

## **Medication Substitution**

### **Purpose:**

This protocol allows for MCA to substitute medications during a time of shortage without having to enact emergency protocols within the MCA. This protocol does not replace or override any portion of the **Medication Shortage Procedure**. All procedures within that procedure must still be followed in regards to substitutions in concentration or medication.

### **Indications:**

1. Medications indicated in the primary protocol are not available.
2. No other medication is listed in primary protocols as accepted by the MCA for use.

### **Procedure:**

1. Follow **Medication Shortage Procedure**.
2. Alternate concentrations are listed within this protocol for reference; these do not require a protocol change and are outlined in the **Medication Shortage Procedure**.
3. Notification and education of providers within the MCA should be done as soon as the substitution is known.
  - a. It is the responsibility of the MCA to distribute information on the shortages and substitutions to agencies for distribution to providers.
  - b. If a substitution is imminent, it is acceptable for an MCA to distribute information prior to the medication being substituted.
4. The MCA should notify the Division of EMS and Trauma if a substitution is suspected to last more than 60 days so that a more permanent protocol solution can be enacted.
5. All uses of substitute medications will be reviewed by PSRO for appropriateness.

| <b>Current Medication</b>  | <b>Alternate A</b>   | <b>Alternate B</b>   | <b>Protocols</b>  |
|----------------------------|--|--|---|
| <b>Atropine</b>            | Epinephrine 2-10 mcg/min infusion<br>Pediatric 0.1 mcg/kg/min                                      | Transcutaneous Pacing  | <b>Bradycardia</b>  |
| <b>Amiodarone</b>          | Lidocaine 1-1.5 mg/kg IV<br>Pediatric 1 mg/kg IV   | Procainamide 20 mg/min,<br>max 17 mg/kg IV/IO<br>Pediatric 15 mg/kg IV/IO over<br>60 minutes | <b>Adult and Pediatric Cardiac Arrest –<br/>General<br/>Adult and Pediatric Tachycardia</b> |
| <b>Calcium Chloride</b>    | Calcium Gluconate 20 ml of 10% solution<br>administered over 1 to 2 minutes IV<br>(adults only)    |  | <b>Poisoning/Overdose<br/>Cardiac Arrest – General (Adult)</b>                              |
| <b>Dextrose 50%, 50 ml</b> | Dextrose 10%, 250 ml IV<br>Pediatric Dextrose 10% 5 ml/kg IV                                       | Glucagon 1 mg<br>Pediatric 0.05 mg/kg, up to 1<br>mg IM                                      | <b>Adult and Pediatric Altered Mental<br/>Status<br/>Adult and Pediatric Seizures</b>       |
| <b>Diphenhydramine</b>     | Famotidine 20 mg IV<br>Pediatric 0.25 mg IV<br>Or<br>Ranitidine 50 mg IV<br>Pediatric 0.1 mg/kg IV | Hydroxyzine 50 mg IM<br>Pediatric 0.1 mg/kg IM   | <b>Allergic Reaction</b>  |
| <b>Lidocaine</b>           | Amiodarone:  | Procainamide 20 mg/min,  | <b>Adult and Pediatric Cardiac Arrest –</b>   |



**Michigan  
MEDICATION SECTION  
MEDICATION SUBSTITUTION**

Initial Date: 10/25/2017

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Section 9-2

|                             |   |  |   |
|-----------------------------|---|--|---|
|                             | <ol style="list-style-type: none"> <li>For Recurrent VF/VT: Adults 300 mg IV/IO repeat 150 mg one time. Pediatrics 5 mg/kg IV</li> <li>Wide complex Tach 150 mg x 2 PRN, pediatric 5 mg/kg IV</li> </ol>  | <p>max 17 mg/kg IV/IO</p> <p>Pediatric 15 mg/kg IV/IO over 60 minutes</p>        | <b>General<br/>Adult and Pediatric Tachycardia</b>                            |
| <b>Morphine</b>             | Fentanyl 1 mcg/kg   | <p>Hydromorphone<br/>2 mg IV or IM</p> <p>Pediatric 0.05 mg/kg max dose 2 mg</p> | <b>Pain Management</b>  |
| <b>Fentanyl</b>             | <p align="center">Morphine<br/>4 mg IV/IO</p> <p align="center">Pediatrics 0.1 mg/kg IV</p>   | <p>Hydromorphone<br/>2 mg IV or IM</p> <p>Pediatric 0.05 mg/kg max dose 2 mg</p> | <b>Pain Management</b>  |
| <b>Midazolam (Versed)</b>   | Lorazepam<br>2 mg or 0.05 mg/kg IV  | <p>Diazepam<br/>5 mg IV</p> <p>Pediatric 0.1 mg/kg</p>                           | <b>Adult and Pediatric Seizures<br/>Patient Sedation<br/>Excited Delirium</b> |
| <b>Ondansetron (Zofran)</b> | <p align="center">Promethazine<br/>12.5 mg IM</p> <p align="center">Pediatric 0.25 mg/kg IM</p>   | <p>Compazine<br/>10 mg</p> <p>Pediatric 0.1mg/ kg</p>                            | <b>Nausea/Vomiting</b>  |
| <b>Diazepam (Valium)</b>    | <p align="center">Midazolam<br/>5 mg IV</p> <p align="center">Pediatrics 0.1 mg/kg</p>  | <p>Lorazepam<br/>2mg IV</p> <p>Pediatrics 0.1 mg/kg IV</p>                       | <b>Adult Seizures</b>   |
| <b>Ketamine</b>             | <p align="center">Midazolam<br/>5 mg IV</p> <p align="center">Pediatrics 0.1 mg/kg</p>  | Fentanyl 1 mcg/kg  | <b>Patient Sedation<br/>Excited Delirium</b>                                  |
| <b>Midazolam</b>            | <p align="center">Patient Sedation:<br/>Ketamine 0.2 mg/kg IV/IO slowly</p> <p align="center">Excited Delirium<br/>Adults only 4 mg/kg IM</p>   | <p>Lorazepam<br/>2mg IV</p> <p>Pediatrics 0.1 mg/kg IV</p>                       | <b>Patient Sedation<br/>Excited Delirium</b>                                  |
| <b>Epinephrine 1mg/10ml</b> | <b>Epinephrine 1mg/1ml 30mL Vial</b> <ol style="list-style-type: none"> <li>Expel 1mL of normal saline from a 10mL syringe (pre-filled)</li> <li>Instill 1mg(mL) of Epinephrine 1:1,000 from 30 mL vial in to pre-filled syringe</li> <li>30mL vials are to be single patient use only</li> </ol> |  |   |
|                             | <b>Epinephrine 1mg/ml Ampule</b> <ol style="list-style-type: none"> <li>Expel 1mL of normal saline from a 10mL syringe (pre-filled)</li> <li>Instill 1mg(mL) of Epinephrine 1:1,000 from ampule in to pre-filled syringe</li> </ol>   |  |   |