the delivery point.

DELIVERY OF CACHE

I. When the cache arrives at the delivery point, the Incident Command (IC) will take receipt of the cache as the person in charge by completing the Transfer of Custody form that will accompany the cache. The IC will ensure accurate accounting of the antidote supplies in coordination with the senior medical/EMT at the scene.
   A. If additional antidotes are required, the IC will Inform Central Dispatch/911.
   B. If it appears that the amount of antidote needed will be less than anticipated, the transport vehicle will remain in the area to take custody of the unused antidotes to return them to the CSS POC.
   C. Advise the CSS POC when the mission is completed.

POST DEPLOYMENT

I. Within 72 hours of a deployment, the Agencies, BEPESOC and Communications will prepare a Preliminary After Action Report (AAR) using the format prescribed by BEPESOC. (See AAR attachment) BEPESOC will review each AAR with the intent of improving future responses.

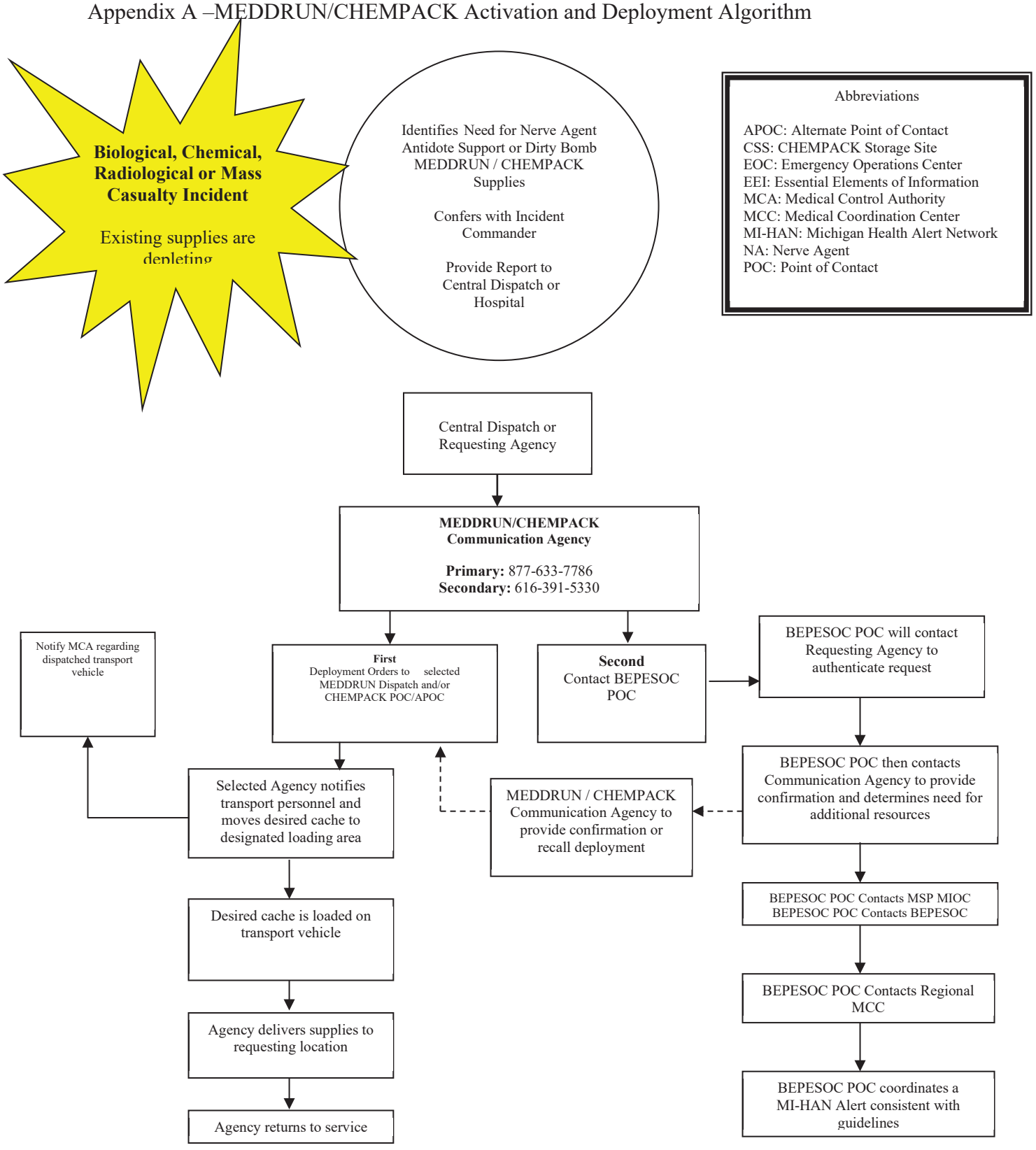
Re-STOCKING MEDPACKS

I. It is important that a packs be restocked and placed back in service as quickly as possible. The Agency may be returned to service on a limited basis with a partially depleted MedPack/Chempack. Depending on the availability of federal funds, the Regional Emergency Preparedness Coordinator, in collaboration with BEPESOC, will be responsible for ordering the supplies to re-stock the MedPack(s)/Chempack(s) used.

II. BEPESOC and Communications will be notified upon the MedPack/Chempack being returned to FULL SERVICE.

**MEDDRUN may also be pre-deployed for special events, designated by the State and Regional Leadership.*

Appendix A –MEDDRUN/CHEMPACK Activation and Deployment Algorithm



Essential Elements of Information (EEI) Report

Essential Elements of Information Report		
1.	**Name, Position, and Contact Information for the Individual Requesting Deployment of CHEMPACK Cache**	**Name:** _____ **Position/Title:** _____ **Telephone/Other Contact:** _____
2.	**Name of Physician/Officer in Charge of Medical Management at the Scene (if different than above)**	**Name:** _____ **Position/Title:** _____ **Employer:** _____ **Telephone/Other Contact:** _____
3.	**Location of Incident**	**Jurisdiction Name:** _____ **Closest Intersection:** _____ OR **Name of Site:** _____
4.	**Estimated Number of Casualties**	**None** **5-10** **100-300** **1** **10-20** **300-500** **2-3** **20-40** **500-1000** **4-5** **40-100** **1000+**
5.	**Symptoms of Casualties**	**Pinpoint Pupils** **Twitching** **Dimness of Vision** **Seizures** **Slurred Speech** **Chest Tightness** **Difficulty Breathing** **Unconsciousness**
6.	**Local Supplies of Antidotes and Pharmaceuticals are Exhausted, multiple lives remain at risk, and CHEMPACK supplies are needed to save lives**	☐ **Yes** ☐ **No**

Cyanide Exposure

Purpose: This Protocol is intended for EMS personnel at all levels to assess and treat patients exposed to cyanide. Additionally, the protocol allows trained and authorized paramedics to administer antidotes when available.

NOTE: A single medical control order in a mass casualty incident may be applied to all symptomatic patients.

Definitions: For the purposes of this protocol Cyanokit (brand name) refers to **Hydroxocobalamin**

Medications in this protocol are not required to be carried on EMS vehicles and may be available through special response units.

Chemical Agent

1. Agents of Concern: Cyanide
    a. Hydrogen Cyanide
    b. Potassium/Sodium Cyanide
    c. Cyanogen Chloride
2. Detection: The presence of these agents can be detected through specialized environmental monitoring equipment available to hazardous materials response teams.
3. Modes of Exposure
    a. Inhalation (including smoke inhalation)
    b. Ingestion
    c. Skin absorption unlikely
4. Alert receiving hospital ASAP to prepare additional antidotes

Assessment

1. Hypotension
2. Shortness of breath
    a. Possibly accompanied by chest pain
    b. Generally, not associated with cyanosis
    c. Pulse oximetry levels usually normal
    d. Usually associated with increased respiratory rate and depth
    e. Potential for rapid respiratory arrest
3. Confusion, decreased level of consciousness, coma
4. Seizures
5. Headache, dizziness, vertigo (sense of things spinning)
6. Pupils may be normal; dilation is a late sign

Indications for Antidote use in patient with suspected cyanide poisoning:

1. Cardiac or Respiratory Arrest
2. Hypotension SBP<90 mm Hg
3. GCS <= 9

Personal Protection

1. Be Alert for secondary device in potential terrorist incident

2. Personal Protective Equipment (PPE) as directed by Incident Commander.
3. Assure EMS personnel are operating outside of Hot and Warm Zones, unless appropriately trained and in proper PPE.
4. Avoid contact with vomit if ingestion suspected – off gassing possible
5. Decontamination of victims usually not indicated unless additional unknown chemical(s) suspected

Patient Management (in Cold zone)

1. Administer oxygen 10-15 LPM via non-rebreather mask and support ventilation as needed**.** Per **Oxygen Administration-Procedure Protocol and/or Airway Management-Procedure Protocol**
    a. Note: Patients in respiratory arrest (i.e., not breathing but still having a pulse) have been found to respond to antidote therapy and should receive positive pressure ventilation when operationally feasible.
    b. This is in contrast to most triage systems that would categorize non-breathing patients as non-survivable.
2. Establish vascular access. Refer to **Vascular Access & IV Fluid Therapy-Procedure Protocol**
3. Administer antidote:
    a. **Cyanokit**® (5g. adult IV/IO; 70 mg/kg pediatric IV/IO) per **Hydroxocobalamin (Cyanokit®)-Medication Protocol** (preferred, per MCA Selection)

Cyanokit® Included?
(●) **Yes** ( ) **No**

    b. Each vial of **Cyanokit**® for injection is to be reconstituted with diluent (not provided with **Cyanokit**®) using the supplied sterile transfer spike.
        i. The recommended diluent is **0.9% Sodium Chloride** injection (0.9%NaCl).
        ii. The line on each vial label represents the volume of diluent. Following the addition of diluent to the lyophilized powder, each vial should be repeatedly inverted or rocked, not shaken, for at least 60 seconds for the 5g bottles, 30 seconds for the 2.5g bottles prior to infusion.
        iii. **Cyanokit**® solutions should be visually inspected for particulate matter and color prior to administration.
        iv. If the reconstituted solution is not dark red or if particulate matter is seen after the solution has been appropriately mixed, the solution should not be administered to the patient and should be discarded.
        v. There are a number of drugs and blood products that are incompatible with **Cyanokit**®, thus **Cyanokit**® requires a separate intravenous line for administration.
        vi. Depending upon the severity of the poisoning and the clinical response, a second dose of 5 g may be administered by IV/IO infusion for a total dose of 10g in adults. The rate of infusion for the second dose may range from 15 minutes (for patients in extremis) to two hours, as clinically indicated. Contact medical control for second dose instructions for pediatric patients.

Cyanokit® Administration for Suspected Cyanide Poisoning (including serious smoke inhalation)

Weight	Age	Cyanokit® Dose[1] (~70 mg/kg +/-) IV/IO	Cyanokit® Volume to Administer[2] IV/IO
3-5 kg (6-11 lbs)	**0-2 months**	250 mg	**10 mL[3]**
6-7 kg (13-16 lbs)	**3-6 months**	500 mg	**20 mL[3]**
8-9 kg (17-20 lbs)	**7-10 months**	625 mg	**25 mL[3]**
10-11 (21-25 lbs)	**11-18 months**	750 mg	**30 mL[3]**
12-14 kg (26-31 lbs)	**19-35 months**	900 mg	**36 mL[3]**
15-18 kg (32-40 lbs)	**3-4 years**	1100 mg	**44 mL[3]**
19-23 kg (41-51)	**5-6 years**	1500 mg	**60 mL[3]**
24-29 kg (52-64)	**7-9 years**	1750 mg	**70 mL[3]**
30-36 kg (65-79 lbs)	**10-14 years**	2500 mg	**100 mL[4] (1/2 bottle)**
Adult 37 40 kg (80 88 lbs)	**>14 years**	3000 mg	**120 mL[4]**
Adult 41 49kg (89 108 lbs)	**>14 years**	3500 mg	**140 mL[4]**
Adult > or 50 kg (> or 109 lbs)	**>14 years**	5000 mg	**200 mL[4] (full bottle)**

[1]The safety and efficacy in pediatrics has not been established, [2]Administer slowly over 15 minutes.
[3]Push slowly over 15 minutes, [4]Infuse over 15 minutes

4. Cardiac monitoring
5. Special Considerations for Smoke Inhalation
    a. Smoke inhalation victims may have cyanide poisoning along with burns, trauma, and exposure to other toxic substances making a diagnosis of cyanide poisoning particularly difficult.
    b. Prior to administration of **Cyanokit®**, smoke inhalation victims should be assessed for the following:
        i. Exposure to fire or smoke in an enclosed area
        ii. Presence of soot around the mouth, nose or oropharynx
        iii. Altered mental status
    c. The **Cyanokit®** should be considered for all serious smoke inhalation victims (including cardiac arrest).

<u>Medication Protocols</u>
Hydroxocobalamin (Cyanokit®)

Mass Casualty Incidents

The purpose of this protocol is to provide a uniform initial response to a Mass Casualty Incident (MCI).

I. **Definition of MCI**: For the purpose of this document, an MCI will be defined as any incident, which because of its physical size, the number and criticality of its victims, or its complexity, is likely to overwhelm those local resources, which would typically be available.

II. **Overall MCI Management – DISASTER Paradigm™**
The DISASTER Paradigm™ is part of the National Disaster Life Support (NDLS) Program and provides a framework for management of MCIs. The components may be pursued concurrently.
A. ***D****etection*: Do we have an MCI? If yes, immediately declare to dispatch.
B. ***I****ncident Command*: Establish or interface with the Incident Command System (ICS)
C. ***S****afety and Security*: Immediate action steps to immediately protect responders, casualties, public.
D. ***A****ssess Hazards*: Actively assess (initially and ongoing) for hazards that can harm responders, casualties, public.
E. ***S****upport*: Request resources needed to effectively manage incident
F. ***T****riage and Treatment*: Initiate SALT Triage and provide treatment to casualties
G. ***E****vacuation:* Transport of casualties to appropriate hospitals (avoiding overloading individual hospitals) or alternate treatment centers
H. ***R****ecovery:* Return responders and community to pre-incident status and identify lessons learned.

III. **MCI Detection**
A. Actively assess the scene to determine if MCI is (or maybe) present
B. Alert dispatch and assure hospitals and other stakeholders made aware
C. For major incidents (including incidents involving multiple counties/MCA resources) RMCC should be alerted

IV. **Incident Command System**
A. All incidents shall be managed in accordance with the National Incident Management System and the National Response Framework.
B. If Incident Command (IC) has not been established, the most qualified EMS personnel shall assume the role of IC until command is transferred.
C. The IC is responsible for all functions of the Incident Command System (ICS) until other personnel are assigned those functions**.**
D. Establish EMS Branch Director/EMS Group Supervisor
    1. Established by IC
    2. Responsible for all EMS activities
    3. Reports to IC or Operations Chief
E. Establish functional subordinate EMS ICS positions, as appropriate. Note, positions may be combined (e.g., Treatment/Transport) when appropriate.
    1. Triage Unit Leader Role
        a. Report to EMS Branch Director/Group Supervisor

b. Coordinates rapid triage process
c. Determines number/severity of casualties

2. Treatment Unit Leader Role
   a. Within EMS Branch/Group Operations, establish Casualty Collection Point (CCP)
   b. Assigns personnel to treatment area(s)
   c. Supervise care in treatment areas and/or establish subordinate treatment unit leaders for selected casualty types (e.g., Red, Yellow, Green, etc.).
3. Transportation Unit Leader Role
   a. Prioritize transportation of patients from scene assuring high priority patients transported first and departing ambulances maximally utilized.
   b. With information from coordinating resource, assigns destination hospital or alternate care center
   c. Maintains log and tracking of patients transported

V. **Safety and Security**
   A. Responders should don appropriate personal protective equipment (PPE)
   B. Identify any immediate threats to responders, patients, or the public

VI. **Assess for Hazards**
   A. Actively assess scene for hazards
   B. Ongoing assessment for new hazards

VII. **Support – Request Additional Resources for Incident**
   A. Ambulances
      1. Request additional ambulances
      2. Ideally, one ambulance for every two Red/Yellow patients
   B. Non-Ambulance Medical Transport
      1. Non-licensed vehicles may be used for emergency transport when licensed ambulances are not readily available.

If an ambulance operation is unable to respond to an emergency patient within a reasonable time, this part does not prohibit the spontaneous use of a vehicle under exceptional circumstances to provide, without charge or fee and as a humane service, transportation for the emergency patient. Emergency medical personnel who transport or who make the decision to transport an emergency patient under this section shall file a written report describing the incident with the medical control authority. MCL 333.20939

      2. Non-Licensed vehicles include (but are not limited to):
         a. Wheelchair vans
         b. Busses
         c. Other public safety vehicles
   C. Request specialized resources, as appropriate
      1. Local/regional mass casualty resources
      2. Decontamination units
      3. Air medical units
      4. Activate MEDDRUN/CHEMPAC per protocol

D. For major incidents, RMCC may be appropriate for coordination of support

VIII. **Triage and Treatment**

A. Initiate SALT Triage - Preferred
   1. Sort – Perform global assorting
   2. Assess – Perform individual assessment
   3. Life Saving Interventions
      a. Control major hemorrhage
      b. Open airway (if child, 2 rescue breaths)
      c. Chest decompression, as needed (Paramedic only)
      d. Auto-injector antidote (e.g., Duodote®)
   4. Treatment and Transport

B. Triage other than SALT must be compliant with the Model Uniform Core Criteria for Mass Casualty Incident Triage (MUCC)[1]

C. Categorize Patients
   1. **Immediate (Red):** Unable to follow commands or make purposeful movements, OR they do not have a peripheral pulse, OR they are in obvious respiratory distress, OR they have a life-threatening external hemorrhage; provided their injuries are likely to be survivable given available resources. Examples include:
      a. Physiologic and anatomic Trauma Triage Criteria
      b. Major burns (>20% BSA)
      c. Moderate to severe respiratory distress
   2. Delayed (Yellow): Able to follow commands or make purposeful movements, AND they have peripheral pulse, AND they are not in respiratory distress, AND they do not have a life-threatening external hemorrhage, AND they have injuries that are not considered minor. Examples include:
      a. Mechanism of injury Trauma Triage Criteria
      b. Isolated fractures/dislocations
      c. Large and/or multiple lacerations with controlled bleeding
      d. Deep burns <20% BSA
   3. **Minimal (Green):** Able to follow commands or make purposeful movements, AND they have peripheral pulse, AND they are not in respiratory distress, AND they do not have a life-threatening external hemorrhage, AND their injuries are considered minor. Examples include:
      a. Minor wounds (abrasions, isolated laceration)
      b. Contusions
      c. Minor head trauma (GCS 15)
   4. Expectant (Gray): unable to follow commands or make purposeful movements OR they do not have a peripheral pulse, OR they are in obvious respiratory distress, OR they have a life-threatening external

[1] Model Uniform Core Criteria for Mass Casualty Triage. Disaster Med Public Health Preparedness.2011;5:125-128, doi: 10.1001/dmp.2011.41.

hemorrhage, AND they are unlikely to survive given the available resources. These patients should receive resuscitation or comfort care when sufficient resources are available. Examples include:

a. Major head trauma (open skull fracture with exposed brain, blown pupil, etc)
b. Major burns (>75% BSA)

5. Dead (Black): No spontaneous breathing after establishing a basic airway (and 2 ventilations in a child). Patients triaged as Dead should be reassessed after initial triage to confirm no signs of life.

D. Establish Casualty Collection Point(s)
1. One or more sites to provide triage and treatment
2. May be subdivided into treatment areas based on triage category
3. Emphasis should be on providing lifesaving treatment and rapid transport
4. Minimal patients can be sequestered in a designated area
5. Perform secondary triage within each treatment area as able

E. Treatment
1. Treatment should be provided in accordance with Michigan EMS State Protocols
2. ALS should be limited to essential medical interventions, including pain relief

IX. **Evacuation**

A. Transport Unit Leader should assure all departing ambulances and non-licensed transport vehicles depart scene with highest acuity patients
1. Assure distribution of patients to appropriate hospitals (e.g., trauma centers)
2. Maintain a tracking log of patients, acuities, and destinations

B. Non-hospital alternate care centers may be established in major incidents for lower acuity patients

C. Licensed EMS personnel should accompany injured patients when transported in non-licensed vehicles whenever possible

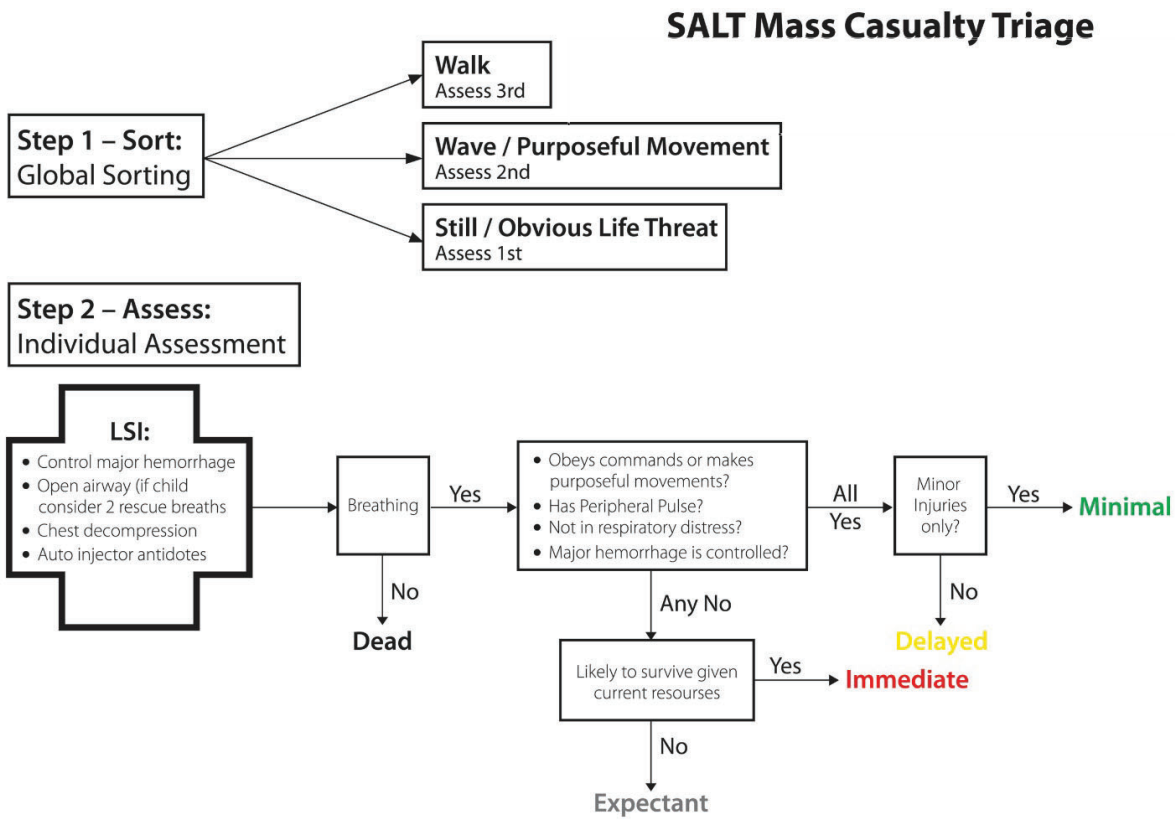
X. **Recovery**

A. Responder rehabilitation (e.g., hydration, nutrition)

B. Responder recovery (e.g., physical and emotional)

C. Agency recovery (e.g., resupply, workforce recovery) and completion of After Action Review

D. Community recovery



XI. REGIONAL MEDICAL COORDINATION CENTER (RMCC)

The RMCC serves as a regional multi-agency coordination center entity as defined by the National Incident Management System (NIMS). The RMCC serves as a single regional point of contact for the coordination of healthcare resources. The RMCC is intended to optimize resource coordination among hospitals, EMS agencies, medical control authorities and other resources. The RMCC serves as a link to the Community Health Emergency Coordination Center (CHECC).

The RMCC acts as an extension and agent of the Medical Control Authority.

A. RMCC Responsibilities include, but are not limited to:
   1. Maintain communications with all involved entities
      a. EMS Branch Directors
      b. EMS Division/Group Supervisors
      c. EMS Unit Leaders
      d. Hospitals
      e. Local EOCs (when activated)
      f. CHECC (when activated)
      g. Alternate care sites (when activated)
      h. Other RMCCs (as appropriate)
   2. Provide initial and update alerts via available communications resources.
   3. Provide frequent updates to on-scene EMS Branch Directors/Group/ Supervisors (or designee) regarding hospital casualty care capacity.
   4. May relay casualty transport information to receiving facilities.
   5. May relay urgent and routine communications to appropriate entities.
   6. May assist in coordination and distribution of resources.
   7. Other appropriate tasks as necessary for an effective regional medical response.

B. RMCC Immunity from Liability

It is the intent of this protocol that the Regional Medical Coordination Center and the personnel staffing the RMCC and performing the functions are afforded immunity from liability whether or not a Mass Casualty Incident has occurred, as provided through MCL 333.20965 of Part 209 of PA 368 of 1978, as amended. This section specifically provides immunity from liability protection to Medical Control Authorities in the development and implementation of department-approved protocols (see language below):

Sec. 20965 (3) Unless an act or omission is the result of gross negligence or willful misconduct, the acts or omissions of any of the persons named below, while participating in the development of protocols under this part, implementation of protocols under this part, or holding a participant in the emergency medical services system accountable for department-approved protocols under this part, does not impose liability in the performance of those functions:

(a) The medical director and individuals serving on the governing board, advisory body, or committees of the medical control authority or employees of the medical control authority.
(b) A participating hospital or freestanding surgical outpatient facility in the medical control authority or an officer, member of the medical staff, or other employee of the hospital or freestanding surgical outpatient facility.
(c) A participating agency in the medical control authority or an officer, member of the medical staff, or other employee of the participating agency.
(d) A nonprofit corporation that performs the functions of a medical control authority.

333.20965 Immunity from liability

XII. STATE COMMUNITY HEALTH EMERGENCY COORDINATION CENTER (CHECC)
- A. Operated by MDHHS Bureau of EMS, Trauma and Preparedness
- B. EMS Personnel should be aware of the existence of CHECC but are not expected to directly interface with CHECC.

Appendix 1:

Definitions:

Incident Command System: The ICS organizational structure develops in a top-down fashion that is based on the size and complexity of the incident, as well as the specific hazard environment created by the incident.

Unified Command: In incidents involving multiple jurisdictions, a single jurisdiction with multi-agency involvement, or multiple jurisdictions with multi-agency involvement, unified command can be implemented. Unified command allows agencies to work together effectively without affecting individual agency authority, responsibility, or accountability

Incident Commander (IC): The IC is the individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site. EMS will typically fall under the IC through a subordinate Branch, Division or Group.

Section Chief: A Section Chief may be assigned to Operations, Logistics, Planning, or Administration/Finance depending on the size of the incident. Not all incidents will require all 4 sections to be assigned.

Branch Director: A Branch Director may be assigned under the Operations Section Chief. Branch Directors are responsible for managing a specific discipline including Fire, EMS, Law Enforcement, Public Works, Public Health, etc.

Division Supervisor: A Division Supervisor is assigned to an area that is separated by a barrier. Examples of a Division would be a multi-level structure, include separated by a river, etc. Numbers are primarily used to identify divisions.

Group Supervisor: A Group Supervisor functions within the Operation Section and is assigned to a specific group. Letters of the alphabet are primarily used to identify groups.

Unit Leaders: Units can be assigned to the Command and General Staff or within a Group or Division.

Medical Unit Officer: The Medical Unit Officer is the individual responsible for the management of incident responder medical treatment and rehab.

Safety Officer: The IC shall appoint a Safety Officer who will ensure safety of responders and victims during the incident operations. With the concept of Unified Incident Command there is valid reasoning to have Assistant Safety Officers to include all disciplines involved in the operation. The Safety Officer appointed by the IC shall have the authority designed within the Incident Command System with the input and advice of all Assistant Safety Officers.

Deputies: Deputies are used within the Command and General Staff or Sections of the ICS. A Deputy may be a higher-ranking responder that assists the IC or Section Chief however does not assume Command.

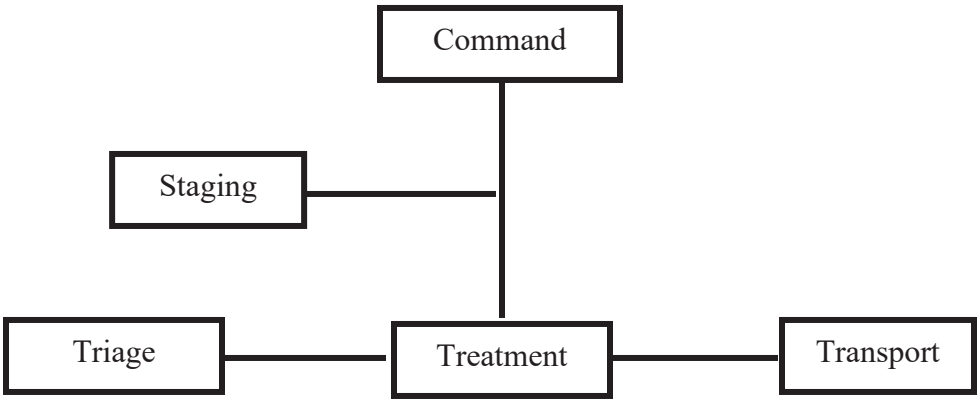
Coordinating Resource: the entity within the local EMS system responsible for the notification and coordination of the mass casualty response. Examples include: medcom, resource hospital, MCA, medical control, dispatch

Regional Medical Coordination Center: The RMCC serves as a regional multi-agency coordination entity as defined by the National Incident Management System (NIMS). The RMCC serves as a single regional point of contact for the coordination of healthcare resources. The RMCC is intended to optimize resource coordination among hospitals, EMS agencies, medical control authorities and other resources. The RMCC serves as a link to the Community Health Emergency Coordination Center (CHECC).

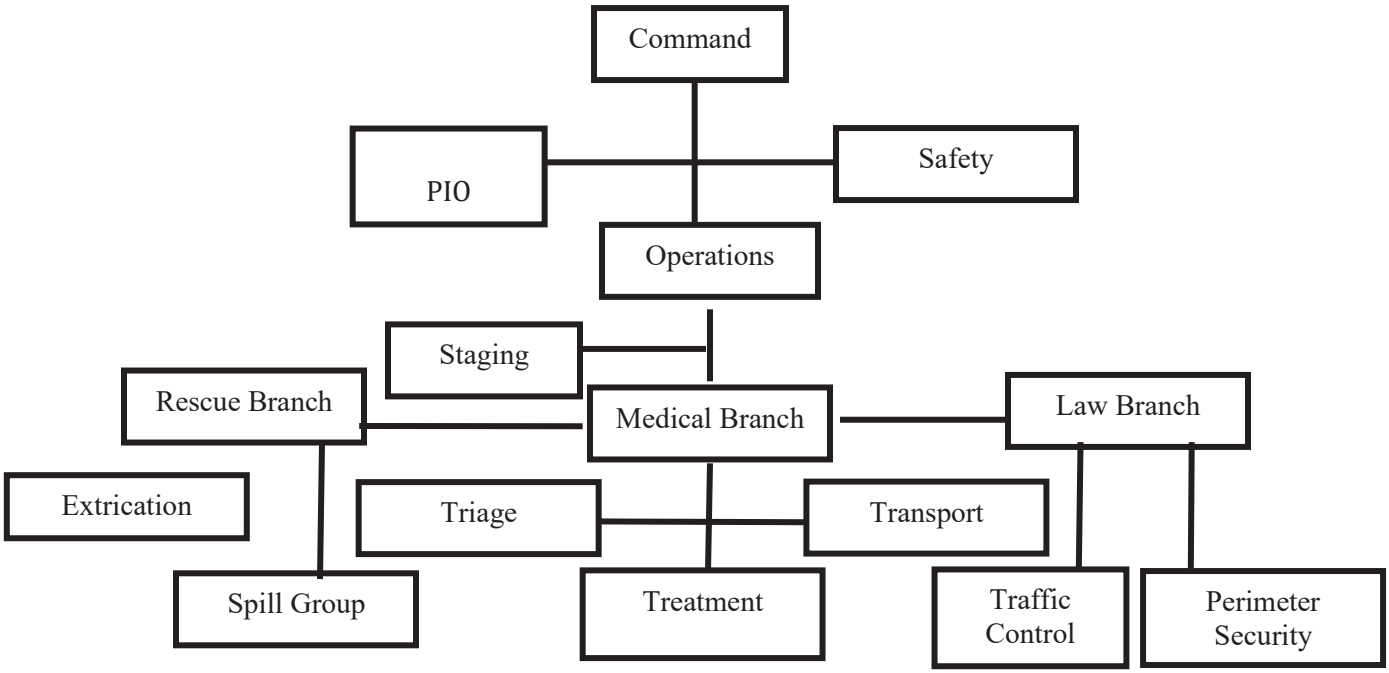
Community Health Emergency Coordination Center: The CHECC serves as a statewide multi-agency coordination entity as defined by NIMS. CHECC is intended to coordinate state-level healthcare and public health resources, to serve as a central point of contact for regional RMCC's, and to serve as a resource to the State EOC. CHECC is expected to be activated following a major disaster or other public health emergency and should be operational within hours of activation.

Appendix 2:

Example ICS Organizational Chart for Simple Incident



Example ICS Chart for Complex Incident



Initial Date: 11-10-2025
Revised Date: **Section 10-6a**

RESOURCE HOSPITAL ROLE

Activation of Mass Casualty Incident (MCI) Events:

- EMS will declare an MCI, establish triage, and designate a Triage Officer or Transport Officer on scene.
- EMS will select a TCEMCA member hospital to be the Resource Hospital and contact them.
    - EMS will advise that they have an MCI, type of incident, estimating number of patients, and advise they are designating your hospital as the Resource Hospital.
    - EMS will have communication with the Resource Hospital for patient transport destination decisions.

Designated Resource Hospital

- Once designated as the resource hospital:
    - All emergency departments must stay open to all patients, making plans for possible influx of patients from MCI under your facility Mass Casualty Incident emergency operations plan.
    - Contact all TCEMCA hospitals and advise of the MCI, any MCI details they have, and ask them to determine number of Red, Yellow, & Green patients they can manage.
        - UMH-Sparrow is a Level I trauma center.
        - McLaren Greater Lansing is Level III trauma center.
        - Eaton Rapids Medical Center, UMH-Sparrow Clinton, and UMH-Sparrow Eaton are all Level IV trauma centers.
    - Track all hospital capabilities and all patients sent to each facility. (reverse side)
        - Disperse patients across all emergency departments in attempt to not overwhelm any one health system based on each hospital's capabilities and patient condition.

Designated Resource Hospital Cont.

- When EMS calls the resource hospital with a patient, EMS will advise patient triage level (Red, Yellow, Green), and any patient information they have such as age, sex, injury(s), etc.
  - Resource hospital assigns patient destination hospital based on patient condition and ER capabilities. The Resource hospital advises EMS where to transport the patient and contacts the destination hospital to advise a patient is coming along with any information they have regarding the patient.
  - Resource hospitals may use their own hospital patient intake form for patient information (if used), just like receiving a non-MCI ambulance, recording what hospital you sent the patient to on the form.
- Depending on the location or size of the incident the resource hospital may need to reach out to emergency departments that are not within TCEMCA area for patient destination.
- Keep all paperwork used being the resource hospital for the MCI after action plan.

Tri-County Emergency Medical Control Authority

Serving Clinton, Eaton, and Ingham County

Emergency Room Capabilities Chart

Hospital Name	Phone #	IMMEDIATE 1 RED Patients		DELAYED 2 YELLOW Patients		MINIMAL 3 GREEN Patients	
		Capability	SENT TO THEM	Capability	SENT TO THEM	Capability	SENT TO THEM
Eaton Rapids Medical Center Level IV Trauma Center	517-663-9455						
McLaren Greater Lansing Level III Trauma Center	517-975-2111						
McLaren GL – Grand Ledge	517-975-1200						
UMH-Sparrow Clinton Level IV Trauma Center	989-227-3437						
UMH-Sparrow Eaton Level IV Trauma Center	517-543-9510						
UMH-Sparrow Main Level I Trauma Center	517-364-3367						
UMH-Sparrow - Okemos	517-253-5525						
Other Hospitals Outside Tri-County	EXAMPLE	2	II	4	I	8	~~IIII~~ I

Pre-hospital (EMS) MCA Mutual Aid During Disaster

Purpose: Establish a mechanism allowing EMS agencies/Medical Control Authorities (MCA) to give prehospital care across MCA boundaries during "disaster" conditions.

1. This agreement between the MCAs demonstrates the intention to assist and support each other during a disaster situation. It provides an approved/authorized process allowing EMS agencies to function within a MCA under their originating MCAs protocols, during a disaster.

2. During "disaster" conditions, whether natural or otherwise, MCAs may need assistance from other MCAs. For the purpose of this agreement, a "disaster" is considered to be an emergency event where a "declared" emergency and/or disaster condition as defined by local, state, or federal statutory laws, exists in which the responding MCA and EMS resources may be unable to handle the patient care needs without additional resources from outside its own Medical Control area.

3. Requests for support may be made to any MCA or any EMS agency. It is agreed that mutual aid response is dependent on the availability of equipment and personnel.

4. It is in the best interests of MCAs to include each other in disaster planning efforts. It is expected that upon request, participating MCAs will extend any relevant information on emergency planning to other MCAs as deemed reasonably appropriate by the MCA distributing the information.

5. Participating MCAs agree to adopt, as a minimum, the State Protocols for responding to a disaster event, and those agencies/EMS personnel will follow these when responding outside their own MCA, unless prior arrangements with that MCA.

Hazard Contaminated Patient

I. Identification of the Contaminated Patient
   a. Use all your senses. Suspect hazardous material situation if you:
      i. **See** containers, labels or placards, or a location suggesting a hazardous substance
      ii. **Hear** explosions, or reports of possible contamination, pre-arrival or on scene
      iii. **Smell** unusual odors – be suspicious

II. If contamination of a patient is suspected, the local fire or public safety department must be informed of the hazardous material situation.

III. The responding EMS agencies must prevent further contamination to themselves or others. Determine if any contaminated patients have already left the scene and promptly notify the hospital(s).

IV. The responding EMS agency must not spread any contamination outside the response area until the responding fire or public safety department incident commander, or appropriate designee, has confirmed that decontamination is complete. Contaminated patients will not be transported out of the decontamination area until field decontamination is complete.

V. EMS responders will not enter a known contaminated area without proper personal protective equipment, training, and direction by incident command.

VI. Invasive patient care procedures (IV/IO, OPA, NPA, ET, and Emergency Airway Devices) should not begin until decontamination of the patient is confirmed or until personal protective equipment is in place.

VII. Prior to transport of a decontaminated patient, on-line medical control will be contacted to assure the patient is transported to a facility equipped to handle the specific needs of the patient.

VIII. Once the scene Incident Commander, or the appropriate designee, has confirmed that the patient is decontaminated, the responding EMS agency may transport the patient to the designated facility.

Suspected Pandemic

Purpose: To have a standard approach to patients during a period of a declared pandemic or state of Public Health Emergency. This approach should increase awareness and protection of first responders and prehospital care while maximizing supplies that may become limited.

Criteria:

1. This protocol will apply to patients encountered by all levels of EMS, during an infectious disease epidemic/pandemic. All agencies should frequently check the CDC.gov website for the latest recommendations with Personal Protective Equipment (PPE) and treatment. These recommendations may change frequently during an evolving and ongoing epidemic/pandemic as regulatory standards are influenced by CDC recommendations.
2. The center for Disease Control and Prevention (CDC) has declared that an epidemic and/or the Michigan Department of Public Health has declared a statewide or local public health emergency.
3. "Acute Febrile Respiratory Illness" (AFRI) is defined as fever and at least one of the following (cough, nasal congestion/runny nose, or sore throat).

EMS System / Medical Control Authority (MCA) Recommendations:

1. Encourage all EMS personnel to receive seasonal and disease specific vaccinations.
2. Each life support agency shall maintain a supply of fit tested N-95 respirators and eye protection (e.g., goggles, eye shield), disposable non-sterile gloves, and gowns.
3. Each life support agency shall provide approved pathogen neutralizing hand sanitizer to staff.
4. Each life support agency should instruct their personnel to stay home and not report for duty if they have signs or symptoms of acute febrile respiratory illness. A staff member that develops these symptoms during a shift must inform the agency supervisor for appropriate follow up procedures.
5. Dispatch centers should be encouraged to screen callers to determine if the patient may have an AFRI. Information should be provided to EMS personnel prior to arriving on the scene if suspected AFRI.
6. If it is determined by EMS that the patient may have an AFRI, early notification to the receiving facility should be done so that appropriate infection control may be taken prior to patient arrival.

Procedure and Patient Categorizations/Situations

1. **Limiting Personnel Exposure:**
   A. If the patient has symptoms of an "Acute Febrile Respiratory Illness" (AFRI) based upon the dispatch information the responding agency should consider limiting the initial number of personnel that approach or enter a residence.

2. **Patients with a medical condition that requires immediate care (e.g., cardiac arrest) and have a recent history of AFRI will be assessed and treated after:**
    A. EMS Personnel don appropriate PPE prior to proceeding with assessment and treatment.

3. **Patient Assessment:**
    A. Begin patient assessment while maintaining a 6-foot distance from the patient exercising appropriate routine respiratory droplet precautions (hand hygiene, cough etiquette, and distance) while assessing patient .
    B. Assess patient for “Acute Febrile Respiratory Illness” which is fever and at least one of the following (cough, nasal congestion/ runny nose, or sore throat).
    C. If **patient does not have an Acute Febrile Respiratory Illness (AFRI)** proceed to appropriate treatment protocol.

4. If **patient has an AFRI,** EMS personnel with direct patient care shall:
    A. Don appropriate PPE.
    B. Place a surgical mask on the patient if tolerated.
    C. Treat patient according to appropriate protocol.
    D. Notify Medical Control of assessment findings.
    E. Encourage good patient compartment vehicle airflow/ventilation to reduce the concentration of aerosol accumulation when possible.

5. **Post Exposure**
    A. Health care personnel, who have had a recognized unprotected close contact exposure to a person with AFRI can be considered for treatment according to current post-exposure guidelines.
    B. Clean EMS Transport Vehicles after Transporting a Suspected AFRI.

Transportation and Destination Guidelines

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

Purpose:

This protocol is to assist inter-facility transport of patients believed to be infected with a "*special pathogen*" to a hospital that may be outside of the local Medical Control Authority.

Definition:

"*Special pathogen*" refers to highly infectious diseases, including hemorrhagic viral diseases (HVDs) such as Ebola and similar infections.

Transport Destination Decision

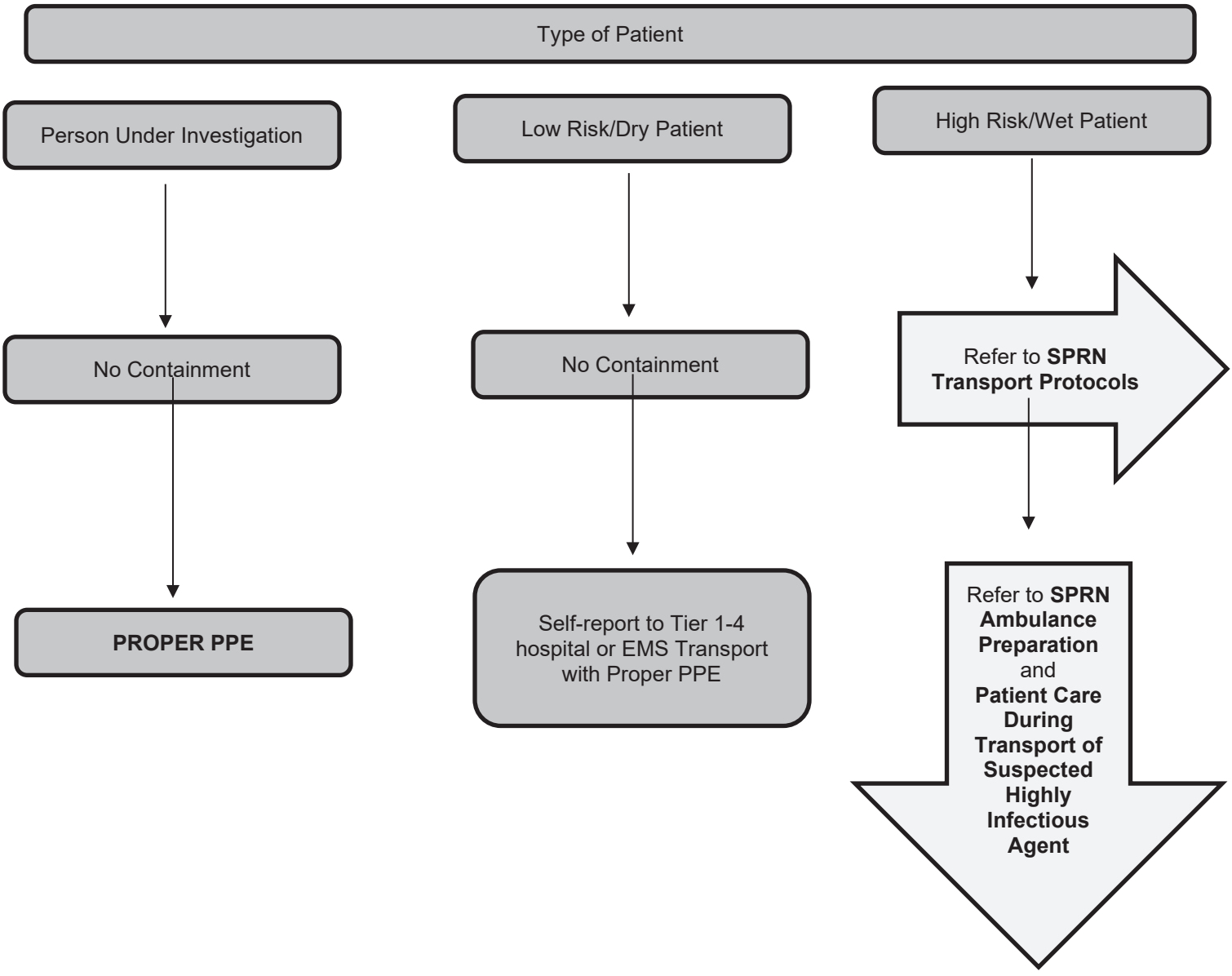
1. The patient will be transported to the closest appropriate hospital capable of providing the services needed. *The closest appropriate hospital may be outside of an agency's primary service area.*
2. Inter-facility transport of patients is permitted by pre-identified transport teams to hospitals that may originate and end outside of the transporting agency's Medical Control Authority when no local pre-identified specialty transport team is available.

Michigan
SPECIAL OPERATIONS
SPECIAL PATHOGEN RESPONSE NETWORK (SPRN)
PATIENT CONTAINMENT ALGORITHM
(MCA Optional Protocol)

Initial Date: 04/28/17
Revised Date: 12/27/2022

Section 10-11

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



MCA Name: Tri-County Emergency Medical Control Authority
MCA Board Approval Date: 2/9/24
MCA Implementation Date: 3/25/24
MDHHS Approval: 12/27/22

MDHHS Reviewed 2023

Michigan
SPECIAL OPERATIONS
SPECIAL PATHOGEN RESPONSE NETWORK (SPRN)
TRANSPORT SUPPLIES
(MCA Optional Protocol)

Initial Date: 04/28/17
Revised Date: 12/27/2022 Section 10-12

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

Transport Supplies

Suggested Supplies to be Immediately Available:

- ☐ Manual Suction
- ☐ BP cuff (manual, disposable)
- ☐ Pulse Ox (disposable)
- ☐ Emesis containers (sealable)
- ☐ Absorbent paper towels
- ☐ Sharps Container (small)
- ☐ Nitrile gloves box (Small, Medium, Large, Extra-large)
- ☐ Small trash bags
- ☐ Disinfectant wipes for surfaces
- ☐ Disinfectant wipes for skin
- ☐ Portable 02 tank (15 LPM capable)
- ☐ Nasal Cannula/NRB
- ☐ Cooler/ice packs
- ☐ Blankets (Space)
- ☐ Pillow
- ☐ Trauma Shears
- ☐ 2 Buckets (for bodily fluids, hold trash bags, use for cleaning)
- ☐ Time Keeping Device
- ☐ Sedation and/or pain control guidelines as applicable
- ☐ Medications, needleless delivery system

Suggested Supplies to be in accompanying vehicle or with driver:

- ☐ IV Kit/Fluid/Saline Lock
- ☐ 4X4 and/or Abdominal Pads
- ☐ Tape
- ☐ Rolled Gauze
- ☐ Body bag
- ☐ Cleaning / decontamination equipment
- ☐ Solidifier for liquids
- ☐ Donning/doffing protocols and checklists

Cleaning and Decontamination supplies (in accompanying vehicle or with driver):

- ☐ Towels & Cleaning Rags (disposable)
- ☐ Solidifier
- ☐ Bucket for cleaning
- ☐ EPA registered cleaning product with instructions for use
- ☐ Biohazard bags (~20)
- ☐ Box for Biocell / Visquine disposal
- ☐ Zip ties for trash
- ☐ Bleach wipes for outside of Biohazard bags
- ☐ Procedure for cleaning/disinfection
- ☐ Procedure for waste handling

Suggested PPE per team members:
(PPE should cover all skin, mucous membranes and protect against inhalation of aerosolized particles)

☐ Fluid-resistant or impermeable coveralls (appropriate sized suits)	2
☐ Fluid-resistant or impermeable boot covers	2
☐ Powered air-purifying respirator (PAPR)	1
☐ PAPR batteries	2
☐ PAPR filters	1 set
☐ PAPR hoods	1
☐ PAPR hose and clamp	1
OR	
☐ Full-face respirators with appropriate cartridges for protection	2
☐ Surgical Cap/Hair Cover (2)	2
☐ N-95 Respirator	1
☐ Biohazard bags (Large)	30
☐ Biohazard Receptacles (1 small for sharps)	
☐ Nitrile gloves box (1 each of Small, Medium, Large, Extra-large)	1EA
☐ Hand sanitizer (1 bottle)	10
☐ Absorbent rags (package)	
☐ Caution tape (yellow 200' roll)	
☐ Duct tape (roll)	
☐ Buckets (2)	2
☐ Healthcare bleach (wipes) or other EPA-registered hospital disinfectant wipes	
☐ Trauma Shears (for Biocell/Visquine removal)	2
☐ Doffing Pad (Large Fluid Absorbent Fabric) (2)	2

Protocol Source/References:
January 28, 2016 Guidance for developing a plan for interfacility transport of persons under investigation or confirmed patients with Ebola virus disease in the United States
Nebraska Biocontainment Unit and Healthcare and Emergency Responder Organization Education through Simulation (HEROES)

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Transport Procedure

Purpose: The purpose of this procedure is to provide guidance for transport of a patient with a known or suspected highly infectious disease including pathogens referred to as "Category A" agents.

1. Patient belongings
   A. All patient belongings shall be kept in transport vehicle and only be removed at the final destination.
   B. Belongings shall be placed in a biohazard bag if possible and sealed in a manner that will prevent any further contamination to its surroundings.
   C. Belongings will be labeled with the patient name and identification.

2. Documentation
   A. Pt documentation may be performed in a normal manner as outlined by the transporting agencies guidelines. A note pad may be used to document vital signs and times during transport.
   B. All documentation should be performed after the transport is complete as to avoid contamination of equipment and materials. Any materials used for documentation in the patient environment (such as Toughbook, tablets, clipboards etc.) shall be cleaned, disinfected, and decommissioned for the same duration as the transport vehicle and equipment involved in transport.

3. Travel plans
   A. The MDHHS will be the central coordinating agency for the patient transport. Local and state authorities will assist in planning the path of travel so as to assist in the event of an emergency.
   B. A predetermined route will be planned in conjunction with the sending facility, transport agency, receiving facility or airport, and any facilities in between sending facility and receiving facility that are willing to participate and accommodate transport crews for crew changes or emergency procedures.
      a. Path of travel should be planned out in a way that will keep transport crews on as many major roads as possible to ease the ability of possible responding EMS agencies to locate them in the event of an emergency or accident.
      b. Consider communication to potential Medical Control Authority along the path of travel in the event that assistance is required.

c. Transport team shall attempt to solve any in transport emergencies without involving any outside responding agencies whenever possible.
d. During transport, hospitals located along an extended route (over 2 hours) may act as Patient Transfer Points (PTP). PTP will be identified and notified prior to patient transport. Although the patient will not leave the transport vehicle, PTP may be used to allow EMS personnel to change staff.

4. Destination arrival

A. The patient will be accepted by healthcare workers at the hospital or airport directly from the EMS transport rig. EMS team should not leave the designated "hot zone" or "dirty area" until PPE is doffed per protocol. If there is not an appropriate area for complete decontamination at the receiving facility (such as an airport), decontamination should occur at the closest appropriate doffing area. This will prevent the transmission of the pathogen via accidental contamination to the environment.
B. After proper doffing of PPE, the safety officer, receiving facility or other team members will evaluate and care for crew members involved in transport.
   a. Post vital signs should be recorded.
   b. Evaluation for any exposure to the pathogen.
   c. Food, fluids and lodging may be provided until the receiving facility feels the personnel are fit and able to make the return trip home.
C. To minimize further contamination of "clean personnel", only those involved in actual patient transport may operate the transport vehicle during the return trip. It is anticipated that the person will drive the return trip.
D. Follow cleaning and disinfection of the Ambulance procedure prior to leaving receiving hospital. After airport transfer, the ambulance will go to the designated PTP to doff PPE and follow cleaning and disinfection procedures prior to resuming the return trip to the agency.
E. The receiving facility or PTP shall accept and properly dispose of any PPE and other material(s) used in the transport vehicle.
F. Upon arrival back to the home agency, the vehicle and equipment may be sequestered for a predetermined amount of time to allow for full decontamination.
G. This time will be dependent on the pathogen and current guidelines.
H. No vehicles or equipment shall be placed back into general service prior to completion of the vehicle quarantine.
I. If the vehicle is needed prior to completion of quarantine for transport of like case, guidance will be sought from the MDHHS and CDC.

Protocol Source/References:

Guidance for Developing A Plan for Interfacility Transport of Persons Under investigation or Confirmed Patients with Ebola Virus Disease in the United States: http://www.cdc.gov/vhf/ebola
Bratt, J., Robinson, A., and Alcorta, R. (n.d.). Strategies and Considerations for the Deployment of EMS Personal Protective Equipment in Response to an Ebola Outbreak. (Accessed 8/1/2016.) Maryland Institute for Emergency Medical Service Systems.
Lowe et al: *Considerations for Safe EMS Transport of Patients Infected with Ebola Virus. Prehospital Emergency Care* October

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Patient Care During Transport of Suspected Highly Infectious Agent

Purpose: The purpose of this procedure is to provide guidance for transport of a patient with a known or suspected highly infectious disease including pathogens referred to as "Category A" agents from a health care facility to another, more specialized health care facility.

The EMS Agency Will

A. Prior to transport, the transporting agency will communicate with the sending (departing) and receiving (arriving) hospital facility to coordinate existing and anticipated patient care needs.
    a. Determine the medical authority for the patient while in transit. Refer to the state protocol.
    b. Determine the number and mix of staff needed to provide care during transport.
    c. Assure that equipment, devices, and crew can fit into the load-carrying dimensions of all planned transport vehicles.
    d. Determine if the patient has proper identification for transport.
    e. Determine method for patient tracking.
    f. Determine method to document patient care while preventing contamination.

B. Assess and develop plans for:
    a. Physical needs of the patient: baseline vital signs via non-invasive method. Use blue tooth technology, disposable O2 saturation monitor.
    b. Assess ability to provide for physical comfort of patient:
        i. Heat
        ii. Air flow
    c. Plans for failure of equipment.
    d. Identified pre-existing conditions that will require medication or other means of support (such as diabetes, oxygen therapy, etc.). Identify method to support these conditions if necessary.
    e. Avoid use of sharps (needles, lancets) unless necessary. Dispose in sharps container.
    f. Identify current life support status and identify procedures that will or will not be performed during transport.
    g. Identify medications necessary for patient comfort during transport: sedation, pain, nausea.

h. Identify method to handle fluid loss (vomiting, diarrhea, urine) during transport.
    i. Patient wipes absorbent pads, solidifier, trash bags, duct tape.
    ii. Wipes for cleaning and disinfection of spills. Minimize the use of bleach wipes during transit to prevent overpowering fumes.

C. Provide for crew safety during transport:
    a. Assess how communication will occur among all crew.
    b. If PPE is breached, crew should wipe affected area with bleach and communicate breach immediately to supervisor.
    c. Plans should include area for emergency doffing of PPE for crew safety.
    d. Identify nearest Patient Transfer Point (PTP) to provide relief of staff.

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Ambulance Cleaning and Disinfection

Purpose:
Proper cleaning and disinfection of an ambulance and equipment are necessary to reduce the bioburden of disease and prevent secondary transmission of a known or unknown highly contagious disease. The process describes the measures needed to clean and disinfect an ambulance prior to its return to service following the transport of a patient with a known or suspected Category A disease.

Note: *All disinfection should use a U.S. Environmental Protection Agency (EPA)-registered hospital disinfectant with a label claim for a non-enveloped virus (norovirus, rotavirus, adenovirus, poliovirus) to disinfect environmental surfaces at appropriate concentration and contact time.*

1. This process is to be done after the Biocell or visquine (see procedure) has been removed.
2. Site Set Up
   A. Select an appropriate site for ambulance decontamination that protects the vehicle and the decontamination team from weather elements, preferably a well-ventilated large, enclosed structure.
   B. Establish a secure perimeter for safety of the public and decontamination personnel.
   C. Include considerations for waste management, security plan, public perception, and media visibility when selecting decontamination site.
   D. Depending on the location, the ability for climate control is beneficial.
   E. Define and mark hot, warm, and cold zones of contamination[1] around the ambulance that require PPE to enter.

[1] The hot zone is considered an area that is known or suspected to be contaminated and has a high risk of exposure. It should only be entered with full PPE. In ambulance decontamination, this would be the vehicle and an area about a meter beyond the ambulance.
The warm zone can be considered a transitional area between the hot and cold zones that has no known contamination but has a moderate risk of exposure. It should only be entered when wearing full PPE. This is also the area where one begins the initial portion of the doffing process (following a full suit wipe down within the hot zone) when leaving the hot zone. For ambulance decontamination, the warm zone can also be the place where waste barrels are pre-positioned so that the waste bags can be placed directly into the containers without entering the hot zone.

3. Prior to cleaning
   A. The patient care provider (while wearing "dirty PPE") will remove all equipment, supplies, linen, waste PRIOR to leaving the vehicle and before Biocell/Visquine liners are removed from inside the ambulance. Equipment will be placed in the warm zone.
   B. All waste, including PPE, drapes, and wipes, should be considered Category "A" infectious substance, and should be packaged appropriately for disposal.
   C. The driver or other personnel will be responsible for cleaning and disinfection of the transport unit. One to two people will clean and disinfect; a third in PPE will observe and be available to assist as necessary
   D. The cleaning teams will don CLEAN PPE per protocol.
   E. Any areas that are visibly contaminated with the patient's body fluids should be decontaminated first with an approved EPA-registered disinfectant for the appropriate contact time before soaking up the fluid with absorbent materials.
   F. Place biohazard bag in container close to exit for used cleaning cloths.

4. Cleaning and decontamination
   A. Cleaning will be done beginning at an entrance to the ambulance and moving towards the dirty area. This way, the clean personnel will remain clean as they enter the vehicle and stay in a "clean" area until they exit at the opposite end of the ambulance.
   B. Mix EPA registered cleaning disinfectant per manufacturers' guidelines. All products will have instructions for cleaning and disinfection. Note the manufacturers' "dwell time" or the amount of time a surface must stay wet AFTER cleaning to achieve disinfection.
   C. Using disposable cloths begin cleaning all surfaces as the vehicle is entered.
   D. Remove visible soiling of all surfaces.
   E. Allow surface to stay wet during dwell time. Reapply cleaner if necessary.
   F. Change cloths frequently during cleaning process. Place cloths in biohazard bag.
   G. Manually wipe down the ambulance's exterior patient loading doors and handles, and any areas that may have been contaminated, with disinfectant. The exterior of the ambulance does not require a full disinfectant wipe down.
   H. After ambulance is cleaned, clean re-usable medical equipment.
      a. Using the above process, clean then disinfect the outside of any prepositioned but unused medical equipment (still inside the protective bags they were placed in).

The cold zone is considered an area that has no contamination and no potential risk for exposure. The individuals in this area are not required to wear PPE, although the cold zone will often also serve as the PPE donning area.

b. If the equipment was removed from a protective bag in transit, assess the equipment to determine if it can be properly cleaned and disinfected, or disposed of.

I. Once cleaning and disinfection has been completed, collect and package all waste as Category "A" waste. Dispose of all waste according to organization protocols as well as local and federal regulations for Category "A" infectious substances.

J. Remove PPE per checklist. A third person who has been in the cold zone should supervise doffing, which should be performed according to organization doffing protocols.

5. Further options for decontamination

A. Additional cleaning methods can also be used. While not required, this may provide additional assurance to personnel and public prior returning the vehicle to service.

B. Ultraviolet germicidal irradiation, chlorine dioxide vapor, or hydrogen peroxide vapor can be used for an additional decontamination step. However, these should not replace the manual cleaning and disinfection, as their efficacy against organisms in body fluids has not been fully established and these methods may require specialized equipment and PPE.

C. The ambulance can then be returned to service.

Materials and equipment needed to decontaminate an ambulance (items listed are per person decontaminating)

	Fluid-resistant or impermeable coveralls (appropriate sized suits)	2
	Fluid-resistant or impermeable boot covers	2
	Powered air-purifying respirator (PAPR)	1
	PAPR batteries	2
	PAPR filters	1 set
	PAPR hoods	1
	PAPR hose and clamp	1

OR

	Full-face respirators with appropriate cartridges for protection	2

	Surgical Cap/Hair Cover	2
	N-95 Respirator	1
	Biohazard bags (Large)	30
	Biohazard Receptacles (1 small for sharps)	
	Nitrile gloves box (Small, Medium, Large, Extra-large)	1 EA
	Hand sanitizer (1 bottle)	10

	Absorbent rags (package)	
	Caution tape (yellow 200' roll)	
	Duct tape (roll)	
	Buckets	2
	Healthcare bleach (wipes) or other EPA-registered hospital disinfectant wipes	
	Trauma Shears (for Biocell/Visquine removal)	2
	Doffing Pad (Large Fluid Absorbent Fabric)	2

Protocol Source/References:

1. Isakov, A., Jamison, A., Miles, W., & Ribner, B. Safe management of patients with serious communicable diseases: recent experience with Ebola virus. Annals of internal medicine. 161(11): 829-830.
2. Isakov A, Miles W, Gibbs S, Lowe J, Jamison A, Swansiger R. Transport and management of patients with confirmed or suspected Ebola virus disease. Ann of Emerg Med. 2015; 66(3):297-305.
3. Jelden, K.C., Gibbs, S.G., Smith, P.W., Schweldhelm, M., Iwen, P.C., +Beam, E., Hayes, A.K., Marion, N., Kratochvil, C.J., Boulter, K.C., Hewlett, A., Lowe, J.J. Nebraska Biocontainment Unit Patient Discharge and Environmental Decontamination following Ebola Care. American Journal of Infection Control. 2015; 43(3):203-205.
4. Lowe, J.J., Gibbs, S.G., Schwedhelm, S., Nguyen, J., Smith, P.W. Nebraska Biocontainment Unit Perspective on Disposal of Ebola Medical Waste. American Journal of Infection Control. 2014; 42:1256-1257.
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Michigan
SPECIAL OPERATIONS
SPECIAL PATHOGEN RESPONSE NETWORK (SPRN)
MEDICAL ISOLATION TRANSPORT DEVICE
(MCA OPTIONAL PROTOCOL)

Initial Date: 10/25/2017
Revised Date: 12/27/2022 Section 10-16

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Medical Isolation Transport Device

Definition: A Medical Isolation Transport Device is a vinyl enclosed patient containment device. It creates a negative air environment when closed. It is used for the transport of highly infectious disease patients either internally at a facility or from one facility to another.

1. Patient will be transported in impervious suit if ambulatory, in impervious suit and sheets (as tolerated) if stretcher bound or in isolation pod, as indicated. All transferred patient belongings are considered contaminated and are typically bagged, labeled, and transferred with patient.
2. Any patient care documents should be free of contamination. When in doubt, consider them contaminated and package as appropriate for transport with patient. It may be desirable to store and transmit patient care records electronically if feasible.

Indications for use:
1. A known or suspected case of highly infectious disease that may have been acquired via travel, health care provider, or lab.
2. Drug resistant organism
3. Some Medical Isolation Transport Devices may be used as a positive air environment to transport a patient with known immune deficiency or burns.

Things to know regarding use of Medical Isolation Transport Device:
1. Assess if MEDICAL ISOLATION TRANSPORT DEVICE outside straps are approved for transportation. General rule: vinyl straps are not tested and approved, but some material straps (such as those used in seat belts) may have been tested and approved.
2. The head of the Medical Isolation Transport Device should be placed at the head of the gurney or cart, so the patient is always moving feet first.
3. The white noise created by the blower motor will reduce patient and staff level of hearing.
4. Be careful that wind may catch and move the Medical Isolation Transport Device, especially when unsecured.
5. As the outside temperature increases, the temperature inside the Medical Isolation Transport Device will also increase.
6. After using the Medical Isolation Transport Device during a drill, it may be cleaned and disinfected for future use. Some disinfectants may leave a residue that can be wiped off with a clean towel.

7. In some cases where the disease is treatable, the Medical Isolation Transport Device can be cleaned, disinfected, and readied for re-use as per direction of MDHHS, Subject Matter Experts (SME), and in consultation with manufacture.

Readying for use and patient placement:

1. Consider equipment that will be used for the patient and how it will be placed into the Medical Isolation Transport Device.
   a. Blankets and pillows will not fit through the access ports.
   b. IV's, defibrillator, and pulse oximetry will remain outside the Medical Isolation Transport Device with the wires and tubes snorkeled through the ports.
   c. Keep the snorkel port closed tightly with Velcro to minimize the potential for contamination outside the Medical Isolation Transport Device.
   d. Keep the access ports closed.
   e. Wear exam gloves when using the glove ports.
   f. If the gloves inside the Medical Isolation Transport Device become damaged, gently twist the glove at the port, and secure with tape to maintain air pressure and prevent contamination outside the Medical Isolation Transport Device.
2. Roll the Medical Isolation Transport Device on the gurney. Use Belts to attach to the gurney. Assure that the belts do not interfere with any moving parts of the gurney.
   a. Restraints within the Medical Isolation Transport Device may only be used per order of a physician.
3. Connect the blower motor, inlet, and outlet filters as per manufacturer's recommendations. Turn on blower.
   a. Assure the motor remains unobstructed.
   b. Assure that the battery is charged and know how long the charge will last.
4. Place patient in the Medical Isolation Transport Device. Patient may be wearing gown, gloves, and mask to minimize contamination of the outside of the Medical Isolation Transport Device.
5. Place ribs/spine of the Medical Isolation Transport Device per manufacturer's instructions. Close zipper. Patient should remove mask while in Medical Isolation Transport Device.
6. Wearing clean PPE, clean and disinfect the outside of the Medical Isolation Transport Device before transport. Follow dwell times for disinfectant.
7. Transport patient.

Patient Handoff:

1. EMS removes Medical Isolation Transport Device from rig into designated "dirty" area outside the rig.
2. Hospital personnel in PPE will clean and disinfect the outside of the Medical Isolation Transport Device. Gurney will be placed so as to straddle dirty and clean area. Patient bed will be placed in clean area. Staff who have cleaned the Medical Isolation Transport Device will remain on dirty side of gurney and will assist 2nd team of PPE donned staff on clean side to move Medical Isolation Transport Device onto patient bed.

3. "Soiled" Hospital personnel (who cleaned the Medical Isolation Transport Device) will assist EMS to doff in designated "dirty area". After doffing, these hospital personnel will doff PPE per protocols.
4. EMS will use 2nd team to clean and disinfect rig before leaving. Waste will be contained at the receiving hospital. Gurney will be cleaned and disinfected.
5. 2nd team of Hospital personnel in clean PPE will move patient to care area.
6. Medical Isolation Transport Device may be disposed of per manufacturer's instructions or consultation with SME.

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Team Selection Procedure

Purpose
The purpose of this procedure is to provide guidance in selecting qualified and support training of EMS personnel willing to transport a patient with known or suspected highly infectious disease including pathogens referred to as "Category A" agents.

1. The selected team members will be chosen according to
   A. Previous physical and mental health history
   B. Ability to be in service and away from home for an extended period of time
   C. Knowledge of the potentially hazardous situation to which they may be placed
   D. Additional assets of team members may include:
      a. Able to work in a restrictive environment
      b. Critical thinking skills
      c. Participation in education sessions, exercises and drills
      d. Able to follow strict guidelines to ensure the safety of the entire unit

2. It is recommended that each team member may have on file with their agency
   A. Two or more emergency contacts
   B. Hospital or Health care system of preference
   C. Blood type
   D. Religious preference
   E. Advanced directives (if applicable)

3. Team member health status
   A. Each team member shall be compliant with and have documentation they have passed the medical screening requirements of the agencies Respiratory Protection Program. This includes acknowledging a new history of respiratory diseases (i.e. asthma, chronic lung disease, or upper respiratory infection) that would interfere with wearing a fully enclosed respiratory device, such as a PAPR or would involve removal of the PAPR hood for medication administration.
   B. Consideration should be given to any team member having a condition that affects them while being in an enclosed environment.
   C. Each team member shall be free of any medical conditions that require medication administration in any less than 6 hour increments.

4. Prior to transport:
   A. Team members providing care in patient compartment shall have vital signs assessed prior to transport.
      a. Vital signs must fall with preset parameters (suggestions e.g.: systolic blood pressure less than 150; diastolic blood pressure less than 90; resting heart rate less than 100).
   B. The name of each team member who has direct contact with the patient or the patient environment will be recorded.
5. Post-transport:
   A. Team members will receive a medical evaluation to include
      a. Blood pressure
      b. Heart rate
   B. May include
      a. Blood glucose
      b. Assessment for dehydration
   C. Information will be kept in the employee health file

6. Team member roles and responsibilities: The number and make up of healthcare providers needed during the transport may be based on the patient's condition and length of the transport. Below are suggestions that define roles and responsibilities of team members.
   A. One or more **direct care providers** will remain with the patient in the back of the transport vehicle to provide care and comfort. This area is considered "contaminated" or "soiled". Team members should attempt to limit their time in full PPE to two (2) hours.
   B. The **driver of the transport vehicle** will remain in the front cab. This area is considered "clean". Although the driver may wear PPE, the driver is considered "clean".
   C. The **chase team** may consist of enough personnel (up to 6 to 7 employees) to accommodate crew changes, to take place at designated site and at designated intervals. The purpose of the chase team is to ensure personnel do not become fatigued or in danger of dehydration or malnourishment. The chase team may be members of another transport agency.
   D. The chase team may consist of a **medical officer** who will not be involved in the actual transport and care of a patient; his or her sole responsibility will be to attend to any personnel that fall ill or succumb to any injury during transport.
   E. The chase vehicle shall carry enough Personal Protective Equipment (PPE) to cover each team member on the transport team. Extra PPE shall also be carried in chase vehicle in the event of rips or tears in PPE gowns or malfunctions in PAPR operation.
   F. It is recommended that an operations supervisor or special operation supervisor be included in the transport chase team and act as **safety officer**.

G. A second ambulance may follow transport vehicle and supervisor vehicle in the event of a mechanical failure during transport.

7. Post trip monitoring
   A. Any crew member that had any duration of time spent in the transport vehicle with the patient may be placed on a paid leave for a duration determined by his or her employer.
   B. Any crew member that had any duration of time spent in the transport vehicle with the patient will be appropriately monitored according to their employer procedure.

8. Public information
   A. Any communication with the public, media or other EMS, fire or police agencies shall be handled by a designated person, as outlined in transport agency or sending facilities policies.
   B. At no time shall any transport team member be subject to inquiries from outside agencies, media, or family members.
   C. Team members shall follow the State of Michigan Communicable disease rules when divulging any details of patient transport.

Protocol Source/References:

Guidance for Developing A Plan for Interfacility Transport of Persons Under investigation or Confirmed Patients with Ebola Virus Disease in the United States: http://www.cdc.gov/vhf/ebola
Bratt, J., Robinson, A., and Alcorta, R. (n.d.). Strategies and Considerations for the Deployment of EMS Personal Protective Equipment in Response to an Ebola Outbreak. (Accessed 8/1/2016.) Maryland Institute for Emergency Medical Service Systems.
Lowe et al: *Considerations for Safe EMS Transport of Patients Infected with Ebola Virus. Prehospital Emergency Care* October/December 2014

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Death During Transport

Purpose
To provide guidance for special pathogen crews when a patient suffers cardiac arrest during transport to a special pathogen treatment facility.

I. This protocol is only for use by trained crews during the transport of a patient being handled for treatment of a special pathogen.
II. If a patient experiences cardiac arrest during transport,
    a. No interventions will be performed
    b. Immediately discontinue transport
    c. Contact Community Health Emergency Coordination Center for destination determination
        i. Crematorium
        ii. ME needed?
        iii. Receiving or sending hospital
        iv. What about when it's a county in between sending & receiving
III. MDHHS SPRN subject matter expert will provide technical assistance in the event of a patient death using Bio Seal and body bags to complete safe and respectful handling of the decedent.
IV. The Community Health Coordination Center (CHECC) has identified a list of crematoriums to receive the body.