



**Michigan
MEDICATION SECTION
MEDICATION SUBSTITUTION**

Initial Date: 10/25/2017
Revised Date:

Section 9-2

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.

Current Medication	Alternate A	Alternate B	Protocols
Atropine	Epinephrine 2-10 mcg/min infusion Pediatric 0.1 mcg/kg/min	Transcutaneous Pacing	Bradycardia
Amiodarone	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	Adult and Pediatric Cardiac Arrest – General Adult and Pediatric Tachycardia
Calcium Chloride	Calcium Gluconate 20 ml of 10% solution administered over 1 to 2 minutes IV (adults only)		Poisoning/Overdose Cardiac Arrest – General (Adult)
Dextrose 50%, 50 ml	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	Adult and Pediatric Altered Mental Status Adult and Pediatric Seizures
Diphenhydramine	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	Allergic Reaction



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Lidocaine	<p align="center">Amiodarone:</p> <ol style="list-style-type: none"> For Recurrent VF/VT: Adults 300 mg IV/IO repeat 150 mg one time. Pediatrics 5 mg/kg IV Wide complex Tach 150 mg x 2 PRN, pediatric 5 mg/kg IV 	<p align="center">Procainamide 20 mg/min, max 17 mg/kg IV/IO</p> <p align="center">Pediatric 15 mg/kg IV/IO over 60 minutes</p>	<p align="center">Adult and Pediatric Cardiac Arrest – General Adult and Pediatric Tachycardia</p>
Morphine	Fentanyl 1 mcg/kg	<p align="center">Hydromorphone 2 mg IV or IM</p> <p align="center">Pediatric 0.05 mg/kg max dose 2 mg</p>	Pain Management
Fentanyl	<p align="center">Morphine 4 mg IV/IO</p> <p align="center">Pediatrics 0.1 mg/kg IV</p>	<p align="center">Hydromorphone 2 mg IV or IM</p> <p align="center">Pediatric 0.05 mg/kg max dose 2 mg</p>	Pain Management
Midazolam (Versed)	Lorazepam 2 mg or 0.05 mg/kg IV	<p align="center">Diazepam 5 mg IV</p> <p align="center">Pediatric 0.1 mg/kg</p>	<p align="center">Adult and Pediatric Seizures Patient Sedation Excited Delirium</p>
Ondansetron (Zofran)	<p align="center">Promethazine 12.5 mg IM</p> <p align="center">Pediatric 0.25 mg/kg IM</p>	<p align="center">Compazine 10 mg</p> <p align="center">Pediatric 0.1mg/ kg</p>	Nausea/Vomiting
Diazepam (Valium)	<p align="center">Midazolam 5 mg IV</p> <p align="center">Pediatrics 0.1 mg/kg</p>	<p align="center">Lorazepam 2mg IV</p> <p align="center">Pediatrics 0.1 mg/kg IV</p>	Adult Seizures
Ketamine	<p align="center">Midazolam 5 mg IV</p> <p align="center">Pediatrics 0.1 mg/kg</p>	Fentanyl 1 mcg/kg	<p align="center">Patient Sedation Excited Delirium</p>
Midazolam	<p align="center">Patient Sedation: Ketamine 0.2 mg/kg IV/IO slowly</p> <p align="center">Excited Delirium Adults only 4 mg/kg IM</p>	<p align="center">Lorazepam 2mg IV</p> <p align="center">Pediatrics 0.1 mg/kg IV</p>	<p align="center">Patient Sedation Excited Delirium</p>
Epinephrine 1mg/10ml	<p align="center">Epinephrine 1mg/1ml 30mL Vial</p> <ol style="list-style-type: none"> Expel 1mL of normal saline from a 10mL syringe (pre-filled) Instill 1mg(mL) of Epinephrine 1:1,000 from 30 mL vial in to pre-filled syringe 30mL vials are to be single patient use only 		
	<p align="center">Epinephrine 1mg/ml Ampule</p> <ol style="list-style-type: none"> Expel 1mL of normal saline from a 10mL syringe (pre-filled) Instill 1mg(mL) of Epinephrine 1:1,000 from ampule in to pre-filled syringe 		