



MICHIGAN State Protocols

Protocol Number

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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. Definite pattern of casualties and common symptoms

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 or Emergency Care for Hazardous Materials Exposure.
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 the G series of 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 the worse the exposure.

2. **Nuclear Agents:** Primary risk is massive trauma and devastation as the result of a large scale blast.
3. **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 Treatment and Cyanide Exposure 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. 100% Oxygen
 3. If wheezing, administer Albuterol
 - a. 2.5 mg/3 ml nebulized
 - b. 2-3 puffs from metered dose inhaler
 4. For severe exposure consider early interventional airway and aggressive ventilatory support. (Evidence of non-cardiogenic pulmonary edema)
 5. 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.

Nerve Agent/Organophosphate Pesticide Exposure Treatment

Purpose: This Protocol is intended for EMS personnel at all levels to assess and treat patients exposed to nerve agents and organophosphate pesticides. The protocol includes the use of the Mark I/Duo Dote Antidote Kits and the Atropen auto injector for personnel trained in the use of these devices and authorized by the local medical control authority.

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.

3. **Mild Symptoms and Signs:**
 - A. Threshold Symptoms *plus:*
 - B. Constricted Pupils*
 - C. Muscle Twitching
 - D. Increased Tearing, Drooling, Runny Nose
 - E. Diaphoresis
4. **Moderate Symptoms and Signs**
 - A. Any or all above *plus:*
 - B. Constricted Pupils
 - C. Urinary Incontinence

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- D. Respiratory Distress with Wheezing
- E. Severe Vomiting
- 5. **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.

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. Antidote administration per Mark I Kit/Duo Dote auto injector Dosing Directive – See Chart
4. Establish vascular access
5. Atropine 2-6 mg IV/IM per Mark I Kit Dosing Directive if Mark I Kit is not available (each Mark I Kit/Duo Dote auto injector contains 2 mg of atropine)
6. Treat seizures
 - A. **Adult**

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- a. Administer **Diazepam** 2-10 mg IV/IM OR Midazolam 0.05 mg/kg to max 5 IV/IM
- b. Administer **Midazolam** 0.1 mg/kg to max 10 mg IM
- c. If available, **Valium** auto-injector



B. Pediatrics

- a. **Midazolam** 0.15 mg/kg IV/IM (maximum individual dose 5 mg)
- b. If available, **Valium** auto-injector

7. Monitor EKG



8. Additional **Atropine** 2 mg IV/IM for continued secretions (0.05 mg/kg for pediatrics)



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*NA Kit Dosing Directive				
Clinical Findings	Signs/Symptoms	Required Conditions	NA Kits To Be Delivered	
SELF-RESCUE	Threshold Symptoms	<ul style="list-style-type: none"> • Dim vision • Increased tearing • Runny nose • Nausea/vomiting • Abdominal cramps • Shortness of breath 	<p style="text-align: center;">Threshold Symptoms -and- Positive evidence of nerve agent or OPP on site</p>	1 NA Kit (self-rescue)
ADULT PATIENT	Mild Symptoms and Signs	<ul style="list-style-type: none"> • Increased tearing • Increased salivation • Dim Vision • Runny nose • Sweating • Nausea/vomiting • Abdominal cramps • Diarrhea 	Medical Control Order	1 NA Kit
	Moderate Symptoms and Signs	<ul style="list-style-type: none"> • Constricted pupils • Difficulty breathing • Severe vomiting 	Constricted Pupils	2 NA Kits
	Severe Signs	<ul style="list-style-type: none"> • Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing 	Constricted Pupils	3 NA Kits (If 3 NA Kits are used, administer 1 st dose of available benzodiazepine)
PEDIATRI	Pediatric Patient with Non-Severe Signs/Symptoms	<i>Mild or moderate symptoms as above</i>	Positive evidence of nerve agent or OPP on site	Age ≥8 years old: <ul style="list-style-type: none"> • As Above Age <8 years old <ul style="list-style-type: none"> • Per Medical Control



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<p>Pediatric Patient with Severe Signs/Symptoms</p>	<ul style="list-style-type: none">• Constricted pupils• Unconsciousness• Seizures• Severe difficulty breathing	<p>Severe breathing difficulty</p> <p>Weakness</p>	<p>Age \geq 8 years old:</p> <ul style="list-style-type: none">• 3 NA Kits <p>Age < 8 years old:</p> <ul style="list-style-type: none">• 1 NA Kit <p>Contact Medical Control as needed</p>
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***NOTE: Nerve-agent Antidote (NA) =1 Duo Dote or 1 Mark I**

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 EMS, Trauma and Preparedness (BETP), 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 Communications Agency
 - a. Primary: Survival Flight 877-633-7786
 - b. Secondary: Aero Med: 616-391-5330
 - B. Hospital, Public Health, EOC or Emergency Management
 1. Identifies need
 2. Contact MEDDRUN Communications Agency
 - a. Primary: Survival Flight 877-633-7786
 - b. Secondary: Aero Med: 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).
 - B. Contacts the state agency (BETP) Point of Contact: BEEPER: 517-232-0007

- 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. BETP 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 BETP 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, BETP and Communications will prepare a Preliminary After Action Report (AAR) using the format prescribed by BETP. (See AAR attachment) BETP will review each AAR with the intent of improving future responses.



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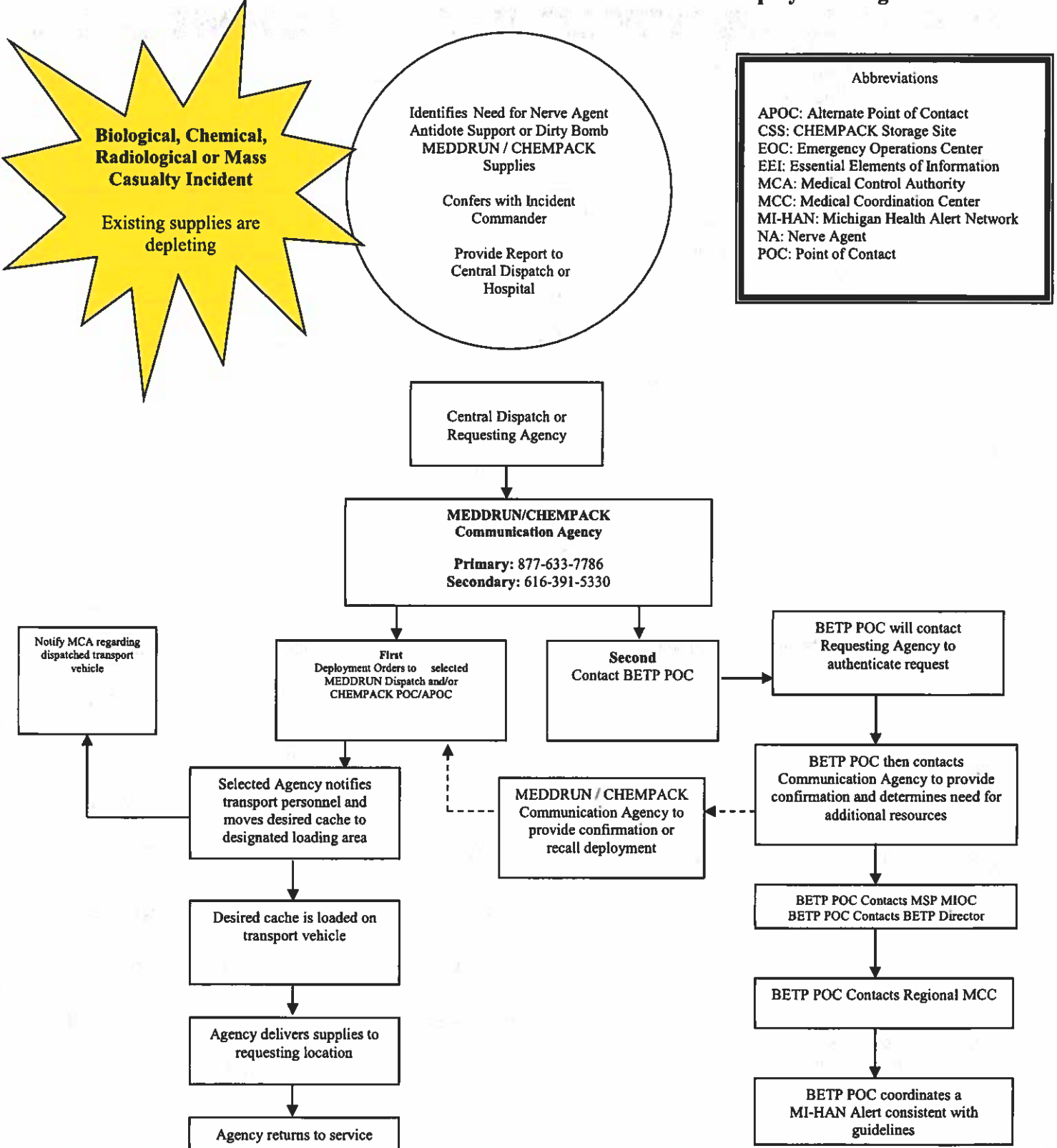
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Re-STOCKING MEDPACKS

- 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 BETP, will be responsible for ordering the supplies to re-stock the MedPack(s)/Chempack(s) used.
- II. BETP 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



Abbreviations
APOC: Alternate Point of Contact
CSS: CHEMPACK Storage Site
EOC: Emergency Operations Center
EI: Essential Elements of Information
MCA: Medical Control Authority
MCC: Medical Coordination Center
MI-HAN: Michigan Health Alert Network
NA: Nerve Agent
POC: Point of Contact



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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	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">None</td> <td style="text-align: center;">5-10</td> <td style="text-align: center;">100-300</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">10-20</td> <td style="text-align: center;">300-500</td> </tr> <tr> <td style="text-align: center;">2-3</td> <td style="text-align: center;">20-40</td> <td style="text-align: center;">500-1000</td> </tr> <tr> <td style="text-align: center;">4-5</td> <td style="text-align: center;">40-100</td> <td style="text-align: center;">1000+</td> </tr> </table>	None	5-10	100-300	1	10-20	300-500	2-3	20-40	500-1000	4-5	40-100	1000+
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	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Pinpoint Pupils</td> <td style="text-align: center;">Twitching</td> </tr> <tr> <td style="text-align: center;">Dimness of Vision</td> <td style="text-align: center;">Seizures</td> </tr> <tr> <td style="text-align: center;">Slurred Speech</td> <td style="text-align: center;">Chest Tightness</td> </tr> <tr> <td style="text-align: center;">Difficulty Breathing</td> <td style="text-align: center;">Unconsciousness</td> </tr> </table>	Pinpoint Pupils	Twitching	Dimness of Vision	Seizures	Slurred Speech	Chest Tightness	Difficulty Breathing	Unconsciousness				
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	<p align="center"> <input type="checkbox"/> Yes <input type="checkbox"/> No </p>												

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.

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 (e.g. Hydrogen Cyanide, Potassium/Sodium Cyanide, 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. Shortness of breath
 - A. Generally not associated with cyanosis
 - B. Pulse oximetry levels usually normal
 - C. Usually associated with increased respiratory rate and depth
 - D. Potential for rapid respiratory arrest
2. Chest pain
3. Confusion, decreased level of consciousness, coma
4. Seizures
5. Headache, dizziness, vertigo
6. Pupils may be normal or dilated.

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. Evaluate and maintain the airway
2. Provide oxygenation and support ventilation as needed
3. 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.
4. This is in contrast to most triage systems that would categorize non-breathing patients as non-survivable.
-  5. Establish vascular access
-  6. Administer antidote:
 - a. Cyanokit® (5g. adult; 70 mg/kg pediatric maximum dose 1g.) per **Cyanokit® Protocol** (preferred, per MCA Selection)

Cyanokit® Included?

Yes

No

b. Sodium Thiosulfate

- i. Adults: 50 ml (12.5 g) IV over 10 minutes if available
- ii. For pediatric patients: 1.65 ml/kg (12.5 g/50 ml solution) IV over 10 minutes



7. Cardiac monitoring

8. 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).

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. **Detection:** Do we have an MCI? If yes, immediately declare to dispatch.
 - B. **Incident Command:** Establish or interface with the Incident Command System (ICS)
 - C. **Safety and Security:** Immediate action steps to immediately protect responders, casualties, public.
 - D. **Assess Hazards:** Actively assess (initially and ongoing) for hazards that can harm responders, casualties, public.
 - E. **Support:** Request resources needed to effectively manage incident
 - F. **Triage and Treatment:** Initiate SALT Triage and provide treatment to casualties
 - G. **Evacuation:** Transport of casualties to appropriate hospitals (avoiding overloading individual hospitals) or alternate treatment centers
 - H. **Recovery:** 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

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

obvious respiratory distress, OR they have a life-threatening external 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

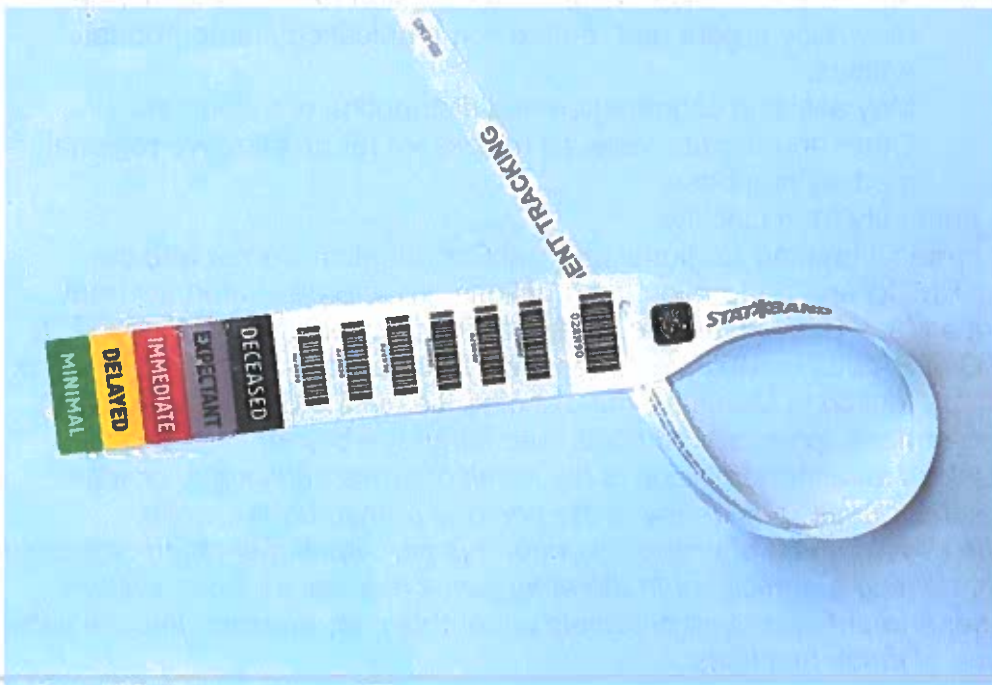
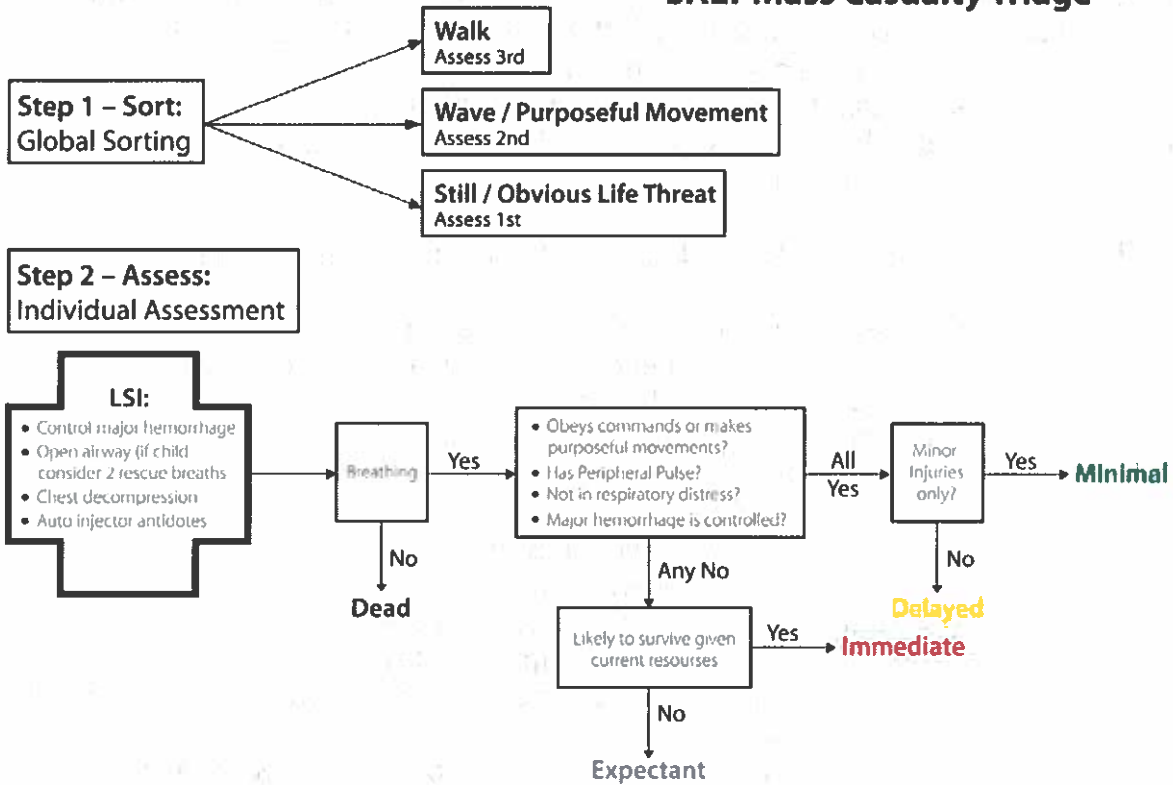
IX. Evacuation

- 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

SALT Mass Casualty Triage



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:



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- (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.



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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.

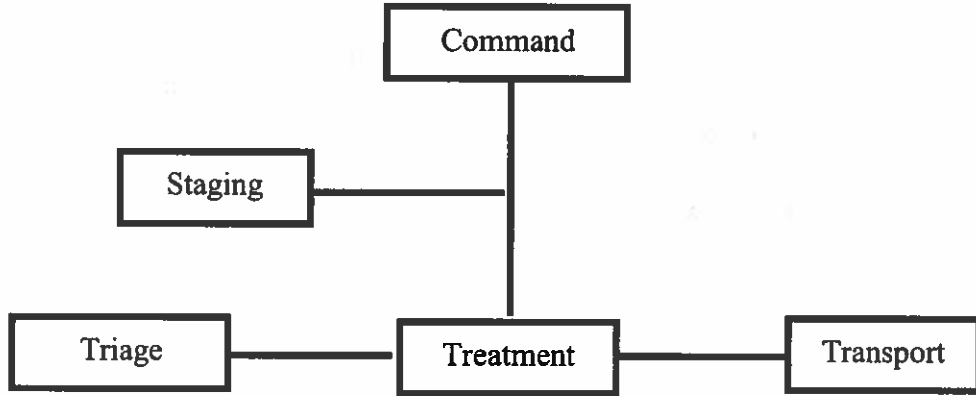
Coordinating Resource: the entity within the local EMS system responsible for the notification and coordination of the mass casualty response. Examples include: medcom, resource hospital, MCA, medical control, dispatch

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).

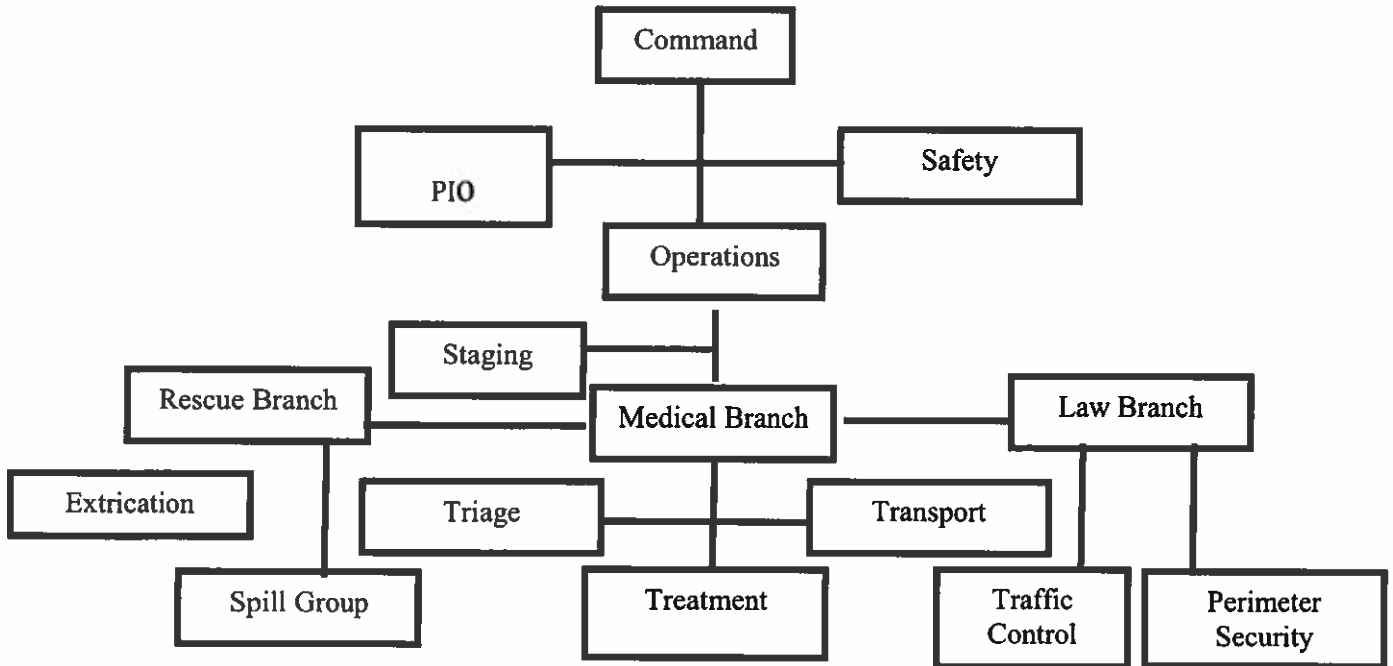
Community Health Emergency Coordination Center: The CHECC serves as a statewide multi-agency coordination entity as defined by NIMS. CHECC is intended to coordinate state-level healthcare and public health resources, to serve as a central point of contact for regional RMCC's, and to serve as a resource 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





**Michigan
SPECIAL OPERATIONS**

PRE-HOSPITAL (EMS) MCA MUTUAL AID AGREEMENT

Initial Date: 09/2004

Revised Date: 10/25/2017

Section: 10-7

Pre-hospital (EMS) MCA Mutual Aid Agreement

Purpose: Establish a mechanism allowing EMS agencies/Medical Control Authorities (MCA) to give prehospital care across jurisdictional 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 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 the MCA or EMS agencies within the jurisdiction. It is agreed that mutual aid response is dependent on the availability of equipment and personnel.
4. It is in the best interests of participating MCAs to include each other in disaster in 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 participating MCA distributing the information.
5. Participating MCAs agree to adopt, as a minimum, the State Model 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.
6. It is agreed that signatories may terminate this agreement without cause by providing a 30 day written notice to all other participating MCAs.

EMS Immunization & TB Testing

Purpose:

To allow paramedics to provide agency TB testing and vaccinations for seasonal influenza and during public health emergencies.

Community immunization and other public health applications are important duties that paramedics may perform as determined necessary in cooperation with the medical control authority and the local public health department. Training will be approved by the EMS Medical Director and Medical Control Authority and may be accomplished under the direction of the MCA and/or local public health department.

1. Indications for immunization and/or TB testing:

- A. Public or EMS agency personnel may be immunized or tested for TB under guidelines developed by the public health department or MCA.
- B. Age groups for immunization will be determined by the MCA or public health department as appropriate for the immunization clinic setting or agency TB testing requirements as determined necessary by the local public health department or agency infection control guidance.
- C. Timing of immunizations or TB testing will be determined by the MCA, EMS agency and public health department to comply with public health needs or agency immunization requirements as determined by agency infection control guidance.
- D. Immunizations or TB testing may be performed in clinic, NEHC, mass immunization or agency setting as approved by the MCA and/or local public health department.

2. Immunization or TB testing

- A. Immunizations or TB testing may be administered via IM, SQ or intranasal route in dosing determined by guidance provided by the MCA or local public health department as required for the agent administered.
- B. Screening will be performed as determined appropriate for the agent administered by the MCA or local health department.
- C. TB tests will be interpreted by paramedics performing the tests or personnel trained to review TB tests under MCA approved training programs.

3. Training

- A. Training for immunization will be provided by local public health department personnel or under an approved MCA program.

4. Personnel requirements

- A. Immunizations or TB testing may only be performed by paramedics trained by local public health department personnel or under approved MCA training programs.



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EMS IMMUNIZATION & TB TESTING

Initial Date: 05/31/2012
Revised Date: 10/25/2017

Section 10-8

5. Record keeping

- A. A record of public or agency personnel receiving immunizations or TB testing will be maintained by the agency performing the immunizations or TB testing as determined by the local public health department/Medical Control Authority.
- B. Michigan Care Improvement Registry (MCIR) record keeping may be required for some immunizations such as is required for H1N1.

Suspected Pandemic Influenza

Purpose: To have a standard approach to patients during a period of declared Pandemic Influenza, or state of public health emergency, that enhances awareness and protection of responders and prehospital care to patients and maximizing supplies that may become limited.

Criteria:

1. This protocol will apply to patients encountered by all levels of EMS, during an epidemic/pandemic of influenza. All agencies should frequently check the CDC.gov website for the latest recommendations with Personal Protective Equipment (PPE) and treatment recommendations. These can change frequently in an evolving and ongoing epidemic/pandemic.
2. The center for Disease Control and Prevention (CDC) has declared that an epidemic of influenza A or similar illness 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 vaccinations.
2. Each life support agency shall maintain a supply of fit tested disposable N-95 respirators and eye protection (e.g., goggles, eye shield), disposable non-sterile gloves, and gowns.
3. Each life support agency shall provide hand sanitizer to staff.
4. In areas with confirmed cases of influenza, 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 should 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 for suspected case of influenza 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 for suspected case of influenza.
- 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.

