QUALITY ASSURANCE TASK FORCE
AGENDA – Protocol Review Session
February 13, 2023
1:00 p.m.
VIRTUAL ONLY
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Attendance:
Member Roll Call:
Dr. Edwards-chair, Dr. Domeier, Dr. Fales, Dr. Noel, Dr. Wise, Dr. Paul, Deb Wagner, Lynn Weber, Lisa Martin, Betsy McDavid.
Guests:
BETP Staff:

State Protocols Review Session

- Impact Minimum Equipment - #1 PRIORITY – Ambulance Ops is meeting Feb 27th.
- Feb 13 VOTE – Please review and be prepared to vote
- Discuss – I have questions.

CPAP Administration
Required for Specialist/LALS and Paramedic/ALS

☐ MCA approval for BLS use of CPAP

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

~~The~~ CPAP ~~portion of the protocol~~ may be utilized by BLS agencies that have completed CPAP training, approved by the MCA, and are equipped with CPAP e~~E~~quipment including pulse oximetry. Exclusion clause. For use of this protocol, patients must meet the Inclusion Criteria. Contraindicated patients and those that do not meet the inclusion criteria will be treated according to existing protocols without the application of CPAP.

Indications:

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

1. CHF/Pulmonary edema/near drowning
2. Hypoxia, i.e., SaO2 less than 92% on supplemental oxygen.
3. Acute exacerbation of asthma/COPD.

Contraindications:

1. Respiratory/cardiac arrest.
2. B/P less than 90mmHg.
3. Inability to maintain patent airway.
4. Major trauma, pneumothorax, penetrating chest trauma.
5. Vomiting or active GI bleeding with emesis.
6. Unstable facial fractures.

Caution:

~~6.~~ 1. Use with caution in blunt chest trauma and blast injury

Procedure

1. EXPLAIN THE PROCEDURE TO THE PATIENT.
2. Apply CPAP per manufacturer's recommendations.
3. Place the patient on continuous pulse oximetry.
4. Secure the mask with provided straps and tighten to obtain a good seal, check for air leaks
5. Continue to coach the patient to keep the mask in place, readjust as needed.
6. Advise medical control of CPAP use during radio report.
7. If respiratory status deteriorates, remove the device and assist ventilations with a BVM/supplemental **O2**; place an appropriate airway control device.
8. Place the patient on cardiac monitor and record rhythm.
9. Obtain/monitor vital signs

Commented [KK(C1]: PC: "The agency may choose not to equip all of their EMS licensed vehicles with CPAP devices." Not sure how to word this - we do want those doing a 9-1-1 response to have it correct?

Commented [KK(C2]: Where is the inclusion criteria? Rename to indications ?

Commented [KK(C3]: Public Comment: Suggest somehow adding "tiring" respiratory distress/respiratory failure for BiPAP indication. Sometimes respiratory failure patient may be hypercarbic and hypoventilating while maintaining oxygenation via oxygen mask or other supplemental oxygen. They still may need BiPAP support to help with ventilation, even if oxygenation is doing okay.

Commented [KK(C4]: Should we have a bottom peds age limit?

Commented [KK(C5R4]: CPAP is referred to in peds protocols

Commented [KK(C6]: What about pediatric BP?

Commented [KK(C7]: It was a public comment to add this caution.

Commented [KK(C8]: Appropriately sized

Commented [KK(C9]: Public Comment: Suggest adding recommended starting pressure ranges for CPAP and BiPAP with titration as necessary and as tolerated.

10. Administer medications, per appropriate protocol, as indicated**.**


11. Contact medical control and consider sedation to reduce anxiety per **Patient Procedural Sedation- Procedure Protocol.**

Removal Procedure

1. CPAP therapy needs to be continuous and should not be removed unless the patient cannot tolerate the mask or has marked deterioration including respiratory arrest, decreasing LOC or patient may vomit.
2. Assist ventilations as necessary

Special Notes:

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

Pleural Decompression
Paramedic Use Only

Indications

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

Presentation of Tension Pneumothorax

A tension pneumothorax will have at least one of the following:

1. Severe respiratory distress in the conscious/breathing patient with **hemodynamic compromise (hypotension)**.
2. Difficult ventilation in the hypotensive, unconscious/apneic patient in the presence of a confirmed, correctly positioned endotracheal tube.

Technique

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

MCA Approved Commercial Device Use	
Adults	Pediatrics
☐ Yes	☐ Yes
☐ No	☐ No

      ~~a.~~c. Antiseptic swabs
      d. Dressing and tape

Commented [KK(C1]: Public Comment: (Technique) Studies have shown that a 3 inch angiocath will not reach the pleural space in up to 54% of casualties in the 2nd ICS/MCL and 22% in the 4th or 5th ICS/AAL. Suggest longer catheter be specified for adults. A 3.25 inch catheter is effective in 99% of casualties in the 2 ICS/MCL. Chest Wall Thickness in Military Personnel: Implications for Needle Thoracentesis in Tension Pneumothorax. H. Theodore Harcke, et.al. Military Medicine, 172:12 (2007) What is the Best Anatomic Location for Needle Thoracostomy? S. Rezaie REBEL EM (Mar 2016)

Commented [KK(C2]: Are commercial devices for adults only?

~~b.~~

B. Identify landmarks and insertion site per MCA selection

Commented [KK(C3]: Should the sites me as selected by MCA

Approved decompression sites per MCA Selection	
Adults	Pediatrics
☐ Anterior Axillary	☐ Anterior Axillary
☐ Midclavicular	☐ Midclavicular

~~B.~~

a. Anterior axillary line at the fourth intercostal space just above the fifth rib.. OR
b. M~~m~~id-clavicular line at the second intercostal space just above the third rib

Commented [KK(C4]: GCMCA states Hurley only allows midaxillary - should the site be MCA options? Public Comment: Strongly recommend that this be a checkbox based upon MCA choice/selection. Our MCA, based upon Hurley Trauma Department, has limited the insertion site to one location and our protocol is written as follows: Insertion site is slightly anterior to the midaxillary line at the fifth intercostal space. This is the current science according to our local trauma team.

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

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

~~**Pediatric Considerations**~~

1. ~~To perform needle decompression, use an 18 or 20 gauge over the needle catheter inserting the needle in the mid-clavicular line at the second intercostal space, just above the third rib.~~

Commented [KK(C5]: Should the needle size be moved up to Procedure 2.A.b.

MCA Approved Commercial Device
☐ Yes:
☐ No

End-Tidal Carbon Dioxide Monitoring (Capnometry and Capnography)

Commented [KK(C1]: End tidal CO2 monitoring and interpretation of waveform capnography is AEMT and Paramedic in the national scope of practice

Aliases: ETCO2, End Tidal, Capnography

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

1. Capnography is a graphic representation of exhaled carbon dioxide displayed as ~~.~~ ~~Capnography is~~ a waveform along with a numeric representation. Capnography is ~~the preferred method of airway confirmation and~~ mandatory for endotracheal tube~~ALS~~ airway confirmation. Capnography via nasal cannula is mandatory per applicable protocol for LALS and ALS as it is also a valuable assessment tool in critically ill patients.

Commented [KK(C2]: Licensure level

MCA approval to utilized capnography ☐ EMT MCAs will be responsible for maintaining a roster of the BLS and LALS agencies choosing to participate and will submit roster to MDHHS

~~1.~~

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

Commented [KK(C3]: Licensure level

Indications:

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

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

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

4. Monitoring therapy intended to increase coronary blood flow, reflected in CO_2 elimination
    A. Capnography **may** be utilized in patients receiving CPR (even without advanced airway placement), cardiac pacing, or when receiving medications that are intended to increase cardiac output, as a means to determine the physiological effectiveness of interventions
    B. Capnography must be utilized for critically ill patients and for patients with ROSC in ALS units.

Contraindications:

1. There are no absolute contraindications to Capnography/Capnometry

Procedure:

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

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

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

Medication Administration

Information:

EMS providers preparing to administer medications in the out of hospital setting should review and/or recite the "6 Rights" prior to administering any medication to a patient. While all 6 elements are important, In the out of hospital setting, special attention should be paid to the right medication, right dose, and right route - as these are frequently the areas of error in the EMS environment. In addition, EMS providers should ensure the patient is informed as to what medications they are receiving and afford an opportunity for the patient to refuse. Lastly, documentation is essential so that medications administered in the out of hospital setting become part of the patient's clinical medical record. By following the "6 Rights" of medication administration, EMS providers will significantly decrease the potential and number of errors associated with medication administration.

Definitions:

I. Medication: Any pharmacological intervention used to treat, prevent, or reduce signs and symptoms of diseases, disorders, and/or traumatic injuries.

II. Medication administration routes include the following: Intramuscular, Intravenous, Intraosseous, Oral, Buccal, Rectal, Inhaled, and Subcutaneous.

Procedure:

I. Prior to the administration of any medication ensure the following are reviewed and/or verbalized by at least two providers – if available (checked, and double checked):

A. 6 Rights of Medication Administration –

1. Right Patient
2. Right Dose
3. Right Medication (including indication)
4. Right Route
5. Right Time
6. Right Documentation (including response)

II. Calculating medications when given a dosage range and a per kg dose:

A. Calculate weight in kilos and multiply by the prescribed dosage (e.g. - mg/kg)

B. The resultant dose should be less than the maximum single dose.

1. In adults, for ease of administration, doses may be rounded to the nearest whole number within the range for those calculated doses at or above 1 dosage unit, or to the nearest tenth for those below 1 dosage unit (examples: 1.2 mg rounded to 1 mg, and 0.26mg rounded to 0.3mg). That calculated and rounded dose may be given and repeated in timed intervals, as indicated for that medication, to the control of symptoms or maximum stated cumulative dose if symptom control is not previously achieved.

2. For pediatric patients, utilize MI-MEDIC and a length-based tape for all medication calculations.

C. Pediatric patients will never be given a single or total dose that exceeds the maximum single or total adult dose.

III. Following administration of any medication

A. Document all pertinent aspects of the medication administration including but not limited to medication name, dose, route, and time in an electronic patient care report.

B. Obtain signature of prescriber (medical control physician or other qualified designee) per local medical control authority policy.

Intranasal Medication Administration:

Intranasal medication administration using an FDA-approved and MCA authorized atomizing device as specified in applicable patient care protocols is allowed for the following licensure levels per MCA selection.

MCA Approval for intranasal medication administration

- ☐ MFR
- ☐ BLS
- ☐ Specialist
- ☐ Paramedic

PROCEDURE:

1. Select desired medication and determine dose per applicable protocol.).
2. Draw up appropriate dose (volume) of medication plus an additional 0.1 mL to account for device dead space.
3. Attach atomizing device to syringe.
4. Use one hand to support back of patient's head as needed.
5. Place tip of atomizing device snuggly against nostril aiming slightly upward and outward. Administration angle should be approximately 45°.
6. Rapidly administer one half of the dose of medication, briskly pushing plunger.
7. Repeat with other nostril delivering the remaining volume of medication.
8. Use the highest concentration available for the medication.
9. Note: Maximal dose per nostril is 1 mL.

Nebulized Medication Administration

Nebulized medication administration using an FDA-approved and MCA authorized atomizing device as specified in applicable patient care protocols is allowed for the following licensure levels per MCA selection.

MCA Approval for intranasal medication administration

☐ BLS
☐ Specialist

Procedure

1. Obtain vital signs and auscultate lung sounds.
2. Select desired medication and determine dose per applicable protocol.).
3. Place the appropriate volume of medication in the lower half of the nebulizer unit. Then screw the upper half of the unit in place.
4. Attach the nebulizer to the base of the T piece. Then attach the mouthpiece to the T piece or connect neb chamber to NRB mask.
5. Attach one end of the oxygen tubing to the base of the nebulizer and the other end of the oxygen tubing to the oxygen source.
6. Set the **oxygen** liter flow at 6 L/min.
7. Instruct the patient to breathe normally through the mouthpiece, taking a deep inspiration every 4 or 5 breaths.
8. Continue the treatment until all the medication has been delivered through the nebulizer. You may need to gently tap the reservoir once or twice during the treatment to re-disperse the medication.
9. Obtain and record another complete set of vital signs and lung sounds after completion of the treatment.

Pediatric Considerations

1. Infants and small children may not be able to use adult mouthpiece and may need to use blow-by or pediatric mask

NOTES:
MCL 333.17754 Section 1(C)) An electronic signature or other identifier that specifically identifies and authenticates the prescriber or his or her agent.

Protocol Source/References:

Medication Shortage

A. Definitions:

1. ***Alternate Concentration*** – same medication, different concentration, while volume may change, the delivered dose remains unchanged, dilution may be required (*Epinephrine 1: 10,000 replaced using Epi 1: 1,000 with a 10mL diluent)*
2. ***Alternate Supplied Volume –*** same medication, same concentration, standard volume is unavailable, the delivered dose and volume remain the same *(Epi 1: 1,000, typically supplied in a 1mL vial replaced with Epi 1: 1,000 in a 10mL multi-dose vial due to shortage of the smaller vials)*
3. ***Alternate Supply/Type –*** same medication, standard supply type is unavailable (preloads vs. vials), dosing remains unchanged *(diphenhydramine 50mg/5mL preload is unavailable, replaced with diphenhydramine 50mg/5mL in a vial)*
4. ***Alternate Form*** – same medication, different route such that identical dosing does not yield the same systemic concentration or effect *(ondansetron 4mg vial unavailable, replaced with ondansetron 4mg ODT, option to repeat x 1 added to allow approximation of equivalent dosing)*
5. ***Alternate Medications*** – medication other than the standard approved medication which accomplishes an acceptably similar effect as the medication it replaces *(fentanyl 100mcg approved to replace morphine 10mg, dosing adjusted to obtain therapeutic equivalency)*
6. ***Missing Medication*** – standard medication which is unavailable *(amyl nitrite not available, acceptable alternative of Cyanokit is excessive in cost and size: alternate means to access treatment established – MEDDRUN)*
7. ***Outsourced medications – Repackaged by a 340B or 503 B medications in the same concentration and volume that have at least a 90 day expiration date.***

B. Criteria:

1. Participating pharmacies be it at the individual MCA or at a wider regional level, shall establish and maintain a listing of the standard medications and supplies contained in drug bags or boxes supplied to life support agencies for the purposes of treating patients.
2. Each participating pharmacy shall maintain a dated listing of alternative medications which are approved as substitutes or replacements for medications which are in shortage.
3. Due to the frequency of medication shortages and the need for alternative dosing or medication substitutions, each MCA shall develop and enact a medication cross-check procedure, to which EMS personnel will be held accountable as a means to avoid medication errors
4. Both the standard list and the alternate list (may be combined into a single document) shall be made readily available to system participants
5. The participating pharmacy shall enact policies/procedures which guide each of the following:
   A. Recognition of medication shortages and a means to report them

B. Pharmacy involvement in the investigation and designation of acceptable alternatives when shortages are identified
C. An organized process by which participant pharmacies will enact the replacement or substitution
D. A documented means of visually identifying when an alternative medication or dosing has been placed into an EMS drug bag or box, or when a medication is missing
    a. ***Alternate medications*** will be indicated by the placement of a sticker, tag or label on the outside of the bag or box; on the compartment where the alternate medication is located (if applicable) such that one inspecting the bag or box could easily recognize that the medication was included and what the missing medication it is intended to replace was. (Stickers GREEN or WHITE with GREEN)
    b. ***Missing medications*** will be signified by the placement of a sticker, tag or label on the outside of the bag or box, on the compartment where the missing medication would be located (if applicable) such that one inspecting the bag or box could easily recognize that the medication was missing and what the potential alternate medication was. (Stickers YELLOW or WHITE with YELLOW)
E. A method for dissemination of information related to changes made to the participating pharmacy drug bags or boxes with a means of accounting for receipt of the notifications at the agency/pharmacy levels

C. Selection of Alternative Medications:

1. Alternative concentrations, alternative supply/type and alternative supplied volume may be approved at the MCA/participating pharmacy level without a change to protocol provided that the standard and approved alternate medications are documented in the required lists, by effective date or date range.
2. Alternate form and alternate medications may be enacted as an emergency protocol according to statute and state approval, in the event of imminent shortage.
3. Non-standard medications, or those with no precedence of EMS use within Michigan must be submitted as new protocol submissions. The state may allow for expedited review in the event of imminent shortage of the medication being replaced.
4. If a missing medication will not be replaced, or an acceptable alternative is not found, a protocol or process should be developed or presented which addresses the potential inability to meet the existing protocol established standard of care.

D. Process:

1. A brightly colored ALTERNATE DOSE sticker/tag MUST be attached to the outside of the drug bag, box or narcotics box that lists the effected medication, the concentration of the substituted medication, the expiration date of the medication and the pharmacy name/date.
2. A brightly colored – MISSING MEDICATION sticker/tag must be placed on bags/boxes when a protocol medication is not available to stock in that bag/box.

3. A dosing/instruction card may be required to be included in the bag/box depending on the change.
4. Pharmacies experiencing shortages must provide notification of the need to utilize alternate dosing to the MCA , and receive MCA approval, prior to any change being implemented.
5. Drug bags, boxes or narcotics boxes with alternate dose medications/missing medications should have the medication replaced and the sticker/tag removed by pharmacy as soon as possible when the proper medication or concentration of medication is available.
6. Any additional equipment, which is needed to deliver the medication, must be included with the alternate dose.
7. EMS Agencies receiving notice of the utilization of alternate dosing, alternate medications or missing medications due to shortage must post the changes and ensure that all providers that may have cause to use the medications are made aware of the changes and are educated on proper use, risk and dosing of any new or replacement medication prior to their first potential exposure to the alternate dose or medication.
8. Any Special Instruction for a particular shortage will be communicated to all effected pharmacies and EMS services.

Protocol Source/References:

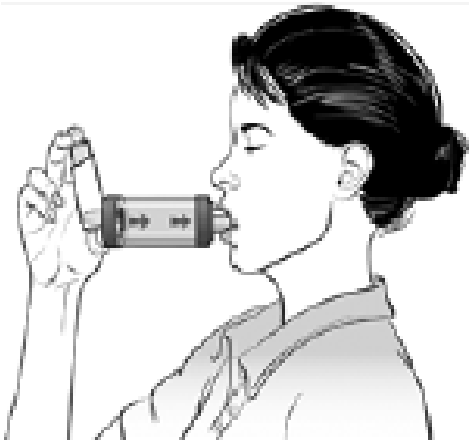
Metered Dose Inhaler (MCA OPTIONAL)

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

Purpose: To reduce the utilization of nebulized albuterol medication administrations by EMS personnel in patients with febrile respiratory symptoms. This protocol allows for use of the patients own prescribed metered dose inhaler instead.

A. To substitute administration of **albuterol 2.5 mg/3ml** NS nebulized with use of the patient's own MDI the following criteria MUST be met.
    1. A specific and applicable treatment protocol is being followed
    2. EMS provider administering patient prescribed MDI is MCA authorized to administer **albuterol 2.5 mg/3ml** NS nebulized within the treatment protocol
B. Indications
    1. Patients with febrile respiratory symptoms
C. Requirements
    1. Patient has a prescribed rescue Metered Dosed Inhaler (MDI) containing albuterol only
    2. MDI is prescribed to the patient (no one else)
    3. Medication is not expired
    4. MDI has a functioning spacer (preferred not required)
D. Procedure
    1. Assist patient in receiving four (4) puffs of their own rescue Albuterol Metered Dose Inhaler (MDI), with spacer, in place of each nebulized treatment of **albuterol 2.5 mg/3ml** NS as indicated in applicable treatment protocol.
    2. Use of a spacer is optimal. When no spacer is available, ensure that that patient breathes out completely before each puff in order to inhale as much medication as is possible.
    3. Do not use an MDI prescribed to another person
    4. All MDIs should be brought to the hospital with the patient, if transported.
E. Directions for use
    1. Remove the cap from the MDI and spacer. Shake well
    2. Insert the MDI into the open end of the spacer (opposite the mouthpiece).
    3. Place the mouthpiece of the spacer between the patient's teeth and have them seal their lips tightly around it.
    4. Have the patient breathe out completely
    5. Press the MDI canister once.
    6. Have the patient breathe in slowly and completely through their mouth. If you hear a "horn-like" sound, they are breathing too quickly and need to slow down.

7. Have the patient hold their breath for 10 seconds (count to 10 slowly) to allow the medication to reach the airway of the lung.
8. Repeat the above steps for each puff.
9. Replace the cap on your MDI when finished.



Using an MDI with a spacer (Figure 1)

Protocol Source/References

Field Medication Box and IV Supplies

I. Emergency medical service vehicles will be equipped with medication boxes and IV kits or supplies consistent with their licensure level and protocols.

II. Medication boxes will be prepared by participating hospital pharmacies prior to each patient use. The pharmacy will manage their respective inventory for restocking medication boxes and IV kits or supplies. IV kits may be prepared and sealed by the pharmacy.

III. Medication boxes and IV kits (when prepared by the pharmacy) will be labeled with a pharmacy label which contains, at a minimum:
   A. The name of the re-stocking pharmacy
   B. The name or initials of the certifying pharmacist
   C. The expiration date of the box or kit (and ID of first expiring med)
   D. The date the box or kit was refilled
   E. The tag number of the locks assigned to the box.

IV. Licensed EMS personnel will assure that a proper seal is in place on any medication box or IV kit when it is provided by the participating pharmacy. The ambulance agency and licensed EMS personnel are responsible for the security of the medications and supplies.

V. Medication boxes and IV kits (supplies) shall be locked and secured in the EMS vehicle, except when required for patient care. Each agency will have a procedure in place to ensure controlled access to the medication box and IV kits (supplies).

VI. Licensed EMS personnel will document the medications used from the medication box and/or IV kit. A physician, PA or NP signature is required as part of the documentation when controlled substances are administered. The documentation will accompany the sealed medication box when returned to a secure location for pharmacy exchange.

VII. Whenever controlled substances are used from a medication box, any unused or contaminated medication must be wasted in the presence of a witness that is a licensed healthcare professional that is authorized by the receiving facility. This witness shall also sign their name on a patient care record, attesting to the disposal of the wasted medication.

VIII. Opened syringes, needles, and any broken glass ampules will be properly disposed of and not left in the medication box. It is the responsibility of the licensed EMS personnel to clean any blood or body fluids from the inside of the medication box before it is returned to the pharmacy.

IX. The pharmacy shall routinely inspect these medications and will verify the contents and replace the medications as necessary.

X. If a pharmacy or agency discovers a discrepancy in medication box contents, they shall contact the last pharmacy or agency which had possession of the box and mutually resolve the discrepancy. The pharmacy/agency, which discovered the discrepancy, shall submit a report to the medical control authority documenting the circumstances and the

resolution. If the pharmacy and agency are not able to arrive at a mutually agreeable solution, the issue shall immediately be forwarded to the medical control authority for investigation and resolution.

XI. The contents of the medication box are subject to inspection at any time by participating hospital pharmacy staff or by the medical control authority.

Protocol Source/References:

Pharmacy, Medication Box and IV Supply Exchange Procedure

1. Pharmacies operated within the member hospitals of the medical control authority in the medication exchange system established by this protocol are considered MCA participating pharmacies

2. The pharmacy is responsible for ensuring that re-stocked EMS medication boxes and IV supplies are available to EMS units who bring in a used box for replacement. The Administrative Rules of the Michigan Board of Pharmacy (R 338.486)(4)(c) require that "The pharmacist shall routinely inspect these medications and, after use, shall verify the contents and replace the medications as necessary".

    A. All medications in approved protocols must be supplied in correct dosages, concentrations, and quantities.
    B. All medications carried must have a corresponding protocol for use.

3. The pharmacy is responsible for providing a secure environment for restocked medication boxes and IV supplies awaiting pickup by an EMS unit and used boxes brought back for restocking.

4. Upon receiving a used box from an EMS service, the pharmacy will check to assure that the box is properly sealed and contains documentation of medication use, signed by a physician for medication exchange, is in the box. The documentation will be checked, by the pharmacist, against the remaining contents of the box to assure accountability for all medications. The pharmacy will design a system whereby EMS units present appropriate documentation when replacing used IV supplies.

5. The pharmacy will replace the used contents of the medication box and IV supplies, and verify that all supplies and medications listed on the medical control authority medication box inventory form are present. The box will be sealed and secured.
    A. Each box will include either a standard usage log sheet or an inventory list.

6. The refilled medication box will then be relabeled with a pharmacy label which contains, at a minimum:
    A. The hospital name
    B. The name or initials of the pharmacist checking the box
    C. The date the box was restocked and checked.
    D. The expiration date of the first medication to expire in the box (this date must be at least three months from the date the box is being restocked and checked).
    E. The tag number of the locks assigned to the box.
    F. Pharmacies must attach to the exterior of the box a notification regarding any changes to content of the medication box from the standard inventory contents.

7. Medication box contents remain the property of the participating pharmacy. The box itself is owned by the entity (EMS or hospital) that purchased it and entered it into the system. The medical control authority will maintain a listing of the medication box numbers currently "in service", and will assign new medication box numbers, as needed.

8. The Director of Pharmacy at each participating hospital is responsible for assuring compliance with this policy.

9. Unless addressed by approved protocol, all medications (including over the counter medications) must be obtained from an MCA recognized participating pharmacy.

Protocol Source/References:

Naloxone Leave Behind Medication Kit Contents and Distribution Procedure (MCA OPTIONAL)

☐ 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.

I. Medications and supplies for naloxone kits will be supplied by participating pharmacies or the MCA
II. Assembly, labeling, and access to kits will be done according to the **Pharmacy, Drug Box and IV Supply Exchange Procedure.**
III. Overdose Medication Kit Contents List

Medication / Item	Concentration	Packaging	Quantity
Naloxone (Narcan)	4mg / spray	Nasal Spray	1
MDHHS Safety Advice for Patient and Family Members Card			1
Resuscitation Face shield*			1* *(MCA Optional)
Replacement Form			1
Local Treatment Resources Form			1

IV. Procedure
A. Each participating EMS Agency will stock each of its licensed vehicles with 2 Naloxone Medication Kits. After deployment, the naloxone medication kit will be replaced within 24 hours at the assigned stocking hospital pharmacy.
B. Kits will be stored on the EMS vehicle in a secure way, not accessible to the public.
C. Deployment of a Naloxone Medication Kit will be documented the patient care record and uploaded to the Michigan EMS Information System.
D. The replacement/use form will be completed and returned to the designated hospital pharmacy for dispensing of a replacement Naloxone Kit.

Protocol Source/References:

Epinephrine Auto-Injector Procedure

Aliases: Epi-Pen ®

Purpose: To outline the use and resupply of epinephrine auto-injector/pediatric epinephrine auto-injector by authorized prehospital providers for life-threatening anaphylaxis and respiratory emergencies as outlined in applicable treatment protocols Providers must be licensed at or above the Emergency Medical Technician level unless otherwise specified by MCA selection. .

MCA Approval of **Epinephrine Auto-injector** for Select MFR Agencies

☐ YES ☐ NO

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

1. **Indications**
   A. Life-threatening allergic/anaphylactic and respiratory emergencies
   B. Use is outlined in applicable treatment protocol
2. **Contraindications**
   A. No absolute contraindications to life-threatening allergic/anaphylactic emergencies as described in applicable treatment protocols.
3. **Cautions**
   A. Use with caution in patients with heart disease, high blood pressure, and stroke.
    B. Contact Medical Control if child appears to weigh less than 10 kg (approx. 20 lbs.) prior to administration if possible.
4. **Technique**
   A. **Epinephrine auto-injector** is an auto-injector that injects medication into the intramuscular tissue when the device is pushed against the skin. Injection is to be done at the anterolateral portion of the thigh.
   B. Dosing:
      i. **Epinephrine auto-injector** (0.3 mg) is used for patients weighing over 30 kg (approx. 60 lbs.)
      ii. **Pediatric epinephrine auto-injector** (0.15 mg) is used for patients weighing between 10-30 kg (approx.20-60 lbs.)
       iii. Contact Medical Control if child appears to weigh less than 10 kg (approx. 20 lbs.), prior to **pediatric epinephrine auto-injector** administration, if possible
   C. Instructions for use are pictured on the side of each auto-injector.
   D. The auto-injector must be held in place for ten (10) seconds once the needle injects into the thigh.

5. **Documentation**
   A. EMS providers will document any changes in the patient's condition and report those changes to on-line medical control.
   B. Complete the Epinephrine Auto-injector Utilization Form as required by MCA.
6. **Accountability**
   A. **Epinephrine auto-injectors** will be stored in a secured compartment in a temperature-controlled area of the EMS vehicle.
   B. **Epinephrine auto-injectors** must be restocked at the pharmacy or through other Medical Control approved process in conformity with current pharmacy laws and the public health code. Utilization forms must be completed for each use.

Epinephrine auto-injector Utilization Form
(To be used by Hospital)

Drug	Standard	Quantity	Count	Exp. Date
Epinephrine auto-injector	0.3 mg	1	_____	_____
Pediatric Epinephrine auto-injector	0.15 mg	1	_____	_____

Run Date _____

Patient Name _____

Physician _____

EMT or MFR _____

Receiving Hospital _____

Protocol Source/References:

HEAD INJURY – ADULT MODERATE & SEVERE TBI

Purpose: Reduction of morbidity and mortality associated with Traumatic Brain Injury (TBI). The treatment of a patient with suspected TBI should focus on four important clinically identifiable conditions, hypoxia, hyperventilation, hypotension, and hemorrhage. Each of these conditions, have been shown to cause patient harm and are often preventable. Treatment should focus on the control, monitoring and prevention of the aforementioned four clinically identifiable conditions. hemorrhage.

I. Prehospital identification of moderate or severe TBI

1. Anyone with physical trauma and a mechanism consistent with the potential to have induced a brain injury AND one or more of the following:
   a. Any injured patient with loss of consciousness, especially those with GCS less than 15 or confusion
   b. Multisystem trauma requiring advanced airway whether the primary need for intubation was from TBI or from other potential injuries
   c. Post-traumatic seizures whether they are continuing or not

I. Inclusion Criteria:

1. Adults: Age ≥18

Commented [KK(C1]: Not sure where this came from: Add pediatrics to this use criteria out of approved 2.1 into this protocol.

Commented [KK(C2R1]: Look at public comment to see if it's there. Talk to Fales - unsure because tx is based on a study if age can be changed.

III. Procedure:

1. Follow **General Pre-hospital Care Protocol**
2. Transport according to **Adult and Pediatric Trauma Triage-Treatment Protocol** and MCA Transport Protocol.
3. **Manage Airway & Oxygenation**
   a. All patients identified with moderate or severe head injury should receive high-flow **oxygen**.
   b. Monitor and maintain SpO2 equal to or greater than 90%.
   c. If high-flow **O2** fails to correct hypoxia, basic maneuvers for airway repositioning should be attempted, followed by reevaluation.
   d. If this does not restore SpO2 to 90% or greater, or if there is inadequate ventilatory effort, bag-valve-mask ventilation should be performed using appropriate airway adjuncts (e.g., oropharyngeal airway). Use Pressure-Controlled Bags (PCBs), Ventilation Rate Timers (VRTs), ETCO2 monitoring or ventilators, if available.
      i. Maintain a strict 10 breaths per minute ventilation rate (one breath every 6 seconds)
   e. If airway compromise or hypoxia persists after these interventions, consider additional airway options; go to **Emergency Airway-Procedure Protocol.**
4. **Manage Ventilation**

   Note: Identify and treat hypoventilation as well as prevent hyperventilation when assisting ventilation. As much as possible maintain normal ventilation. Hyperventilation decreases cerebral blood flow and worsens secondary brain injury. Strict attention on avoiding hypo- and hyper- ventilation is critical.

a. If hypoventilation is suspected (ineffective respiratory rate, shallow or irregular respirations, or periods of apnea) despite high-flow O2 therapy, assisted ventilations should be performed via BVM. Use Pressure-Controlled Bags (PCBs), Ventilation Rate Timers (VRTs), ETCO2 monitoring or ventilators, if available.

b. If hypoventilation persists after these interventions, consider additional airway options, go to **Emergency Airway-Treatment Protocol.**

(S) i. Maintain ETCO2 of 40 mmHg (35-45 mmHg). ETCO2 monitors should be used not only to confirm advanced airway placement but to monitor ventilation during patient care. Follow **End Tidal Carbon Dioxide Monitoring-Procedure Protocol.**

ii. Pressure Control Bags (PCBs) and Ventilation Rate Timers (VRTs) should be used immediately after advanced airway placement. Maintain a strict 10 breaths per minute ventilation rate.

c. Ventilators may be used post-intubation, if available, to optimize ventilatory mechanics and O2 therapy. PCBs/VRTs should be used immediately after intubation and until the patient is placed on the ventilator even if this will only take minutes.

i. Target tidal volume (TV) is 7mL/kg with ventilator rate adjusted to keep the ETCO2 within the target range (35-45 mmHg).

Commented [KK(C3]: Do we have a protocol for placing a pt on a vent in the field?

5. **Manage Hemorrhage**
   a. See **Bleeding Control-Treatment Protocol**
   b. Consider TXA per the **Hemorrhagic Shock-Treatment Protocol**
6. **Manage Blood Pressure**

Note: Systolic blood pressure should be maintained ≥ 90 mmHg.

a. Obtain vascular access per **Vascular Access & IV Fluid Therapy-Procedure Protocol**.

i. Systolic blood pressure should not be allowed to drop below 90 mmHG

(S) ii. Administer **LR** or **NS** up to 1L wide open for immediate correction of SBP < 90 mmHG.

(S) iii. Continue IV fluids as needed to maintain a SBP above 90 mmHg. Reduce to a minimal KVO rate if SBP > 140 mmHg.

(S) iv. Do not wait for the patient to become hypotensive. Decreasing SBP or other signs of compensated shock (increasing heart rate, increasing ventilatory rate) require proactive fluid administration to prevent SBP decreasing below 90 mmHG.

v. Consider IO placement per **Vascular Access and IV Therapy-Procedure Protocol** in the presence of hypotension or other signs of shock when an IV can not be established quickly.

7. Check blood glucose (may be MFR skill), see **Blood Glucose Testing-Procedure Protocol**

a. If BGL < 60 mg/dl:

(S) i. Administer 25g **dextrose** (IV/IO

ii. Reassess BGL in 10 minutes, if still less than 60 mg/dl repeat dose 25g **dextrose** one time.

Medication Protocols
Dextrose
Protocol Source/References:

Patient Restraint

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

Indications:

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

Order of Operation:
1. Verbal de-escalation
2. Physical restraint
3. Chemical restraint
~~3.~~

Physical Restraint Procedure

1. Ensure that enough personnel are available to properly control the patient and establish the restraints.
~~2. Attempt verbal de-escalation~~
~~3.~~2. Explain the purpose of the restraints.
~~4.~~3. Physically control the patient and apply restraints.
~~A. If patient continues to resist physical restraints, consider chemical restraint.~~
~~5.~~4. Complete primary and secondary assessments.
    A. Restrained extremities should be evaluated for pulse quality, capillary refill time, color, sensory and motor function continuously
        a. Restraints must be adjusted if any of these functions are compromised.
        b. Restraints must not interfere with medical treatment.
~~6.~~5. Attempt to identify common physical causes for patient's abnormal behavior.
    - Hypoxia
    - Hypoglycemia
    - Head Trauma
    - ETOH/ Substances use/ abuse
~~7.~~6. Patient should be secured to a backboard or stretcher only. Patients must never be secured directly to a vehicle or immovable object. Patients must never be secured in a prone position.
~~8.~~7. Transport patient.
~~9.~~8. Inform hospital that restraints are in place and assistance will be necessary to continue restraint of the patient.

Chemical Restraint Procedure

Commented [KK(C1]: Should this include pediatrics?

1. Chemical restraint should only be utilized when a physical restraint is impossible or ineffective.
2. ~~1.~~2. Contact Medical Control prior to medication administration, unless extreme circumstances exist in which delaying administration poses an immediate danger to patient or others.
3. Administer **midazolam** 5-10 mg IM or 5 mg IN~~.~~
4. PROPOSED: Administer midazolam 0.1 mg/kg IM or IN
   a. Patients over 15 years of age maximum dose of 10 mg
   b. Patients 14 years of age or less utilize MI MEDIC cards maximum dose of 5 mg.

~~2.~~

~~3.~~i. Consider lower range of dosing for Geriatric patients. ~~Monitor vital signs, ECG, pulse oximetry, and capnography.~~ b.

c. Patients 14 years of age or younger, administer 0.1 mg/kg IM, maximum single dose 5mg.

5. Monitor vital signs, ECG, pulse oximetry, and capnography.

4. ~~I~~f after 10 minutes additional medication is necessary, contact medical control for guidance.

~~4.~~

Special Considerations

1. Physical restraints should be of a soft nature (e.g., hook and loop restraints, cravats, sheets, etc.) applied to the wrists and ankles. A restraint may also be needed across the chest and/or pelvis.
2. Stay with a restrained patient at all times, be observant for possible vomiting and be prepared to turn the patient onto their side and suction if necessary.
3. Documentation should include:
   A. A description of the circumstance / behavior which precipitated the use of restraints.
   B. Time of application of the restraints.
   C. Type of restraint used.
   D. The positions in which the patient was restrained.
4. When restraint devices are applied by law enforcement officers for patients who are not under arrest:
   A. If a patient is restrained by law enforcement personnel with handcuffs or other devices EMS personnel cannot remove, a law enforcement officer must accompany the patient to the hospital.
   B. If the officer is unable to accompany the patient in the transporting EMS vehicle the patient will be placed in soft restraints. This can only occur if crew safety will not be compromised and the patient can be safely transported with this type of restraint.
   C. The restraint and position must not be so restrictive that the patient is in a position that compromises patient care.
5. EMS Personnel may NOT use:
   A. Hard plastic ties.
   B. Any restraint device that cannot be immediately removed by the attending EMS provider

Commented [KK(C2]:

Intramuscular
Child: 0.1 to 0.15 mg IV (up to 5 mg IM for teen) over 2 minutes
Adult: 5 mg IM and may repeat in 3-5 minutes prn
Larger patients may require 10 mg IM
Smaller patients or elderly may be adequately sedated with 2.5 mg IM

Commented [KK(C3]: Still applicable if it is weight based and if so what are we suggesting?

C. Backboards to “sandwich” the patient.
D. Restraints which secure the patient’s hands and feet behind the back.
E. Restraints that “hog tie” the patient.
F. Any device that restricts normal breathing.

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

Protocol Source/References:

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

Spinal Precautions

Commented [KK(C1]: Spinal Immobilization and Spinal Precautions

Indications & General Guidance

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

Specific Techniques

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

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

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

B. Head may be supported with head block or similar device to prevent rotation if needed. Padding should be placed under the head when practical. Do not tape the head to the ambulance cot.

Special Considerations

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

~~C.~~

Commented [KK(C2]: Are all of these special considerations or should some be integrated elsewhere into the protocol?

Commented [KK(C3]: Will placement of towels under side of board negate safety requirements?

Dispatch

Purpose:
As mandated under Public Act 368 of 1978, as amended, Section 20919 (1)(b): "A local medical control authority shall establish written protocols for the practice of life support agencies and licensed emergency medical services personnel within its region. The protocols shall be developed and adopted in accordance with procedures established by the department and shall include medical protocols to ensure the appropriate dispatching of a life support agency based upon medical need and the capability of the emergency medical services system."

Local municipalities shall determine, in accordance with the rules and regulations of their local Medical Control Authority, the level of agency licensure, as well as who will provide EMS service in their area.

Commented [KK(C1]: Can this be made simpler?

Protocol

1. Public Safety Answering Points and/or Life Support Agency dispatch centers shall use Enhanced 911 technology, where available, and shall dispatch appropriate resources as quickly as possible.
2. Since ALS may provide additional medical care and delay may negatively impact patient outcome, in areas where ALS is available it shall be simultaneously dispatched to certain medical emergencies including, but not limited to:
    a. Cardiac Arrest
    b. Chest Pain
    c. Stroke
    d. Drug Overdose / Poison
    e. Altered Mental Status / Unconscious
    f. Allergic Reaction
    g. Difficulty Breathing
    h. Drowning or Near Drowning
    i. Injury with Bleeding or Immobility
    j. Seizures / Convulsions
    k. Diabetic Reactions
    l. Child Birth
    m. Burns
    n. or as determined through prioritized dispatch developed through an MCA approved EMD program.

Commented [KK(C2]: Or what? They will turn it over to someone who can?

Commented [KK(C3]: The sentence does not make sense, do you mean, "Since BLS may provide…" I'm not sure what is being dispatched simultaneously.

All medical callers shall be provided with complaint evaluation ~~and prioritization, along with~~and pre-arrival instructions. Evaluation, instructions and prioritization shall be made through an Emergency Medical Dispatch program approved by the MCA which conforms to nationally recognized guidelines. ~~Pre-arrival instructions should conform to nationally recognized guidelines.~~

Commented [KK(C4]: In other words, if a PSAP does NOT have the ability to provide medical complaint evaluation and pre-arrival instructions than they MUST turn the call over to someone who can?

Commented [KK(C5]: Comment, I'm not sure "which conforms to nationally recognized guidelines" is necessary. Are there EM Dispatch programs which do not conform?

Commented [KK(C6R5]: KK-would need a list and criteria otherwise not really enforceable

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 **Duo Dote/Mark I Antidote Kits** and the **atropine auto injector (Atropen**) 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.

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. Antidote administration per **Duo Dote/Mark I Kit** auto injector Dosing Directive – See Chart
4. Establish vascular access per **Vascular Access and IV Fluid Therapy-Procedure Protocol**
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
      a. Administer **midazolam** 10 mg IM prior to IV start. or 5 mg IN.
      b. If IV already established and **midazolam** IM or IN has not been administered, administer **midazolam** 5 mg IV/IO.

c. If available, **Valium (diazepam) auto-injector**

B. Pediatrics
   a. Administer **midazolam** 0.1 mg/kg IM (maximum individual dose 10 mg) prior to IV start.
   b. If IV already established and **midazolam** IM has not been administered, administer **midazolam** 5 mg IV/IO or IN
   c. If available, **Valium (diazepam) auto-injector**

Commented [KK(C1]: Are these still a thing?

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

Commented [KK(C2]: Make sure above dosing is acceptable first - then make changes

7. Monitor EKG
8. Additional **atropine** 2 mg IV/IM for continued secretions (0.05 mg/kg for pediatrics)

Medication Protocols
2 Pam Chloride/Duodote
Atropine
Diazepam
Midazolam

*NA Kit Dosing Directive				
	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	1 NA Kit (self-rescue)
ADULT PATIENT	**Mild Symptoms and Signs**	• Increased tearing • Increased salivation • Dim Vision • Runny nose • Sweating • Nausea/vomiting • Abdominal cramps • Diarrhea	Medical Control Order	1 NA Kit
	Moderate Symptoms and Signs	• Constricted pupils • Difficulty breathing • Severe vomiting	Constricted Pupils	2 NA Kits
	Severe Signs	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Constricted Pupils	3 NA Kits (If 3 NA Kits are used, administer 1st dose of available benzodiazepine)
PEDIATRIC	**Pediatric Patient with Non-Severe Signs/Symptoms**	*Mild or moderate symptoms as above*	Positive evidence of nerve agent or OPP on site	Age ≥8 years old: • As Above Age <8 years old • Per Medical Control
	Pediatric Patient with Severe Signs/Symptoms	• Constricted pupils • Unconsciousness • Seizures • Severe difficulty breathing	Severe breathing difficulty Weakness	Age ≥ 8 years old: • 3 NA Kits Age < 8 years old: • 1 NA Kit Contact Medical Control as needed

***NOTE: Nerve-agent Antidote (NA) =1 Duo Dote or 1 Mark I**

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: 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. Almond Odor~~
~~2.~~1. Cardiac or Respiratory Arrest
~~3.~~2. Hypotension SBP<90 mm Hg
~~4.~~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 Emergency Airway-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 **hydroxocobalamin** 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. **Hydroxocobalamin** 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~~ml~~ +/-) IV/IO	Cyanokit® Volume to Administer[2] IV/IO
3-5 kg (6-11 lbs)	**0-2 months**	250 mg	**10 mL[3]**
6-7 kg (13-16 lbs)	**3-6 months**	500 mg	**20 mL[3]**
8-9 kg (17-20 lbs)	**7-10 months**	625 mg	**25 mL[3]**
10-11 (21-25 lbs)	**11-18 months**	750 mg	**30 mL[3]**
12-14 kg (26-31 lbs)	**19-35 months**	900 mg	**36 mL[3]**
15-18 kg (32-40 lbs)	**3-4 years**	1100 mg	**44 mL[3]**
19-23 kg (41-51)	**5-6 years**	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

~~c. **Sodium thiosulfate**~~
~~i. Adults: 50 ml (12.5 g) IV/IO over 10 minutes if available~~
~~ii. For pediatric patients: 1.65 ml/kg (12.5 g/50 ml solution) IV/IO over 10 minutes~~

Commented [KK(C1]: Delete unless the Lilly Kit is still at thing or the components, amyl nitrate and sodium thiosulfate are being used, delete the sodium thiosulfate reference.

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).

Medication Protocols
Hydroxocobalamin (Cyanokit®)
~~Sodium thiosulfate~~

Protocol Source/References:

Equipment	7.5	CPAP
Equipment	7.18	Pleural Decompression
Equipment	7.24	End Tidal Carbon Dioxide Monitoring (Capnometry & Capnography)
VOTE	9.1	Medication Administration
VOTE	9.3	Medication Shortage
VOTE	9.4	Metered Dose Inhaler (MCA Optional)
VOTE	9.5	Field Drug Box & IV Kits
VOTE	9.6	Pharmacy, Drug Box and IV Supply Exchange Procedure
VOTE	9.6a	Nalxone Leave Behind Med Kit Contents and Procedure
VOTE	9.7	Epinephrine Auto-Injector Procedure
Needs Discussion	7.20	Spinal Precautions
Needs Discussion	2.12	Head Injury (TBI)
Needs Discussion	8.6	Dispatch
Needs Discussion	7.16	Patient Restraint
Needs Discussion	10.3	Nerve Agent/Organophosphate Pesticide Exposure Treatment
Needs Discussion	10.5	Cyanide Exposure

Required equipment?
Intranasal Medication added to this: Nebulized medication added to this
NEW
suggest name change, address pregnancy
Age question
too wordy
concerns about dosing
dosing, valium auto injector, may have to rework table
I don't know about this