

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



**Michigan  
MEDICATION SECTION  
MEDICATION SUBSTITUTION**

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Section 9-2

<b>Lidocaine</b>	<p>Amiodarone:</p> <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>Procainamide 20 mg/min, max 17 mg/kg IV/IO</p> <p>Pediatric 15 mg/kg IV/IO over 60 minutes</p>	<p><b>Adult and Pediatric Cardiac Arrest – General</b></p> <p><b>Adult and Pediatric Tachycardia</b></p>
<b>Morphine</b>	Fentanyl 1 mcg/kg	<p>Hydromorphone 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>Morphine 4 mg IV/IO</p> <p>Pediatrics 0.1 mg/kg IV</p>	<p>Hydromorphone 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>	<p>Lorazepam 2 mg or 0.05 mg/kg IV</p>	<p>Diazepam 5 mg IV</p> <p>Pediatric 0.1 mg/kg</p>	<p><b>Adult and Pediatric Seizures</b></p> <p><b>Patient Sedation</b></p> <p><b>Excited Delirium</b></p>
<b>Ondansetron (Zofran)</b>	<p>Promethazine 12.5 mg IM</p> <p>Pediatric 0.25 mg/kg IM</p>	<p>Compazine 10 mg</p> <p>Pediatric 0.1mg/ kg</p>	<b>Nausea/Vomiting</b>
<b>Diazepam (Valium)</b>	<p>Midazolam 5 mg IV</p> <p>Pediatrics 0.1 mg/kg</p>	<p>Lorazepam 2mg IV</p> <p>Pediatrics 0.1 mg/kg IV</p>	<b>Adult Seizures</b>
<b>Ketamine</b>	<p>Midazolam 5 mg IV</p> <p>Pediatrics 0.1 mg/kg</p>	Fentanyl 1 mcg/kg	<p><b>Patient Sedation</b></p> <p><b>Excited Delirium</b></p>
<b>Midazolam</b>	<p>Patient Sedation: Ketamine 0.2 mg/kg IV/IO slowly</p> <p>Excited Delirium Adults only 4 mg/kg IM</p>	<p>Lorazepam 2mg IV</p> <p>Pediatrics 0.1 mg/kg IV</p>	<p><b>Patient Sedation</b></p> <p><b>Excited Delirium</b></p>
<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>		