MEDICAL CONTROL DIRECTIVE 2023-10

DATE: May 15, 2023

TO: Pinellas County EMS Agencies
Pinellas County Emergency Communications
Pinellas County Certified EMTs and Paramedics
Pinellas County Certified Advanced Practice Paramedics, Nurses
Pinellas County Online Medical Control Physicians
Pinellas County Ambulance Billing and Financial Services
ED Nurse Managers

FROM: Dr. Angus Jameson, EMS Medical Director

RE: May 2023 In-service Training

DISTRIBUTION/TRAINING PERIOD: May 17, 2023 – May 31, 2023

EFFECTIVE DATE: May 17, 2023

- An "In-service Training" module separate from regularly scheduled CME has been developed and is assigned to all system clinicians through Vector Solutions for May 2023.

- The in-service includes:
    - ACLS related protocol updates
        - C1 Medical Cardiac Arrest
        - C4 Bradycardia
        - C5 Tachycardia
        - F11 Epinephrine
    - Pharmaceutical updates – Packaging Change
        - Glucagon
        - Lidocaine
        - Midazolam
        - Amiodarone
        - Adenosine
    - Overview of ACLS Recertification Process – Ref. MCD 2023-09
    - Leave Behind Narcan (Naloxone) – UPDATE
    - New Free-Standing Emergency Department – Bayfront Crossroads – Ref. MCD 2023-11

- All system clinicians are required to complete this training no later than May 31, 2023.
- Failure to complete this in-service by May 31, 2023, may result in clinical restriction or suspension.

Attachments:

- C1 Medical Cardiac Arrest
- C4 Bradycardia
- C5 Tachycardia
- F11 Epinephrine
- Glucagon – New packaging overview
- Lidocaine – New packaging overview
- Midazolam – New packaging overview
- Amiodarone – New packaging overview
- Adenosine – New packaging overview

Distribution:

- EMSChiefs e-mail distribution group
- Vector Solutions
- Pinellas County EMS Office of the Medical Director Webpage www.pcemsomd.com

C1 MEDICAL CARDIAC ARREST

ADULT ONLY (Ped. Ref. P3)	GOALS OF CARE
	Provide high quality, evidence based, resuscitation focusing on maximizing perfusion and correction of reversible causes of medical cardiac arrest

BLS

- Establish Compression Performance Resuscitation procedure and Pit Crew Model (Ref. CP9.1, CT3)
- Immediately initiate rhythm assessment when AED/defibrillator available and shock, if indicated (Ref. CP10, CP11)
- Continue Compression Performance Resuscitation and reassess rhythm every two (2) minutes and defibrillate when indicated
- Document any bystander (non-911 responder) interventions (e.g., CPR, rescue breathing, AED use) that occurred prior to arrival
- Document any occurrence of ROSC and last known patient status at hospital, if transported
- Transport should generally be deferred until after ROSC unless dictated by scene factors

ALS

- Ensure BLS resuscitation steps are completed
- Secure airway and establish vascular access per Compression Performance Resuscitation procedure (Ref. CP9.1, CT3)
- Defibrillate at 150J as indicated for ventricular fibrillation or pulseless ventricular tachycardia
  - If patient remains in V-fib despite antiarrhythmic drug therapy and at least three (3) defibrillation attempts, perform vector change defibrillation (Ref. CP12, CT5)
- Administer medications as indicated:
  - Asystole/Pulseless Electrical Activity:
    - 1 mg epinephrine (0.1 mg/mL concentration) intravenous/intraosseous every 3 – 5 minutes. Maximum 3 doses
  - Ventricular Fibrillation/Pulseless Ventricular Tachycardia:
    - 1 mg epinephrine (0.1 mg/mL concentration) intravenous/intraosseous every 3-5 minutes. **Maximum 3 doses**
    - If refractory, administer amiodarone 300 mg intravenous/intraosseous, then 150 mg intravenous/intraosseous in 3 – 5 minutes ***OR***
    - If suspected Torsade's de Pointes, administer magnesium sulfate 2 grams intravenous/intraosseous
- Monitor the progress of resuscitation using EtCO2 (Ref. CP5)

C1 MEDICAL CARDIAC ARREST

ALS (cont.)

- Address potential reversible causes:
  - Suspected hyperkalemia – sodium bicarbonate 8.4% (100 mEq) and calcium chloride (1 gram) intravenous/intraosseous (flush intravenous line between meds)
  - Hypoglycemia – dextrose 10% 25 grams intravenous/intraosseous, repeat once in 3-5 min if no effect
  - Opioid overdose – naloxone 2 mg intravenous/intraosseous, repeat every 3-5 min. as needed up to 6 mg (excluding previous intranasal doses)
  - Suspected cyanide exposure – Cyanokit intravenous/intraosseous rapid intravenous push (Ref. A5)
  - Suspected tension pneumothorax – Perform needle thoracostomy (Ref. CP7)

OLMC

- Consult for unusual circumstances or other specific treatment requests (e.g., lidocaine intravenous/intraosseous - First dose 1.5 mg/kg, Second dose 0.75 mg/kg (maximum combined total of 3 mg/kg), additional naloxone, etc.)
- Consult for cessation of resuscitation efforts after **minimum 20 minutes of EMS resuscitation attempts without *ANY* response** (e.g., no rhythm changes, no increase in EtCO2, etc.)
- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- Early defibrillation of ventricular fibrillation and pulseless ventricular tachycardia is CRITICAL. Two (2) minutes of "priming CPR" is no longer recommended.
- Agonal gasps may be present in the first minutes after sudden cardiac arrest and should not delay initiation of aggressive resuscitation efforts including chest compressions.
- Reversible causes of cardiac arrest:

H's	Hypoxia	Hypovolemia	Hypokalemia	Hydrogen Ion (acidosis)
	Hypoglycemia	Hypothermia	Hyperkalemia	

T's	Tension Pneumothorax	Tamponade (cardiac)	Thrombosis (coronary/pulmonary)
	Trauma	Toxins	

- Hyperkalemia should be suspected in patients with renal failure/dialysis or diabetes, and those who take potassium sparing diuretics or potassium supplementation medications
- New synthetic opiates may require higher doses of naloxone
- **NOTE: Double sequential defibrillation is not authorized in Pinellas County EMS**

C1 MEDICAL CARDIAC ARREST

QUALITY MEASURES
• Compressions initiated within 1 minute • Extraglottic airway utilized • EtCO2 monitored • EtCO2 less than 35 if not transported • OLMC contacted if not transported • ROSC obtained (tracking only)

REFERENCES
• https://nasemso.org/projects/model-ems-clinical-guidelines/ • https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916 • Pinellas County EMS Medical Quality Management Plan – Medical Operations Manual Vol. 2 Protocol AD18 • 2018 JEMS "Variabilities in the Use of IV Epinephrine in the management of Cardiac Arrest Patients" https://www.jems.com/patient-care/cardiac-resuscitation/variabilities-in-the-use-of-iv-epinephrine-in-the-management-of-cardiac-arrest-patients/ • https://warwick.ac.uk/fac/sci/med/research/ctu/trials/critical/paramedic2/

C4 BRADYCARDIA

ADULT ONLY (Ped. Ref. P6)	GOALS OF CARE
	Identification and treatment of brady-dysrhythmias

BLS

- Obtain baseline and repeat vital signs
- If the patient has evidence of dyspnea, apply supplemental O2
- Shock position as required

ALS

- Establish vascular access
- Assess cardiac rhythm and treat as follows:

Stable – Asymptomatic	Stable – Symptomatic (e.g., lightheadedness, weakness, nausea, palpitations, etc.)	Unstable (e.g., chest pain, altered mental status, shortness of breath hypotension, etc.)
Obtain 12 lead ECG to assess for ischemia or other abnormalities	SBP less than 90 mmHg. Infuse 0.9% sodium chloride to max of 2000 mL (or 20 mL/kg if less than 100 kg) assessing for adverse effects (e.g., pulmonary edema) after each 500 mL **and** Atropine 1 mg intravenous/intraosseous bolus. Repeat every 3 – 5 mins. Maximum combined dose 3 mg	Initiate transcutaneous pacing (Ref. CP14) **And** May give atropine 1 mg intravenous/intraosseous while preparing to pace, but **DO NOT DELAY PACING!**
Consider underlying causes	Obtain 12 lead ECG to assess for ischemia or other abnormalities	○ Midazolam: ▪ First Dose: • 2.5 mg intravenous/intramuscular ***OR*** 5 mg intranasal (2.5 mg per nare) ▪ Second Dose (if required after 3 - 5 min): • 2.5 mg intravenous/intramuscular or 5 mg intranasal (2.5 mg per nare)

C4 BRADYCARDIA

OLMC

- May transmit ECG to OLMC Physician or request review of rhythm strip via Corsium system when using Tempus Pro if additional assistance needed with interpretation
- Norepinephrine drip infusion 1 – 10 mcg/min (Ref. CT8)
- Epinephrine drip infusion 2 – 5 mcg/min (Ref. CT7)
- Calcium chloride, 1 gram intravenous slow over at least 5 minutes for suspected calcium channel blocker overdose induced bradycardia
- Additional sedation
- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- Clinically impactful bradycardias are generally at a rate of less than 50 bpm
- 12 lead ECG should be completed early to rule out an acute myocardial infarction (AMI), but it should not delay treatment if the patient is unstable
- Generally, do not administer atropine in the presence of acute coronary ischemia or an AMI. An atropine mediated increase in heart rate may worsen ischemia or increase the size of an infarct
- Atropine may be attempted in Mobitz Type 2 or third-degree AV block with a new wide QRS complex in the absence of an AMI/ischemia
- Consider a lower dose of midazolam (e.g., ½ dose) in patients greater than 60 years old or less than 60 kg

QUALITY MEASURES

If Midazolam administered:

- Complete set of vital signs before and after each administration
- EtCO2 documented after each administration
- Waste documented if name of administering clinician matches crew on PCR
- Midazolam dose does not exceed max or OLMC contact initiated
- Benzodiazepines and opiates not mixed

REFERENCES

- https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916
- https://nasemso.org/projects/model-ems-clinical-guidelines/
- https://www.ahajournals.org/toc/circ/142/16_suppl_2
- https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916
- Pinellas County EMS Medical Quality Management Plan

C5 TACHYCARDIA (WIDE/NARROW)

ADULT ONLY (Ped. Ref. P7)	GOALS OF CARE
	Identification and treatment of tachydysrhythmias

BLS

- Shock position as required

ALS

- Identify and treat underlying cause if secondary tachycardia
- Establish vascular access
- Determine stability/instability
- Assess cardiac rhythm and treat as follows:

UNSTABLE – WIDE/NARROW – (e.g., chest pain, altered mental status, shortness of breath hypotension, etc.)		
If patient condition permits, pre-medicate with midazolam 2.5 mg – 5 mg via the intravenous, intraosseous, or intranasal route. May repeat one time in five (5) minutes, if needed		
Regular – Narrow or Wide	100j, 120j, 150j, 170j	Synchronized cardioversion
Irregular – Narrow	120j, 150j, 170j	Synchronized cardioversion
Irregular – Wide or Polymorphic	150j	Unsynchronized defibrillation

STABLE - WIDE	
Regular - Monomorphic	Consult OLMC for antiarrhythmic choice
Irregular	Amiodarone 150 mg infusion over minimum of ten (10) minutes. Repeat once if tachycardia re-occurs
Irregular – Torsades	Magnesium sulfate 2 grams intravenous over a minimum of ten (10) minutes

STABLE - NARROW	
Regular	1. Modified Valsalva Maneuver (Ref. CP30)
	2. Adenosine 6 mg rapid intravenous push
	3. Adenosine 12 mg rapid intravenous push
	4. If no change, consult OLMC
Regular - History of atrial fibrillation	Diltiazem 0.25 mg/kg slow intravenous push **Max single 25 mg dose**
Irregular	Diltiazem 0.25 mg/kg slow intravenous push **Max single 25 mg dose**

C5 TACHYCARDIA (WIDE/NARROW)

OLMC

- Stable Wide Regular Monomorphic Tachycardia
  - Adenosine 6 mg rapid intravenous push
  - Adenosine 12 mg rapid intravenous push
  - Amiodarone 150 mg infusion over minimum of ten (10) minutes
- May transmit ECG to OLMC Physician or request review of rhythm strip via Corsium system when using Tempus Pro if additional assistance needed with interpretation
- Additional sedation
- Withholding full dose of diltiazem if patient converts after partial dose
- Consult Online Medical Control Physician as needed or required (Ref. CS10)

PEARLS

- Primary tachycardia rates are generally over 150/minute
- Secondary tachycardia rates are usually, but not always lower
- Ventricular rates less than 150/minute usually do not cause signs or symptoms
- *DO NOT* delay immediate cardioversion for the acquisition of the 12 Lead ECG or sedation if the patient is unstable
- Keys to management
  - Determine if pulses are present
  - If pulses are present, is the patient stable, borderline unstable or obviously unstable
  - Provide treatment based on the patient's condition and rhythm. It may be best to monitor the patient versus treat the patient if they are minimally symptomatic
  - Stable wide monomorphic regular tachycardias may represent several different underlying rhythms making antiarrhythmic selection complicated

QUALITY MEASURES

If Midazolam administered:

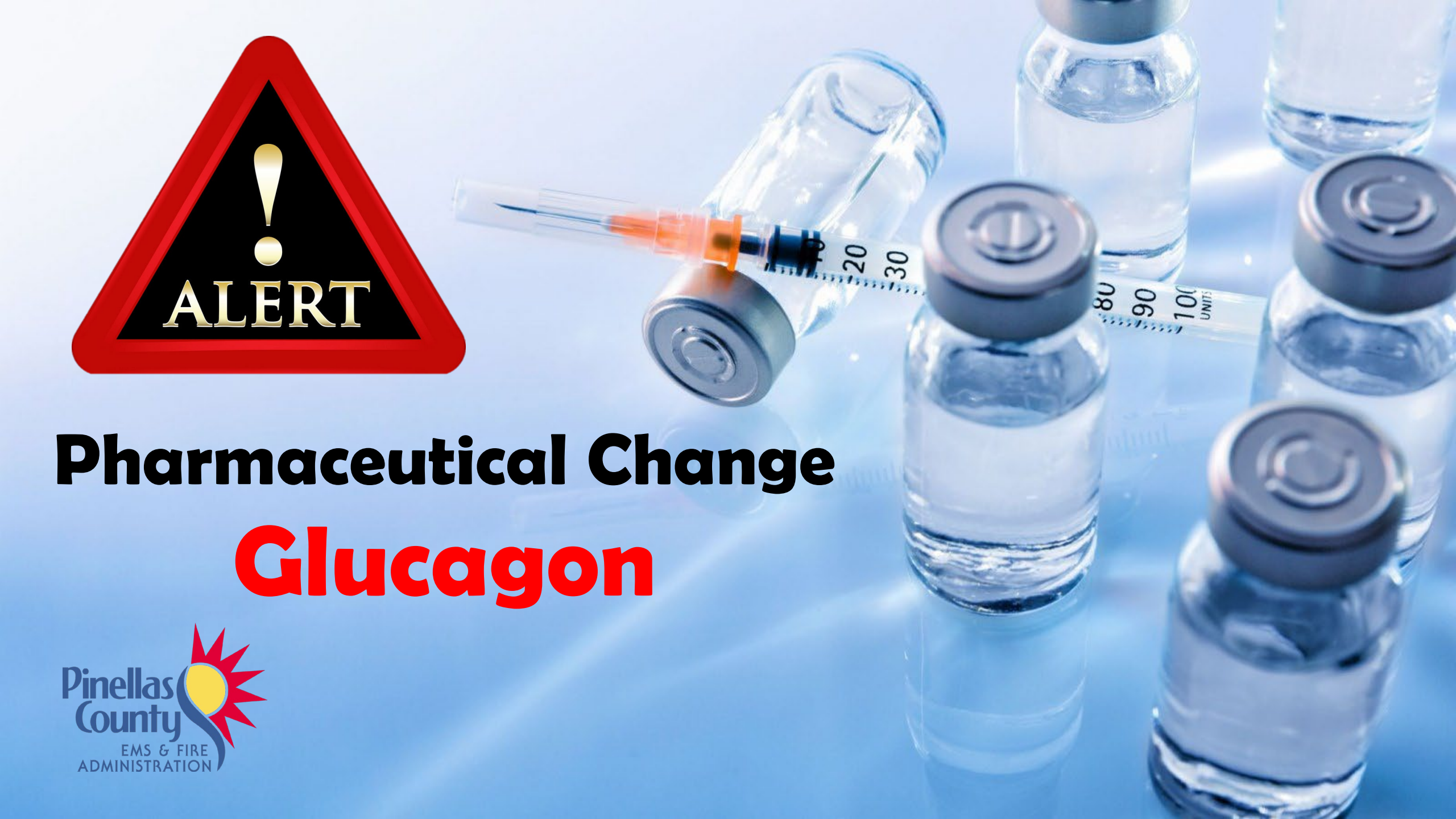
- Complete set of vital signs before and after each administration
- EtCO2 documented after each administration
- Waste documented if name of administering clinician matches crew on PCR
- Midazolam dose does not exceed max or OLMC contact initiated
- Benzodiazepines and opiates not mixed

C5 TACHYCARDIA (WIDE/NARROW)

REFERENCES
• Posen A, Bursua A, Petzel R. DOsing Strategy Effectiveness of Diltiazem in Atrial Fibrillation With Rapid Ventricular Response. Ann Emerg Med. 2023 Mar;81(3):288-296. doi: 10.1016/j.annemergmed.2022.08.462. Epub 2022 Nov 17. PMID: 36402632. • https://www.ahajournals.org/doi/10.1161/CIR.0000000000000916 • https://www.youtube.com/watch?v=8DIRiOA_OsA • https://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2815%2961485-4/fulltext • https://www.cprseattle.com/blog/slow-down-youre-going-too-fast-svt-and-the-modified-valsalva-maneuver • https://nasemso.org/projects/model-ems-clinical-guidelines/ • Pinellas County EMS Medical Quality Management Plan – Medical Operations Manual Vol. 2 Protocol AD18

F11 EPINEPHRINE

Trade Name	Adrenaline, EpiPen, Adrenaclick, Twinject	
Class(es)	Alpha and beta adrenergic agonist; cardiac stimulant; vasopressor	
Action(s)	Stimulates alpha and beta adrenergic receptors (sympathomimetic)	
Authorized Indication(s)	Restore cardiac rhythm in cardiac arrest; anaphylactic reactions; acute asthma attack; temporary relief of bronchospasm, mucosal congestion	
Contraindication(s)	Hypersensitivity to drug; hemorrhagic, traumatic shock; arrhythmias	
Precaution(s)	Older adults; hypertension; diabetes mellitus	
Pharmacokinetics	**Onset:** 3 - 5 minutes	**Duration:** N/A
Authorized Routes of Administration	Intravenous, Intramuscular, Intraosseous	
Technique for Administration	• Protect from exposure to light at all times • DO NOT remove vial from carton until ready to use	
PEARLS	N/A	
Y-Site Compatibility	N/A	
Interactions	May increase hypotension in circulatory collapse or hypotension caused by phenothiazines. Additive toxicities with other sympathomimetics	
Reference	https://dailymed.nlm.nih.gov/dailymed/	



Pharmaceutical Change

Glucagon

Pinellas County
EMS & FIRE
ADMINISTRATION

Glucagon 1 mg per vial

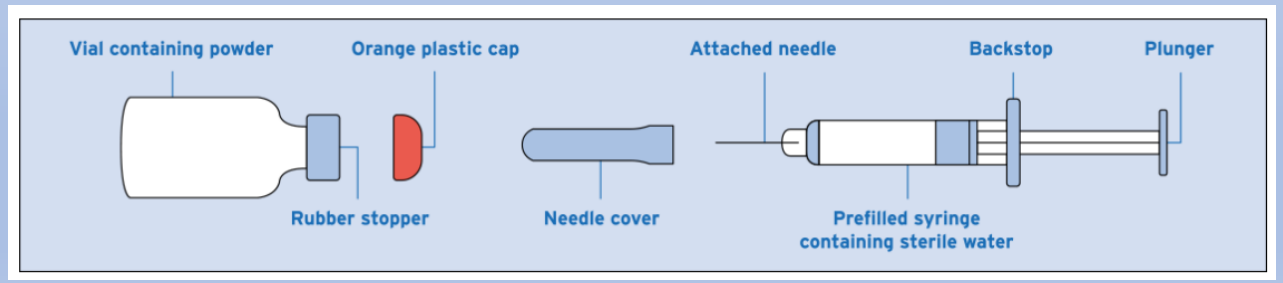
EXISTING

SUMMARY	
Drug Amount	No Change
Concentration	No Change
Volume of Liquid	No Change
Reason for Change	Ongoing National Drug Shortages

Glucagon 1 mg per vial

SUMMARY	
Drug Amount	No Change
Concentration	No Change
Volume of Liquid	No Change
Reason for Change	Ongoing National Drug Shortages

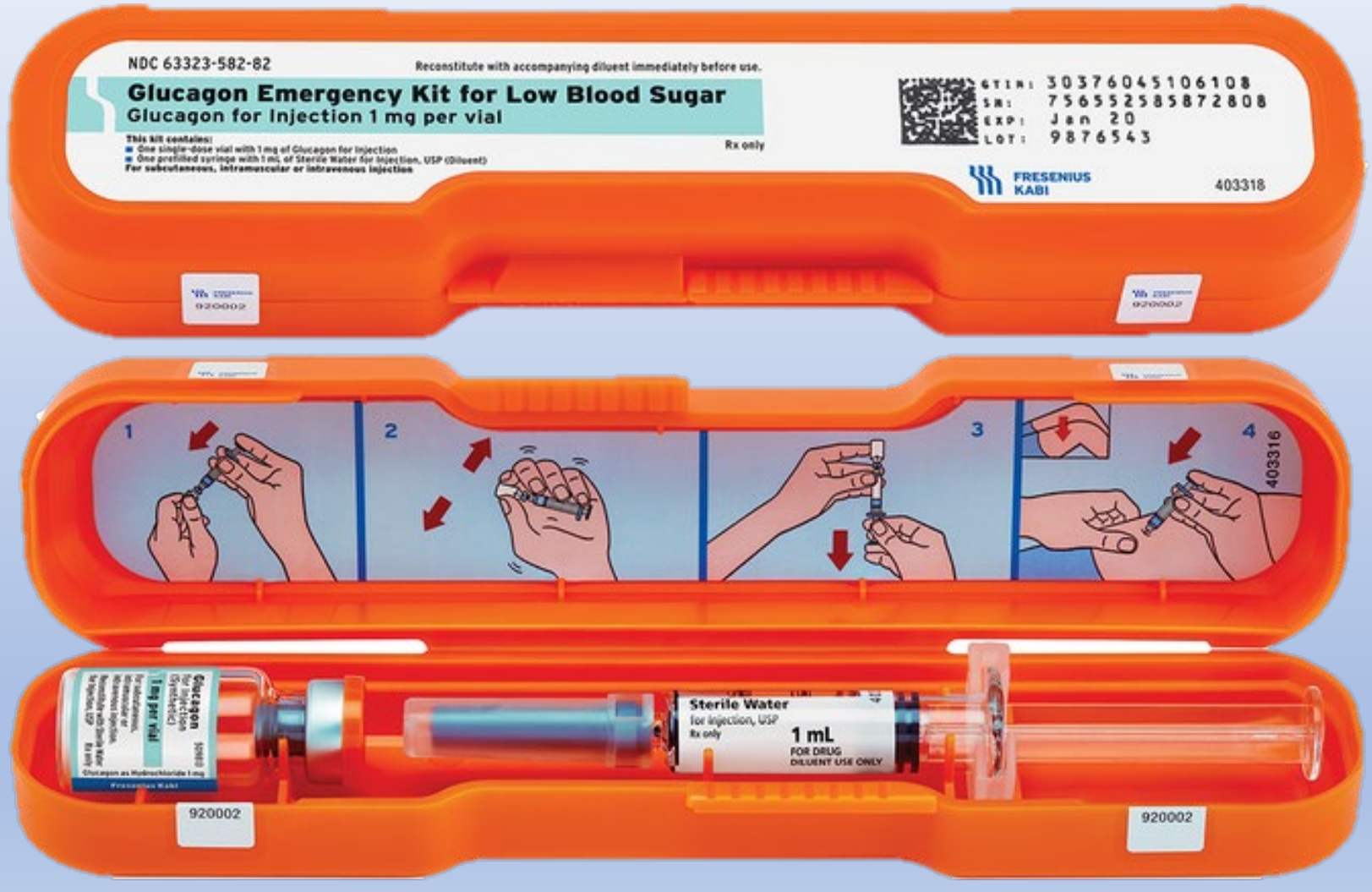
New



This change will occur as the system inventory of the existing format is expended

Glucagon 1 mg per vial

The contents are to remain in the individual plastic container with the SEAL INTACT until required for patient care



Glucagon 1 mg per vial

Preparing the Glucagon dose:

- The Glucagon medicine comes as a dry powder. Before you use Glucagon, you must mix the dry powder with the syringe of sterile water that comes in the Glucagon Emergency Kit for Low Blood Sugar. **Do not use any other liquid to mix the medicine.**
- Check that the orange plastic cap on your vial of Glucagon is firmly attached. **Do not** use the vial of Glucagon if the orange plastic cap is loose or missing.

Glucagon 1 mg per vial

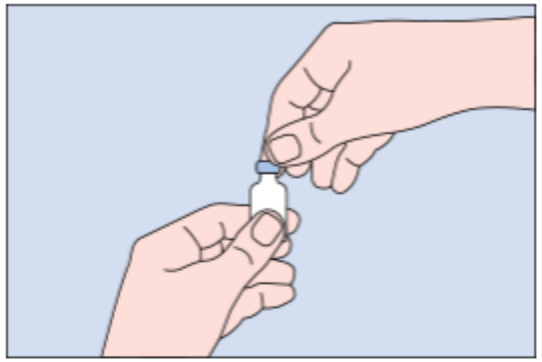


Figure B

Step 1. Using your thumb, flip the orange plastic cap off the Glucagon vial (**See Figure B**).

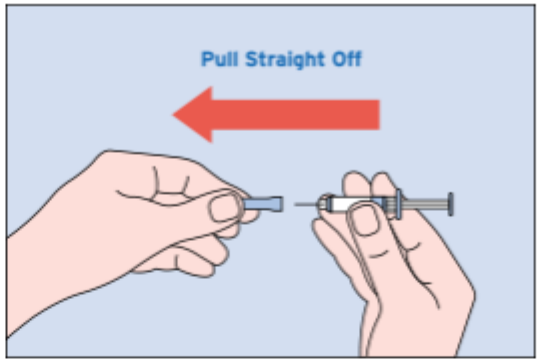


Figure C

Step 2. Pick up the prefilled syringe containing sterile water. Hold the syringe with 1 hand and with your other hand pull the needle cover off the syringe (**See Figure C**).

- **Do not** remove the plastic backstop from the syringe.

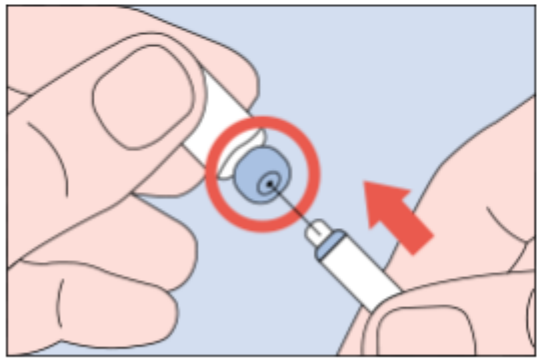


Figure D

Step 3. Pick up the Glucagon vial. Hold the vial of dry powder with 1 hand and with your other hand push the needle of the prefilled syringe through the center of the rubber stopper (**See Figure D**).

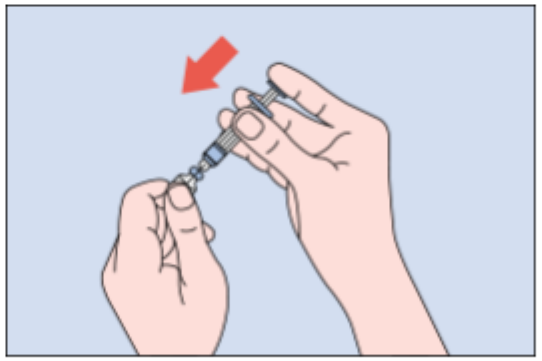


Figure E

Step 4. Hold the vial and syringe together, with the needle still inserted into the vial. Carefully turn the vial and syringe together right side up. Slowly push the plunger down until the syringe is empty (**See Figure E**).

- **Do not take the syringe out of the vial.**

Glucagon 1 mg per vial

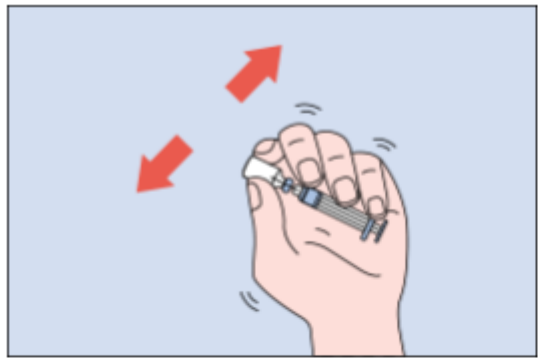


Figure F

Step 5. Hold the entire unit (the vial and syringe) in 1 hand and gently shake the vial until the powder is completely dissolved (**See Figure F**).

- Do not use if it is cloudy or if you see particles in the solution.
- **Do not take the syringe out of the vial.**

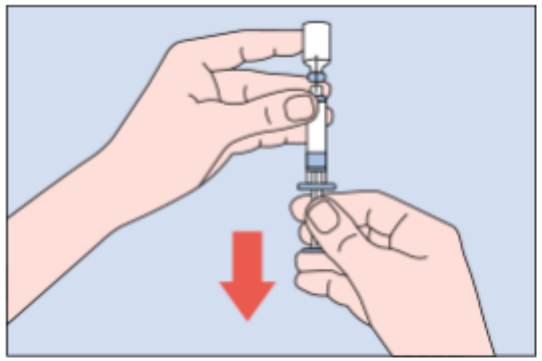


Figure G

Step 6. Firmly hold the vial and syringe together, with the needle still inserted into the vial. Carefully turn the vial and syringe together upside down. Gently pull down on the plunger and slowly withdraw all of the liquid into the syringe (**See Figure G**).

- Do not pull the plunger out of the syringe.

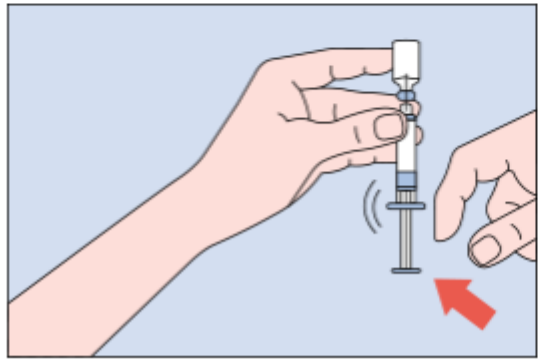


Figure H

Step 7. Keep the needle inside the vial. Check the syringe for air bubbles. If you see bubbles, tap the syringe until the bubbles rise to the top of the syringe (**See Figure H**). Gently push on the plunger to move only the air bubbles back into the vial.

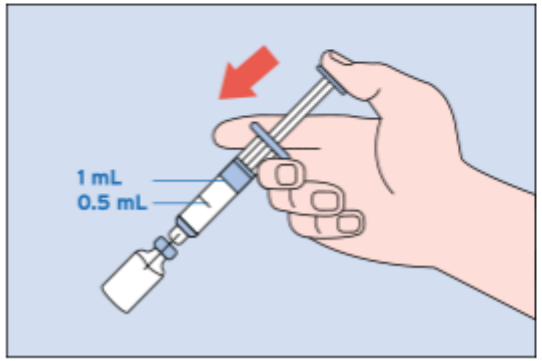


Figure I

Step 8. Hold the vial and syringe as shown (**See Figure I**).

Glucagon 1 mg per vial

Giving the Glucagon for Injection:

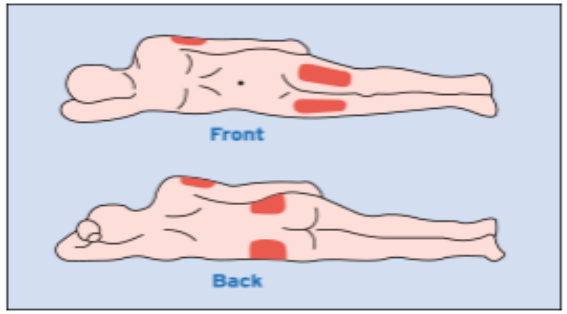


Figure J

Step 9. Choose the injection site (**See Figure J**).

Common injection sites for Glucagon are upper arms, thighs, or buttocks. Patient does not need to be laying down to administer the medication as long as the common injection sites can be easily accessed.

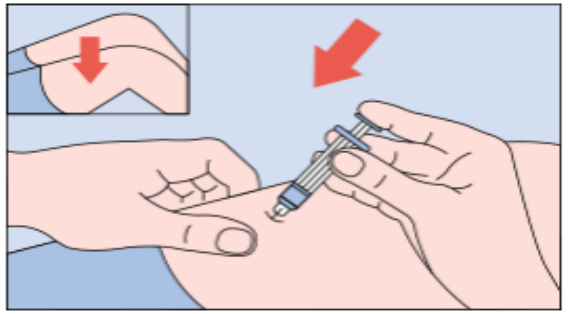


Figure K

Step 10. With 1 hand gently pinch the skin at the injection site. With your other hand insert the needle into the skin and push the syringe plunger down until the syringe is empty (**See Figure K**).

After Giving the Glucagon Injection:

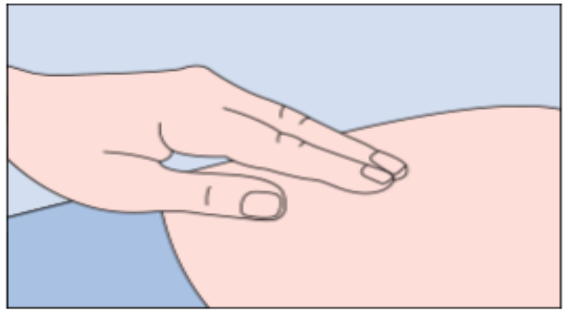


Figure L

Step 11. Pull the needle out of the skin and press on the injection site (**See Figure L**). Use a gauze pad or cotton ball (not included in the kit) if needed to press the injection site to make sure there is no direct contact with the skin.

Glucagon 1 mg per vial

Dispose of Used Syringe/Needle in Sharps Container

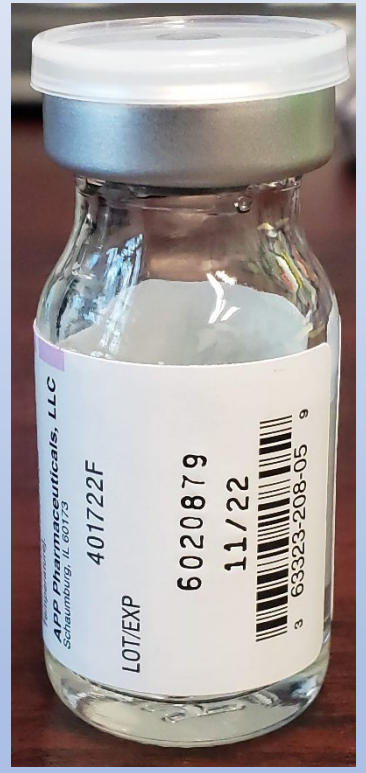
Pharmaceutical Change

Lidocaine

Pinellas County
EMS & FIRE
ADMINISTRATION

Lidocaine – Packaging Change

Current

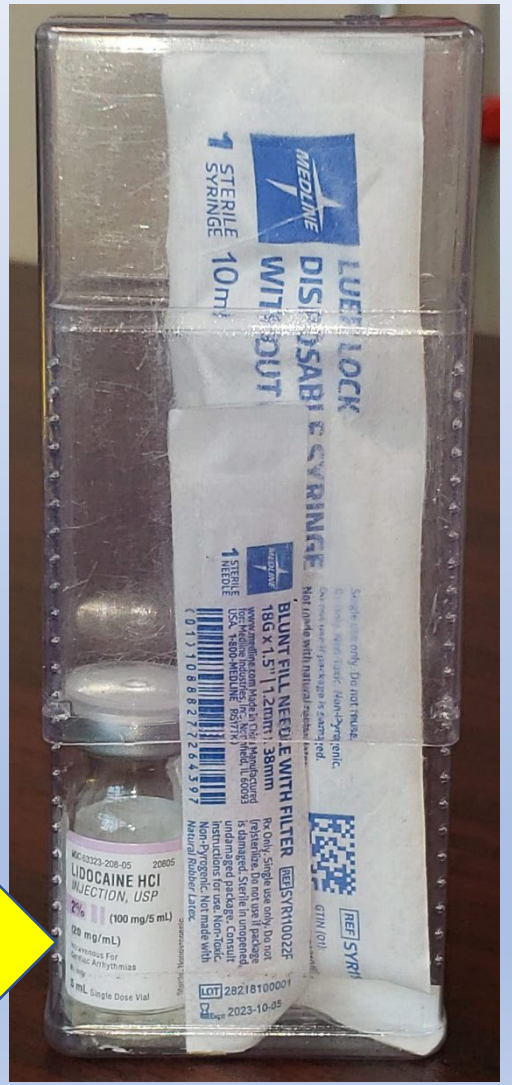


SUMMARY		
No Change	**Total Drug Amount**	No Change
No Change	**Concentration**	No Change
No Change	**Volume of Liquid**	No Change
Appearance	• Vial format	
Reason for Change	Ongoing Drug Shortages	

New

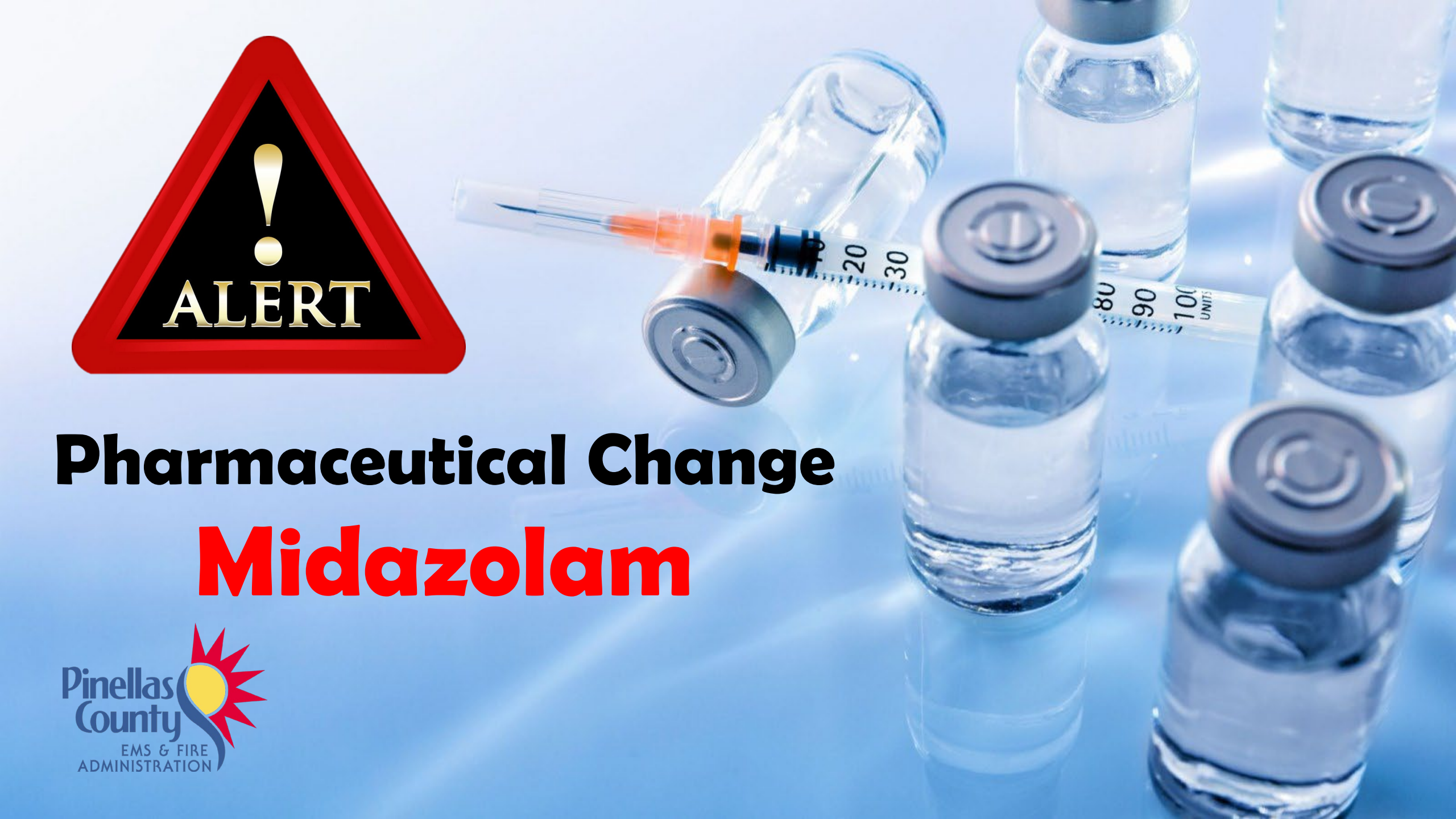
Lidocaine – Packaging Change

OR



The Lidocaine when ordered will be shipped as a kit as shown – The kit will include:

- 1 - Lidocaine
- 1 - 10 mL Syringe
- 1 - 18g x 1.5” Blunt Fill Needle



Pharmaceutical Change

Midazolam

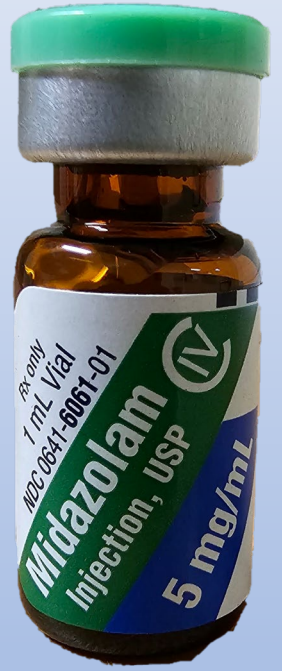
Pinellas County
EMS & FIRE
ADMINISTRATION

Midazolam 5 mg/mL – 1 mL

EXISTING

SUMMARY	
Drug Amount	No Change
Concentration	No Change
Volume of Liquid	No Change
Reason for Change	The 5 mg/mL – 1 mL prefilled syringe format has been discontinued by the manufacturer.

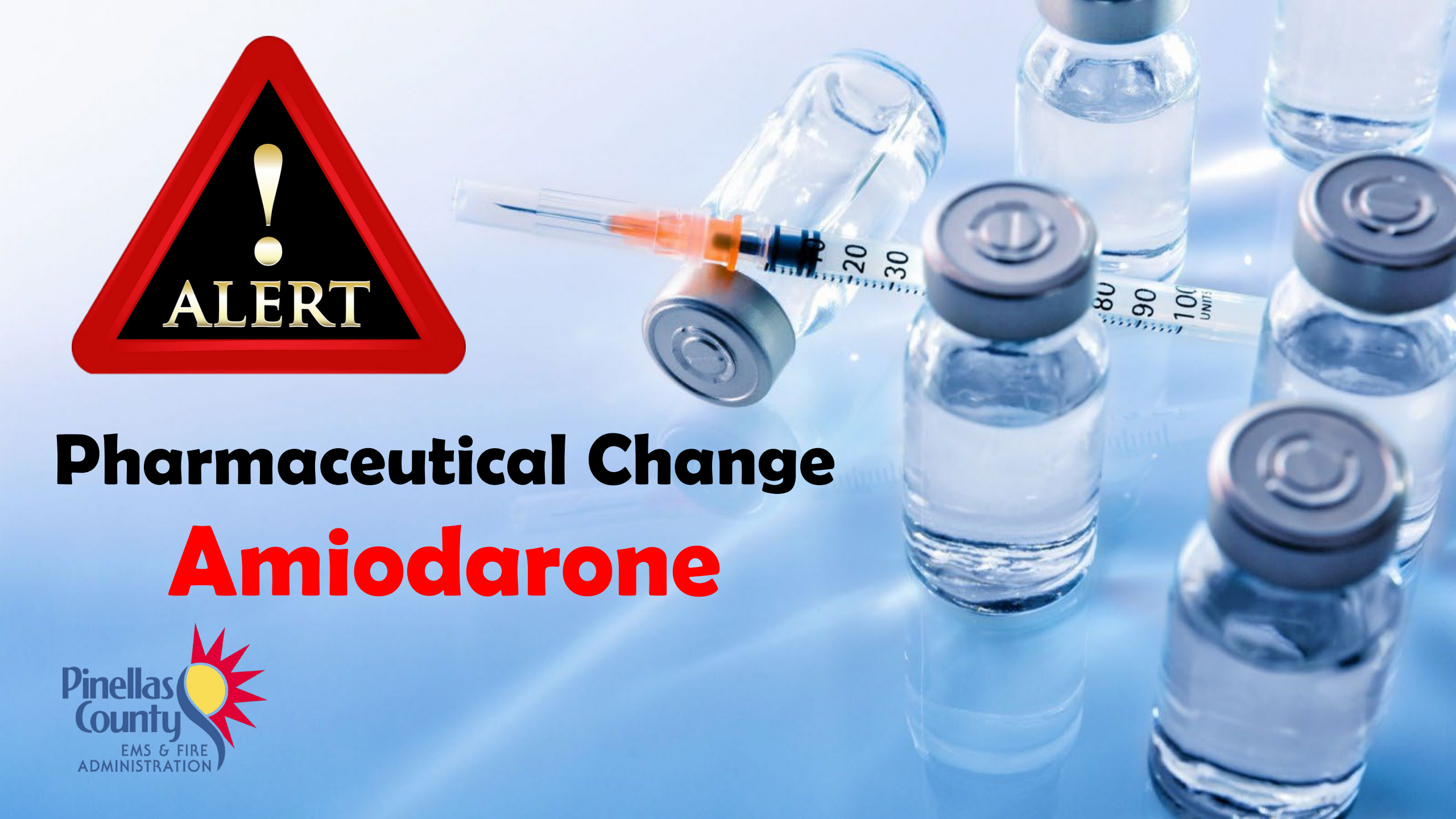
New



This change will occur when the system inventory of the syringe format expires June 2023

Midazolam 5 mg/mL – 1 mL

The new Midazolam vial will be deployed in the same clear container that is used for the Fentanyl vial – This adds an additional layer of protection to the vial packaging/labeling



Pharmaceutical Change

Amiodarone

Pinellas County
EMS & FIRE
ADMINISTRATION

Amiodarone 150 mg/3 mL (50 mg/mL)

EXISTING

SUMMARY	
Drug Amount	No Change
Concentration	No Change
Volume of Liquid	No Change
Reason for Change	Ongoing National Drug Shortages

NEW

This change will occur when the system inventory of the existing format is expended

Pharmaceutical Change

Adenosine

Pinellas County
EMS & FIRE
ADMINISTRATION

Adenosine 6 mg/2 mL (3 mg/mL) – Packaging Change

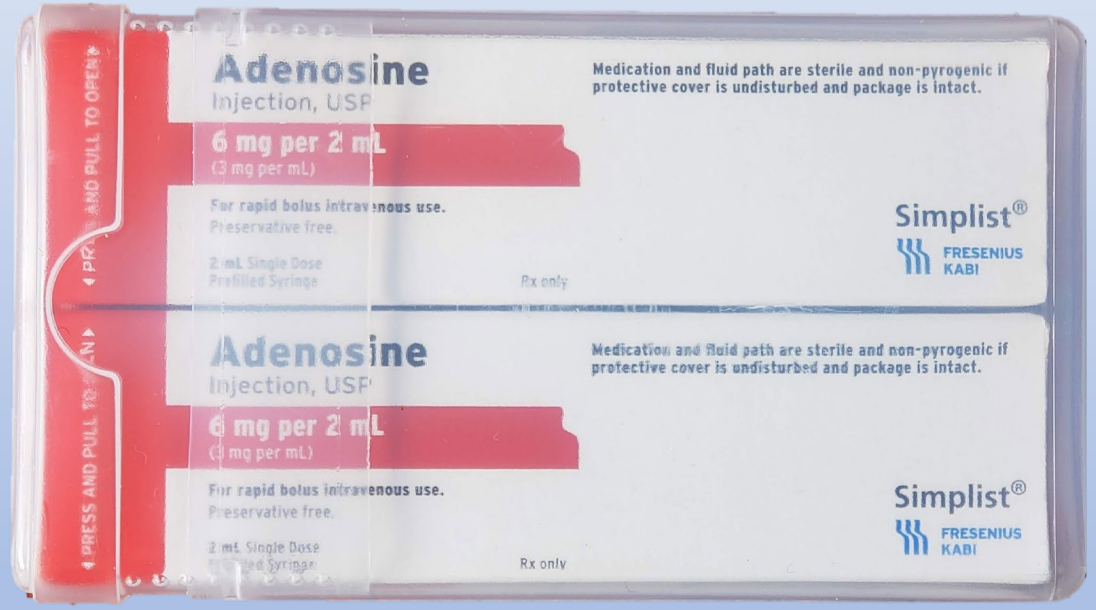
Existing

New

Adenosine 6 mg/2 mL (3 mg/mL) – Packaging Change

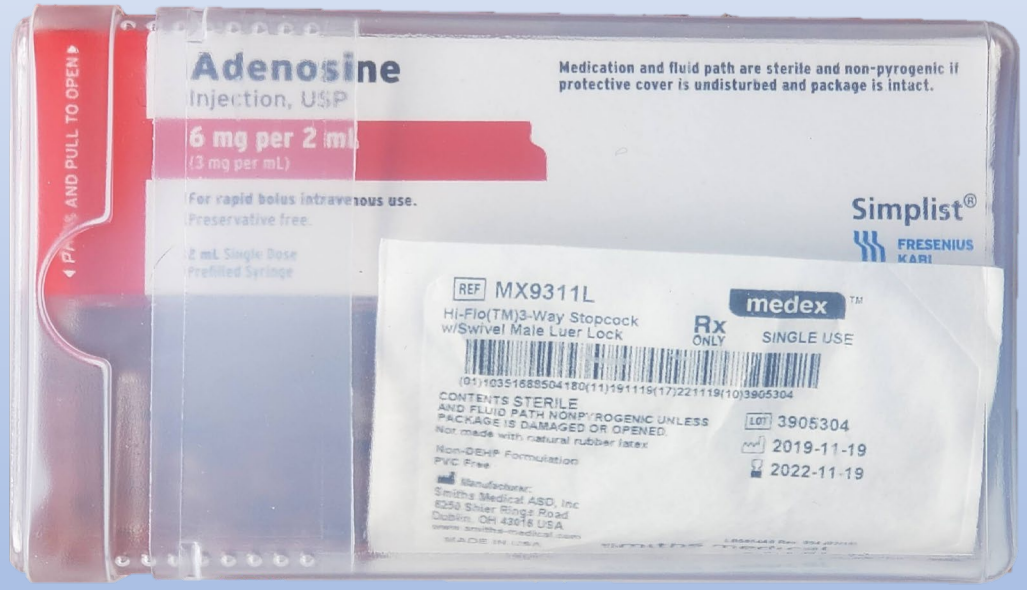
Existing Inventory

Kit #1



2 – Adenosine 6 mg per 2 mL Prefilled Syringes

Kit #2



1 – Adenosine 6 mg per 2 mL Prefilled Syringe

1 – 3 Way Stopcock

Adenosine 6 mg/2 mL (3 mg/mL) – Packaging Change

Kit #1

Temporary Inventory

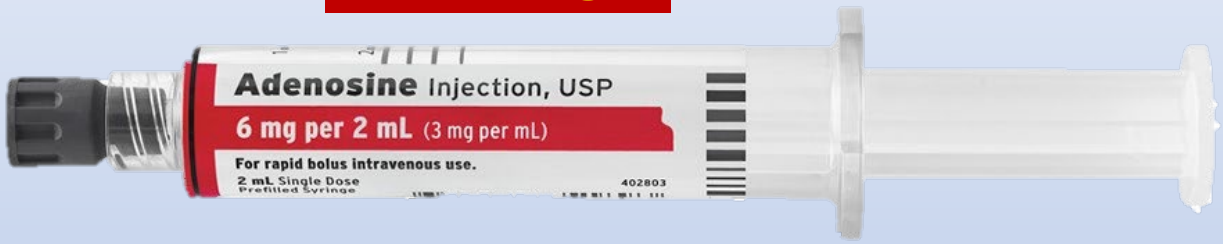
Kit #2

2 – Adenosine 6 mg per 2 mL Vials
2 – 3 mL Syringes
2 – 18g Blunt Fill Needles

2 – Adenosine 6 mg per 2 mL Vials
2 – 3 mL Syringes
2 – 18g Blunt Fill Needles

Adenosine 6 mg/2 mL (3 mg/mL) – Packaging Change

Existing



New

SUMMARY		
No Change	**Total Drug Amount**	No Change
No Change	**Concentration**	No Change
No Change	**Volume of Liquid**	No Change
Appearance	• Vial format	
Reason for Change	Ongoing Drug Shortages	